Fact Sheet

DRAFT June 29, 2021 Prepared by: BERK Consulting, Inc. on behalf of Chelan County

CHELAN COUNTYWIDE CLIMATE RESILIENCE PLANNING

Why is Chelan County Planning for Climate Change?

Climate change is expected to have wide-ranging impacts on life in Chelan County. In recent decades Washington State, including Chelan County, has experienced significant droughts, declining snowpack, and several extreme wildfire seasons. These events and conditions are expected to become more common as the climate continues to change. Changes in temperature and precipitation are expected to affect availability of water for fish, farming, and potable uses, fire and flood hazard potential, winter and summer recreation and tourism, and more.

The Chelan Countywide Climate Resilience Strategy is meant to help answer:

- Where are we heading based on current trends and expected changes?
- What does that mean for commerce, communities, residents of Chelan County as well as visitors?
- What are steps Chelan County and the greater community can take to build climate resilience?

Who are the partners?

Building climate resilience depends not only on actions within and by Chelan County, but on the variety of agencies and landowners who have jurisdiction and ownership within the county. Over 2019-2021, the Climate Resilience Strategy has been formed based on a partnership among the following entities:

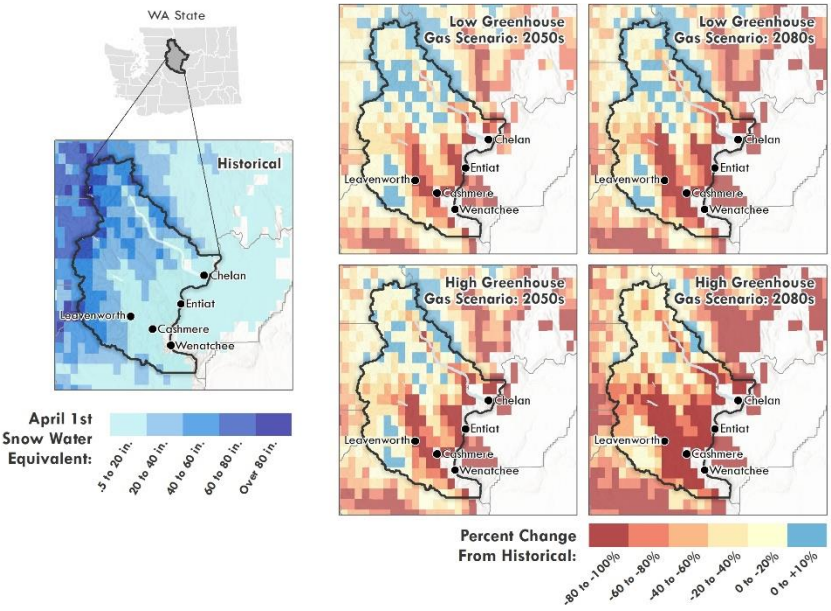
- Chelan County Natural Resources Department
- Chelan County Public Utility District
- Washington State Department of Natural Resources
- University of Washington Climate Impacts Group
- US Environmental Protection Agency, Region 10
- Federal Reserve Bank of San Francisco
- Federal Emergency Management Agency

EXAMPLE STRATEGIES

- Create fire adapted communities
- Wildfire air quality - provide education, training, and responses to protect people and communities during and after wildfire
- …quantify forest management effects on snowpack in order to support development of forest-snow-streamflow model.
- Evaluate and improve stormwater management and infrastructure for high-intensity rainfall events.
- Provide for water storage near sources to address low stream flow, flooding, fire-fighting, and water supply needs.
- Ensure climate resilience outreach and education efforts are multi-lingual to engage all members of the community.

What is in the Climate Resilience Strategy?

The Climate Resilience Strategy is a draft blueprint that provides a snapshot of trends and information, existing initiatives, and new initiatives to adapt and prepare for wildfire, changes in snowpack and streamflow, flooding, and water supply. Some climate change trends affect more than one category of impacts and are addresses as "cross-sector". Strategies are described along with their status, partners, and resources.



Over 100 people from Chelan County organizations and the wider community participated in several workshops, providing in person and survey feedback on the developing strategy and identifying ways to leverage resources and move from strategy to action.

What is the Climate Policy Integration Proposal?

In Summer 2020, the Washington State Department of Commerce allocated grant funding to assist with climate change planning and Chelan County was awarded a $20,000 grant.

The purpose of this funding is to support growth management act (GMA) comprehensive plans and integrate climate change planning. This grant allows Chean County to audit its current comprehensive plan, and to incorporate strategies developed within the Climate Resilience Strategy. This process will be ongoing through the end of 2021, with draft policy amendments being drafted by the end of June, 2021. There will be opportunities for public comment, consistent with the County's public participation program.

Where can I find out more information?

For more information on the climate resilience strategy, please visit the Chelan County Department of Natural Resources website: https://www.co.chelan.wa.us/natural-resources/pages/county-wide-climate-resilience-planning

For information about the Comprehensive Pan policy integration proposal, please see the Chelan County Community Development website: https://www.co.chelan.wa.us/community-development

File(s) No. CPA 21-084

CHELAN COUNTY

DEPARTMENT OF COMMUNITY DEVELOPMENT
316 WASHINGTON STREET, SUITE 301, WENATCHEE, WA 98801
TELEPHONE: (509) 667-6225 FAX: (509) 667-6475

GENERAL LAND USE APPLICATION FORM

Parcel Number (APN): N/A Lot Size: _____ (Acres)
Parcel Address: Countywide City/Zip Code: _____
Property Owner(s): _____ Zoning: _____
Mailing Address: _____
City/State/Zip Code: Chelan County, WA
Phone: _____ E-mail: _____

Applicant/Agent (if different than owner)**:** Chelan County Department of Natural Resources
Company and Mailing Address: 411 Washington St. Suite 201
City/State/Zip: Wenatchee, WA 98801 Phone: 509-667-6533
E-mail: _____
For multiple owners, applicants, or agents, provide additional sheets.

This General Land Use Application Form shall be completed unless specified below. Additional information and supplemental forms may be required. Please review all applicable statutes and regulations pertaining to the proposed development and provide information, documents, studies, and reports (such as a Traffic Impact Study or environmental forms) demonstrating compliance with all statutory and regulatory requirements and other applicable criteria.

Application For: (Check all that apply)

- ☐ Administrative Modification
- ☐ Administrative Determination
- ☐ Administrative Interpretation
- ☐ Binding Site Plan
- ☐ Comprehensive Plan Map Amendment
- ☑ Comprehensive Plan Text Amendment
- ☐ Conditional Use Permit
- ☐ Forest Practice/Conversion
- ☐ Open Space: Public Benefit Rating System
- ☐ Major Subdivision
- ☐ Master Planned Development
- ☐ Planned Development
- ☐ Plat Alteration or Vacation
- ☐ Short Plat
- ☐ Variance (zoning or critical areas)
- ☐ Zoning Text Amendment/ Map Amendment
- ☐ Other: _____

APPLICABILITY SECTION

The following have their own individual application. Do not use this form for:

1. Boundary Line Adjustments. Please use corresponding Boundary Line Adjustment Application Form.
2. Certificate of Exemptions. Please use corresponding Certificates of Exemption Application Form.
3. Shoreline Permits. Provide the JARPA form along with the corresponding Supplemental Form, as necessary.
4. Building and Fire Permits.
5. Pre-Applications.

The following attachments are required for a complete application:

1. Copy of Deed or Proof of Ownership
2. Supplemental Forms, if applicable
3. Completed Aquifer Recharge Section, Marijuana Disclosure Section and Site Plan Checklist
4. All information, documents, studies and reports demonstrating compliance with all statutory and regulatory criteria and requirements and the Chelan County Comprehensive Plan
5. The applicant is required to review and submit documentation showing compliance with all Chelan County Code, including but not limited to Title 4, Title 11, Title, 12, Title 14, and Title 15.

GENERAL INFORMATION

Please provide a narrative of the proposed project including, but not limited to, all proposed activities, uses and development (attach additional sheets if needed):

Integration of climate resilience strategies and climate change issues in the Chelan Co. Comprehensive Plan. The work is a result of a Department of Commerce GMA-Climate Change Planning grant that was awarded to Chelan County.

☐ Narrative attached

Please complete the following:

1. Any related files (such as Pre-Applications): N/A
2. Is the subject property located within an Urban Growth Area (UGA)? ❑ No ❑ Yes
   If "yes", which UGA? N/A
3. Please describe adjacent land uses in all directions around the subject property:
   North: _____
   South: _____
   East: _____
   West: _____
4. What is the current use of the property? N/A
5. Sanitation Disposal: ◪ N/A ❑ Septic Permit ❑ Sewer District: _____
6. Water Source: ◪ N/A ❑ Single Private Well ❑ Shared Private Well ❑ Group B
   ❑ Public Water Supplier: _____
7. Irrigation Water:
   ◪ N/A ❑ Yes (Private) ❑ Yes (Public) Irrigation District/Purveyor: N/A
8. Fire District: N/A School District: N/A
9. Power Service: N/A
10. Are there critical areas or critical area buffers on the property?
    ❑ Airport Overlay: _____
    ❑ Aquifer Recharge Area (see attached)
    ❑ Floodplain / Floodway _____
    Geologically Hazardous Areas (11.86.020) on the site or within the specified distance of the site:
    ❑ Alluvial Fan (250') ❑ Known Historic Hazardous Area (250') ❑ Slopes > 40% (250')
    ❑ Erosive soils (on-site) ❑ Landslide ❑ Snow Avalanche (500')
    ❑ Habitat/Riparian Area, protected species/area: _____
    ❑ Streams / Waterbodies: _____ ❑Shoreline Environment Designation: _____
    ❑ Drainage or Seasonal Stream: _____ ❑ Wetland, if so what category: _____
    ❑ Cultural or Archeological: _____
11. Will landfill be required? ◪ No ❑ Yes, approximate _____(cubic yards)
12. Will excavation be required? ◪ No ❑ Yes, approximate _____(cubic yards)
13. Has site preparation been started on the site? If so, to what extent?
    N/A
14. Are there plans for future additions, expansions, or further activity related to or connected with the proposal?

15. Provide a development schedule with the approximated dates of commencing and completing construction or proposed activity:

    Docket process per Chapter 14.14 CCC. A public participation plan has been prepared.

16. Are there any other applications pending for governmental approvals for this or other proposal affecting the property coverd by this proposal? ❑ No ❑ Yes, please list:

AQUIFER RECHARGE AREA DISCLOSURE SECTION

Exempt from this section only are Single Family Residences and their associated development per CCC 11.82.060.An applicant seeking to develop property which requires a development permit, shall submit with the permit application this certified statement, which lists each of the evaluation criteria and shall indicate whether the criteria "applies" or "does not apply" to the site or development. "Unknown" or similar responses will not be accepted.

If the development meets criteria A, B, C, or D or if the site or development meets any two of the remaining criteria, the Department will direct the applicant to determine the vulnerability rating for the development pursuant to Section 11.82.050 Aquifer Recharge Areas. If the development has a high or medium vulnerability rating, the development shall be subject to the performance standards of Section 11.82.060.

If an applicant's statement asserts that the criteria of do not apply to the development, the Department will accept the statement and proceed with the permitting process. If any statement is incorrect, the applicant will be advised in writing to either; (a) provide an amended statement adding the evaluation criteria as being applicable and determine the vulnerability rating of the development pursuant to Section 11.82.050, or (b) present sufficient countering information clearly establishing that the basis for the Department's concern is incorrect. If the applicant selects to proceed under (b), upon receipt of the applicant's information, the Department shall review the information and obtain whatever additional assistance may be required to resolve the issue. The final determination as to whether a determination of vulnerability is required shall be made by the Administrator.

EVALUATION CRITERIA

The applicant is required to determine the vulnerability rating for **any development permit**, not otherwise exempted, if the site or development meets criteria A, B, C, or D or meets two or more of the remaining criteria below:

Please write the word(s) **"Applies** or **"Does Not Apply"** on the lines before each of the following statements:

Does Not Apply **A.** Within a wellhead protection area designated under WAC 246-290; *Wellhead Protection Area: The surface and subsurface area surrounding a well or well field for a distance of 100 feet, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field.

Does Note Apply **B.** Within an aquifer recharge area mapped and identified by a qualified ground water scientist;

Does Not Apply **C.** The site will be utilized for hazardous substance, (as now or hereafter defined in RCW 70.105D.020(7)), processing storage or handling in applications or quantities larger than is typical of household use;

Does Not Apply **D.** The site will be utilized for hazardous waste treatment and storage as set forth in RCW 70.105 Hazardous Waste Management, as now or hereafter amended;

Does Not Apply **E.** The site contains highly permeable soils, which include soil types 1a, 1b and 2a under WAC 246-272-11001, Table II; **Highly Permeable Soils: Include soil types 1A, 1B and 2A from Table II, Soil Textural Classification, WAC 246-272-11001. 1A: Very gravely coarse sands or coarser, all extremely gravely soils. 1B: Very gravely medium sand, very gravely fine sand, very gravely very fine sand, very gravely loamy sands. 2A: Coarse sands (also includes ASTM C-33 sand).

Does not Apply **F.** Within a sole source aquifer recharge area designated pursuant to the Federal Safe Drinking Water Act **(None currently designated in Chelan County)**;

Does not apply **G.** Within an area established for special protection pursuant to a groundwater management program, chapters 90.44, 90.48 and 90.54 RCW, and Chapters 173-100 and 173-200 WAC **(None currently designated in Chelan County)**;

Does Not Apply **H.** The development involves a proposed major or short subdivision and includes present or future plans to construct three or more dwelling units where the dwelling units will not be connected to a public sewer system and any of the lots are less than 1 net acre in size;

Does Not Apply **I.** The proposed commercial and industrial site is not on a public sewer system and the main structure exceeds 4,000 square feet;

Does Not Apply **J.** The proposed use is as a commercial feedlot;

Does Not Apply **K.** The development is within 200 feet of the ordinary high water mark of a perennial river, stream, lake or pond.

Depending upon soil depths from the surface, the following soil series within Chelan County are considered to be highly permeable soils:

Ardenvoir: ArF, 27-43 inches (depth from surface), very gravelly sandy loam

Anatone: AkD, 5-14 inches (depth from surface), very gravelly silt loam

Beverly: Be, 17-24 inches (depth from surface), very gravelly sandy loam; Bf, 17-24 inches (depth from surface), very gravelly sandy loam; Bg, 0-10 inches (depth from surface), very gravelly loamy fine sand; Bg, 17-24 inches (depth from surface), very gravelly sandy loam

Brief: BrA, BrB, BrC, Brd, 26-60 inches (depth from surface), very gravelly sandy loam

BsD, 26-60 inches (depth from surface), very gravelly sandy loam

Chelan: CgB, CgC, CgD, CgE, 35-60 inches (depth from surface), very gravelly sandy loam; ChC, ChE, 35-60 inches (depth from surface), very gravelly sandy loam; CkD, CkE, 35-60 inches (depth from surface), very gravelly sandy loam; CIA, CIB, CIC, CID, CIE, 35-60 inches (depth from surface), very gravelly sandy loam

Jumpe: JmD, 10-60 inches (depth from surface), very stony silt loam; JnF, 0-60 inches (depth from surface), very stony silt loam

Loneridge: LoD, LoF, 0-10 inches (depth from surface), very stony loam; 10-16 inches (depth from surface), very gravelly clay loam

Malaga: MaA, MaC, 15-19 inches (depth from surface), very gravelly sandy loam

Peshastin: PhB, PhC, 18-60 inches (depth from surface), very cobbly sandy loam; PID, PIE, 18-60 inches (depth from surface), very cobbly loam

Pogue: PsE, 0-17 inches (depth from surface), very stony fine sandy loam

Stemilt: StD, StE, 17-60 inches (depth from surface), very cobbly silty clay loam

Supplee: SuA, SuB, SuC, SuD, SuE, 0-6 inches (depth from surface), Very fine sandy loam; 18-31 inches (depth from surface), very gravelly sandy loam

Thow: TgD, 10-60 inches (depth from surface), very gravelly sandy loam; ThE 10-60 inches (depth from surface), very gravelly sandy loam

Tronsen: TrD, TrE, 8-60 inches (depth from surface), very gravelly clay loam

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CANNABIS DISCLOSURE SECTION

SUB-SECTION I: Circle

I AFFIRM there **IS NOT** or **IS** (circle one) an existing or pending Liquor and Cannabis Board (LCB) license or approval for cannabis production, processing, or retail located on the property that is the subject of the requested development permit or approval.

If you circled "**IS NOT**" above, proceed to Sub-Section III of this form.

If you circled "**IS**" above, proceed to Sub-Section II of this form.

SUB-SECTION II: You must read the below statements, initial on the space provided, and then proceed to Sub-Section III.

_____ I ACKNOWLEDGE AND UNDERSTAND that all cannabis-related activities, development, uses and construction must comply with Chelan County regulations, including but not limited to Chelan County Code Section 11.100.

_____ I ACKNOWLEDGE AND UNDERSTAND that only those cannabis-related uses authorized pursuant to Chelan County Code Section 11.100 are permitted within Chelan County. All other commercial and noncommercial licensed or registered cannabis uses, including but not limited to cannabis research facilities and medical cannabis cooperatives, are prohibited within all zones of Chelan County.

_____ I ACKNOWLEDGE AND UNDERSTAND that pursuant to Chelan County Code Section 11.100 a conditional use permit is required to engage in the production or processing of cannabis within Chelan County, and that all cannabis producers and processors must register annually with Chelan County and pay the appropriate registration fee.

_____ I ACKNOWLEDGE AND UNDERSTAND that it is the responsibility of the property owner to submit for and obtain all necessary development permits and approvals prior to engaging in cannabis-related activities, development, uses or construction, including but not limited to conditional use permits for the production or processing of cannabis, building permits, change of use/occupancy permits, shoreline permits, variances, and mechanical permits.

SUB-SECTION III: Please select one of the following:

☑ I certify with the signature below that the building or land use permit requested **IS NOT** related to or in any way supportive of existing or planned cannabis-related activities, development, uses or construction on the property. I further certify that any authorized activities, development, uses or construction **WILL NOT** be utilized to support or expand cannabis-related activities, development, uses or construction.

☐ I certify with the signature below that the building or land use permit requested **IS** related to or in support of existing or planned cannabis- related activities, development, uses or construction on the property. I certify that any authorized activities, development, uses or construction will be in strict compliance with LCB licensure requirements and all applicable laws and regulations including but not limited to Chelan County Code, Chapter 69.50 RCW (Uniform Controlled Substances Act), Chapter 69.51A (Medical Cannabis), Chapter 19.27 RCW and WAC Title 51 (State Building Code), Chapter 58.17 RCW (Plats-Subdivisions-Dedications), Chapter 90.58 RCW (Shoreline Management Act), Chapter 314.55 WAC, and the Chelan County Shoreline Master Program.

SITE PLAN CHECKLIST SECTION

- ❑ Two copies of site plan are required. Must be drawn to standard engineering/architect's scale, such as 1"=100'. Indicate the scale used. Must include North arrow, and be drawn on grid paper or engineering plan format. For large parcels, applicant may submit a two-page site plan, the first page depicting the entire lot at a convenient scale and the second page depicting an enlargement of the developed area at a larger scale.
- ❑ Label all property lines/boundaries, dimensions, and area of lot/parcel (square feet or acreage).
- ❑ Label the location, size, and use of all existing building(s). Identify the distance between property lines and buildings. Label structures with previous building permit number(s) issued if applicable.
- ❑ Label the location, size, and use of all proposed structure(s) (temporary or permanent) to include dimensions of all decks, porches, cantilevers, bay windows, roof overhangs, retaining walls, patios, chimneys, landings and stairs.
- ❑ Identify the location, dimensions and volume of all existing and proposed propane tanks, fuel tanks, etc., both above ground and underground, as well as setback from property lines.
- ❑ Identify land features such as top and bottom of slopes, direction of slope and any areas of erosion.

- ❑ Identify and label all water features to include, ponds, springs, ravines, streams, creeks, lakes, rivers, irrigation laterals, canals, ditches, wetlands, bogs, areas of saturated ground, flood plain, floodway. Identify the closest distance between the ordinary high water mark and proposed/existing structures.
- ❑ Label the name and width of roads bordering the property and indicate whether they are public or private.
- ❑ Locate the width of existing and proposed driveways/accesses serving each structure. Include stormwater control facilities such as drains, detention ponds, connection lines, catch basins, etc.
- ❑ Label all existing and proposed parking spaces/areas. Parking in residential districts is typically not allowed in the front yard setback area. All parking shall have durable and dustless surfaces suited to all weather use, unless required otherwise. If applicable, show handicapped parking and accessible routes to the structure and within the site to other structures and features.
- ❑ Identify and label all easements and widths, deed restrictions, other encumbrances, and/or issues restricting or affecting the use or condition of the property, including but not limited to access, utilities, railroads, irrigation and overhead power. Include the Auditor's file number(s). *Before Any Development Occurs, Please Call 1-509-661-4220 for assistance in identifying PUD Easements!*
- ❑ Show the location of all existing and proposed overhead and underground utilities including, but not limited to water, sewer, gas, and electrical.
- ❑ Identify location of water lines, well and sanitary control radius. Note: A sanitary control radius around an off-site well may impact your project if it overlaps onto your parcel.
- ❑ Identify location of all well(s), septic/pump tank, drain field, reserve area and tight line involving the proposed structure(s). Show the distance from proposed structure(s) to septic tank, drain field, drinking water well source(s), and any water body, wetland area and/or flood plain to ensure they meet the required horizontal setbacks from each other and property lines. See Chelan Douglas Health District Horizontal Setback Table for details. If applicable, the approved Health District and County site plan must be identical.
- ❑ If drinking water wells, septic tank/drain field is off site, show the location of these systems on the adjacent property or properties and provide a copy of the easement agreement(s).
- ❑ If applicable, identify existing and proposed landscaping, screening and/or fencing. (Show type of landscaping, size, spacing, and provisions for irrigation).
- ❑ If applicable, include outdoor lighting and signage. Label each as existing or proposed.

ACKNOWLEGEMENT SECTION

If the Applicant is not the owner of the property, this application and acknowledgment shall also be executed (signed) by each property owner.

By submitting this application, I acknowledge and certify the following:

Initials
(Owner and, if applicable, Applicant)

_____ _____ 1. All applications will be reviewed for completeness and processed according to Chelan County Code Title 14. Each application may be denied if not consistent with all Chelan County Codes, adopted regulations, Comprehensive Plan and related plans or studies.

_____ _____ 2. This application does not constitute approval of the proposed development and Chelan County does not make any guarantee, either express or implied, that this application will be approved.

_____ _____ 3. False statements, errors and/or omissions in this application or information provided with or in regard to this application may be sufficient cause for denial of the request.

_____ _____ 4. Additional permit applications and approvals may be necessary to conduct specific activities.

_____ _____ 5. Application fees are non-refundable, except when approve by the Board.

_____ _____ 6. In the event of any legal proceeding to challenge this application, any environmental determination or any other aspect of the proposed development, the applicant/owner(s) shall be solely responsible to defend such challenge and pay all court costs and attorney's fees necessary for such defense.

_____ _____ 7. Chelan County is hereby given consent to enter the property(ies) listed above.

_____ _____ 8. I certify that I am the property owner, or authorized agent of the property owner, and I have familiarized myself with the rules and regulations of Chelan County with respect to making this application.

_____ _____ 9. I certify that I possess full legal authority and rights necessary to exercise control over the subject property.

_____ _____ 10. I certify that this application has been made with the consent of the lawful property owner(s).

_____ _____ 11. I certify that all Easements, Deed Restrictions, other encumbrances, and/or issues restricting or affecting the use or condition of the property have been accurately disclosed and are shown on the site plan submitted with this application.

_____ _____ 12. This application shall be subject to all additions to and changes in the laws, regulations and ordinances applicable to the proposed development until a determination of completeness has been made pursuant to Section 14.08.030.

I certify (or declare) under penalty of perjury and under the laws of the State of Washington that the foregoing and all information submitted with this application is true, correct and complete to the best of my knowledge.

Owner Signature: _____ **Place:** _____ **Date:** _____

Print Name: _____

Owner/Applicant/Agent Signature: Lisa Grueter **Place:** Seattle **Date:** 2/25/21

Print Name: Lisa Grueter

Owner/Applicant/Agent Signature: _____ **Place:** _____ **Date:** _____

Print Name: _____

SEPA Environmental Checklist

Chelan County
Climate Policy Integration

PURPOSE OF CHECKLIST:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

INSTRUCTIONS FOR APPLICANTS:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

INSTRUCTIONS FOR LEAD AGENCIES:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

USE OF CHECKLIST FOR NONPROJECT PROPOSALS:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the supplemental sheet for nonproject actions (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1) Name of proposed project, if applicable:

Chelan County Climate Policy Integration

2) Name of applicant:

Chelan County Department of Natural Resources

3) Address and phone number of applicant and contact person:

Mike Kaputa, Director
Chelan County Natural Resource Department
411 Washington Street, Suite 201
Wenatchee, WA 98801
Phone: (509) 670-6935
mike.kaputa@co.chelan.wa.us

4) Date checklist prepared:

February 25, 2021

Prepared by: Lisa Grueter, Principal and Jonathan Morales, Associate, BERK Consulting, Inc. on behalf of Chelan County.

5) Agency requesting checklist:

Chelan County Department of Natural Resources

6) Proposed timing or schedule (including phasing, if applicable):

County adoption of Comprehensive Plan text amendment updates by December, 2021 per Chelan County Code section 14.14.

7) Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Not appliable.

8) List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- Draft Chelan Climate Resilience Strategy - October 2020

9) Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Not applicable.

10) List any government approvals or permits that will be needed for your proposal, if known.

Planning Commission recommendation and Board of County Commissioners consideration and adoption per CCC 14.14.

11) *Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)*

This project proposal involves a Comprehensive Plan text amendment to incorporate climate resiliency goals and strategies into the Chelan County Comprehensive Plan.

12) *Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.*

Chelan County and Unincorporated Chelan County

B. Environmental Elements [HELP]

1. EARTH [HELP]

a. General description of the site:

Locations vary throughout Chelan County; Section B of this SEPA checklist generally does not apply to this non-project action. Proposed policies support tree and shrub steppe habitat conservation and enhancement (e.g. post fire or flood) to promote climate resilience that can reduce erosion potential. County critical areas regulations that address geologic hazards and erosion control would remain.

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

Various; Not applicable.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Various; Not applicable.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Not applicable; countywide non-project action.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Not applicable; non-project action.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Not applicable; non-project action.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not applicable; non-project action and not site specific.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

See 1A above; proposed policies will help to reduce erosion potential.

2. AIR [HELP]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Not applicable; non-project action will not lead to any emissions. Proposed policies aim to reduce greenhouse gas reductions through implementation of climate resiliency strategies and County Code Chapter 13.20 Greenhouse Gas Reduction Policies.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Not applicable; non-project action.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The project will promote climate resiliency strategies and policy implementation, including the reduction of greenhouse gas emissions. Proposed policies address air quality and health due to wildfire smoke. Forest health and management can also support carbon sequestration. The policies also leverage County plans, like Chelan County Community Wildfire Protection Plan 2019.

3. WATER [HELP]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Locations vary throughout Chelan County; Section B of this SEPA checklist generally does not apply to this non-project action.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Not applicable; not site specific.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Not applicable.

4) *Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.*

Not applicable.

5) *Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.*

Countywide non-project action; Not applicable.

6) *Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.*

Not applicable.

b. Ground Water: [help]

1) *Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.*

Not applicable.

2) *Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.*

Not applicable.

c. Water runoff (including stormwater):

1) *Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.*

Not applicable.

2) *Could waste materials enter ground or surface waters? If so, generally describe.*

Not applicable.

3) *Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.*

Not applicable.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Non- project action. Proposed policies support forest management and conservation supporting snow pack and stream flow and groundwater recharge; the proposed policies address climate adaptation and emergency management measures due to flooding. Policies also help leverage County plans, such as 2019 Natural Hazard Mitigation Plan and the 2017 Comprehensive Flood Hazard Management Plan.

4. PLANTS [HELP]

a. Check the types of vegetation found on the site: Not applicable; non-project action and not site specific.

_____deciduous tree: alder, maple, aspen, other
_____evergreen tree: fir, cedar, pine, other
_____shrubs
_____grass
_____pasture
_____crop or grain
_____Orchards, vineyards or other permanent crops.
_____wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
_____water plants: water lily, eelgrass, milfoil, other
_____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Not applicable; non-project action.

c. List threatened and endangered species known to be on or near the site.

Not applicable; non-project action.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Non-project action. Proposed policies support tree and shrub steppe habitat conservation and enhancement (e.g. pre and post fire or flood). Policies also support Watershed Plans.

e. List all noxious weeds and invasive species known to be on or near the site.

Not applicable; non-project action.

5. ANIMALS [HELP]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:
birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Not applicable; non-project action and not site specific.

b. List any threatened and endangered species known to be on or near the site.

Not applicable; non-project action and not site specific.

c. Is the site part of a migration route? If so, explain.

Not applicable; non-project action and not site specific.

d. Proposed measures to preserve or enhance wildlife, if any:

Various. Proposed policies preserve natural habitats, including conservation of wildlife habitats. Policies also support Watershed Plans.

e. List any invasive animal species known to be on or near the site.

Not applicable; non-project action and not site specific.

6. ENERGY AND NATURAL RESOURCES [HELP]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Not applicable; non-project action and not site specific. Proposed policies will boost energy conservation.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

Not applicable; not site specific.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Proposed policies integrate Chelan County Code Chapter 13.20

Greenhouse Gas Reduction Policies and boost energy conservation.

7. ENVIRONMENTAL HEALTH [HELP]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Not applicable; non-project action and not site specific.

1) Describe any known or possible contamination at the site from present or past uses.

Not applicable; non-project action and not site specific. Proposed policies aim to mitigate risk of environmental contaminants through climate resiliency and adaptation measures.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

Non-project action and not site specific.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Not applicable; non-project action and not site specific.

4) Describe special emergency services that might be required.

Not applicable; non-project action.

5) Proposed measures to reduce or control environmental health hazards, if any:

Proposed policies address climate adaptation and climate resiliency to mitigate risk of environmental health hazards. Proposed policies support county plans for emergency management, such as: the 2020 Comprehensive Emergency Management Plan (CEMP) and 2019 Natural Hazard Mitigation Plan.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Not applicable; non-project action and not site specific.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Not applicable; non-project action and not site specific. Proposed policies will not lead to any noise pollution, etc.

3) Proposed measures to reduce or control noise impacts, if any:

Proposed policies will not lead to noise pollution.

8. LAND AND SHORELINE USE [HELP]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Not applicable; non-project action and not site specific.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Existing farmlands and forestlands with long-term commercial significance will not be impacted as a result of the proposed policies. Proposed policies will support the viability of existing agricultural lands in Chelan County including conservation practices and voluntary stewardship.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

Not applicable; non-project action and not site specific. Proposed policies support working farms and/or forestland operations which accommodate carbon sequestration, recognized in Chelan County Code 13.20.

c. Describe any structures on the site.

Not applicable; non-project action and not site specific.

d. Will any structures be demolished? If so, what?

Not applicable; non-project action and not site specific.

e. What is the current zoning classification of the site?

Various; non-project action and not site specific.

f. What is the current comprehensive plan designation of the site?

Non-project action and not site specific. Proposed policies seek to integrate climate resiliency strategies into the Chelan County Comprehensive Plan Elements. Elements addressed include: Land Use, Resource, Capital Facilities, Utility, and Transportation.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable; non-project action and not site specific.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Chelan County has several designated Critical Areas which are addressed in the proposed policies (e.g. floodplains, and vegetation / tree conservation and enhancement pre and post fire/flood, and protection of forest cover and shrub-steppe).

i. Approximately how many people would reside or work in the completed project?

Not applicable; non-project action and not site specific.

j. Approximately how many people would the completed project displace?

Not applicable; non-project action and not site specific.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable; non-project action and not site specific.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Proposed policies are responsive to existing and projected land uses and address the Land Use Element chapter of the Chelan County Comprehensive Plan. The policies promote fire adapted communities and community building in watersheds. Policies also promote energy conservation in buildings.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

Proposed policies support conservation of agricultural and forest lands.

9. HOUSING [HELP]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Not applicable; non-project action and not housing related.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Not applicable; non-project action and not housing related.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable; non-project action and not housing related.

10. AESTHETICS [HELP]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable; non-project action and not site specific.

b. What views in the immediate vicinity would be altered or obstructed?

Not applicable; non-project action and not site specific.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not applicable; non-project action and not site specific.

11. LIGHT AND GLARE [HELP]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable; non-project action.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not applicable; non-project action.

c. What existing off-site sources of light or glare may affect your proposal?

Not applicable; non-project action.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable; non-project action.

12. RECREATION [HELP]

a. What designated and informal recreational opportunities are in the immediate vicinity?

Various. Chelan County has several recreational opportunities. Proposed policies address adaptive recreation and tourism .

b. Would the proposed project displace any existing recreational uses? If so, describe.

Proposed policies will not displace existing recreational uses. Proposed policies address improving recreation opportunities for all-seasons and weather events.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Proposed policies address the development and maintenance of recreational facilities and opportunities. Proposed policies promote all-season and weather independent recreation opportunities.

13. HISTORIC AND CULTURAL PRESERVATION [HELP]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

Various; countywide.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

Various; countywide.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Not applicable; countywide non-project action and not site specific.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Not applicable; countywide non-project action and not site specific.

14. TRANSPORTATION [HELP]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Not applicable; non-project action and not site specific.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Non-project action and not site specific; countywide

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Not applicable; non-project action.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Proposed policies would support roadway and bridge design that is adaptive to floods ad protective of

fish and wildlife, whether improved infrastructure or new infrastructure.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Various; non-project action and not site specific.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Not applicable; non-project action

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

Not applicable; non-project action.

h. Proposed measures to reduce or control transportation impacts, if any:

Proposed policies support roadway and bridge design that is adaptive to floods and protective of fish and wildlife.

15. PUBLIC SERVICES [HELP]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Proposed policies integrate County plans for emergency management and coordination, and solid waste management supporting County climate code.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Proposed policies integrate County plans for emergency management and coordination, and solid waste management supporting County climate code.

16. UTILITIES [HELP]

a. Circle utilities currently available at the site:

electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

Not applicable; non-project action and not site specific. Proposed policies support energy conservation and renewable energy.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Not applicable; non-project action and not site specific. Proposed policies support energy conservation and renewable energy.

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of signee Lisa Grueter, Principal

Position and Agency/Organization: BERK Consulting, Inc.

Date Submitted: 2/26/21

D. Supplemental sheet for nonproject actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1) *How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?*

There are no anticipated increases to discharge to water, emissions to air, release of toxic or hazardous substances, or production of noise. The Proposal is a non-project action that will integrate climate change resiliency measures and strategies into the Chelan County Comprehensive Plan. Proposed policies address issues of greenhouse gas emissions, hazardous waste, water, and air quality, etc.

Proposed measures to avoid or reduce such increases are:

None required. Policies serve as mitigation for future conservation and development activities.

2) *How would the proposal be likely to affect plants, animals, fish, or marine life?*

The Proposal will beneficially impact plants, animals, fish, and marine life. Proposed policies integrate climate change goals and policies into existing Comprehensive Plan policies that aim to mitigate impacts to fish and wildlife habitat and floodplains, and promote conservation of forests and critical areas.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

None required. Policies serve as mitigation for future conservation and development activities.

3) *How would the proposal be likely to deplete energy or natural resources?*

There are no anticipated impacts that would deplete energy and/or natural resources as a result of the proposed policies. Energy conservation measures and protection of natural resources is promoted by the proposed policies.

Proposed measures to protect or conserve energy and natural resources are:

None required. Policies serve as mitigation for future conservation and development activities.

4) *How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?*

The proposed policies addresses conservation and protection of existing environmentally sensitive areas, critical areas, and wildlife habitats, etc.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Proposed policies include management of forests and watersheds to mitigate impacts to stream flow and water supply, agricultural water conservation, etc. Use of greywater systems are proposed as a policy for irrigation to conserve potable water.

Agricultural conservation practices are also proposed promoting climate resiliency.

5) How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The proposed policies address fire adapted communities consistent with the Chelan County Community Wildfire Protection Plan 2019. The policies also support implementation of watershed plans and community building around water supply and other habitat needs. Energy conservation in public buildings are promoted.

Proposed measures to avoid or reduce shoreline and land use impacts are:

None required. Policies serve as mitigation for future conservation and development activities.

6) How would the proposal be likely to increase demands on transportation or public services and utilities?

There are no anticipated increased demand on transportation, public services, and/or utilities. Proposed policies support roadway and bridge design that is adaptive to floods. Policies also support implementation of emergency management plans coordinated by police and fire agencies, and implementation of solid waste management plan.

Proposed measures to reduce or respond to such demand(s) are:

None required. Policies implement plans developed by service agencies.

7) Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The proposed policies are in conformance with local, state, and federal laws. Proposed policies adhere to the Growth Management Act, and follows all applicable environmental laws. Policies leverage County plans including the 2017 Comprehensive Flood Hazard Management Plan, 2019 Natural Hazard Mitigation Plan, 2020 Comprehensive Emergency Management Plan (CEMP), Chelan County Community Wildfire Protection Plan 2019, and Solid Waste Management Plan, 2017. The policies also reference Chapter 13.20 Greenhouse Gas Reduction Policies.

Chelan County Climate Policy Integration

Deliverable 1: Summary trends, conditions, initiatives, and case studies to form a basis for Chelan County Comprehensive Plan policies

BACKGROUND

Chelan County has been confronting climate change and collaborating with Washington Department of Natural Resources, the Chelan County Public Utility District #1, and the University of Washington Climate Impacts Group towards the development of a climate resiliency strategy. The climate resiliency strategy flows from a number of "community conversations" and workshops sponsored by all the partners and engaging stakeholders and community members over 2019 and 2020. The final draft of the strategy was delivered in late Fall 2020.

The Commerce GMA-Climate Change Planning-Grant is a unique opportunity for Chelan County to jump-start the integration of its climate resiliency strategy into its Comprehensive Plan, with the added consideration of greenhouse gas (GHG) reduction efforts where suited to a rural county. The result of the process will be goals, objectives, and policies integrated across plan elements that will shape how Chelan County manages growth and land use, grows the economy in a sustainable way, makes capital investments in infrastructure, and incorporates strategies and incentives to increase resiliency and reduce greenhouse gas emissions in the context of a rural county. The policy development will also extend our engagement of diverse stakeholders in the County representing economic, environmental, and social interests, including underserved populations, and help advance implementation of the goals and policies once adopted.

TASKS

Early steps in the process include the following addressed in this document:

Step 1.1: Review climate change conditions and trends and summarize information and resiliency and adaptation strategies developed for central Washington or Chelan County. This will include the pending Fall 2020 Chelan County Climate Resilience Strategy. See the Supplement for an initial list of relevant studies and initiatives.

Step 1.2: Identify three county case studies illustrating greenhouse reduction policies, incentives, and strategies relevant for rural counties similar to Chelan County and appropriate for development, recreation, infrastructure, agriculture, and other activities managed by the Comprehensive Plan.

Step 1.3: Identify a suite of policy approaches for their effectiveness and applicability to Chelan County.

SUMMARIZE INFORMATION AND STRATEGIES

This section describes pending or adopted County policies or strategies to address climate change. These policies and strategies are considered in an audit of the County's Comprehensive Plan under separate cover as part of Deliverable 2.

Chelan County Climate Resilience Strategy

As noted above, the Chelan County Climate Resilience Strategy document final draft was delivered in late Fall 2020. The purpose of this document is to achieve two key benefits of county-wide climate resilience planning which were identified through community workshops:

1. Improved communication and coordination, and
2. The opportunity to advance projects of multiple benefits.

This document is divided into four sections based on climate change impacts: Wildfire, Snowpack & Streamflow, Floods, and Water Supply. Additionally, it provides a number of cross-sector strategies, and a proposed organizational structure for implementation beginning in 2021.

The strategy document final draft is attached below.

Chelan County Greenhouse Gas Reduction Policies

The Chelan County Board of County Commissioners (BOCC) have adopted early policies to encourage greenhouse gas reductions in publicly owned buildings in the county. The policies are broken into four categories:

1. Public Education and Outreach: promote and expand recycling programs, purchasing policies, and waste reduction efforts.
2. Transportation: provide safe and convenience access for pedestrians and bicyclists across and along major transit priority streets.
3. Land Use: evaluate local plans to align with, support, and enhance any regional plans that have been developed consistent with Chelan County's efforts to achieve reductions in GHG emissions when practicable.
4. Other: coordinate with other agencies, promoted renewable hydroelectric energy, encourage carbon sequestration.

Additionally, the policy encourages energy-efficient design of new county buildings. The full text of the policy is shared below and also found with the Chelan County Code: https://www.codepublishing.com/WA/ChelanCounty/html/Chelco13/Chelco1320.html

> *13.20.010 Adopted.*
>
> *The board of Chelan County commissioners adopts the following policies that will benefit the county's natural resources and reduce the emission of greenhouse gases (GHG):*
>
> *(1) Public Education and Outreach Policy Details. Promote and expand recycling programs, purchasing policies, and employee education to reduce the amount of waste produced.*
>
> *(2) Transportation-Oriented Policy Details. Provide safe and convenient access for pedestrians and bicyclists to, across and along major transit priority streets.*

(3) Land Use Policy Details. Evaluate local plans to align with, support, and enhance any regional plans that have been developed consistent with Chelan County's efforts to achieve reductions in GHG emissions when practicable.

(4) Other Policy Details.

(A) Coordinate with other agencies in the region to develop and implement effective waste-to-energy technologies and other innovative GHG reduction options.

(B) Chelan County is a region with an abundance of renewable hydroelectric energy sources. It is our policy to promote development which recognizes and efficiently utilizes this renewable source of energy.

(C) Recognize that Chelan County is the beneficiary of state and national forest lands in addition to significant developed orchard lands which accommodate carbon sequestration, having a positive effect on carbon emissions in the region. (Res. 2010-103, 11/9/10).

13.20.020 Publicly owned buildings.

The board of Chelan County commissioners hereby adopts the following policies and/or procedures that will benefit its natural resources:

(1) All new publicly funded county-owned buildings shall be of energy-efficient design if cost effective.

(2) When deemed necessary by the board of county commissioners, the county may conduct energy audits of its publicly owned buildings, evaluate potential conservation measures, and then carry out those measures if appropriate and cost effective.

In addition, there are policies in the Chelan County Comprehensive Plan that address energy conservation, multimodal transportation, and strengthening of the County's agricultural and forestry resources.

Policy CF 1.27 Public Buildings and Facilities: Encourage the use of energy conservation design strategies in new construction and the rehabilitation of public facility structures.

Policy UE 3.1: Encourage energy conservation and the use of cost-effective alternative energy sources, such as solar and wind power.

Policy UE 3.2: Incentivize the use of energy conservation design strategies in new construction and rehabilitation of existing residential, commercial, industrial, and public facility structures.

Policy CF 1.12 Solid Waste: Coordinate with other jurisdictions in the development of recycling programs to reduce waste and to protect the environment.

Transportation 2.9 Establish a system of designated bicycle and trail routes for transportation and other recreational uses utilizing existing transportation corridors where safety considerations are not compromised.

Transportation 2.11 Recognize the non-motorized system as an extension of transit, and support needed linkages and access to transit stops.

Transportation 4.4 Promote coordinated non-motorized system improvements focusing on access to schools, parks, transit services, employment and service centers, and shorelines.

Transportation 4.5 Coordinate with other agencies to develop a Comprehensive Trails Plan to analyze alignment, design, cost, phasing and relative priority of trail projects, and to identify the needed linkages between the trails.

Transportation 4.6 Encourage transit facilities and services as mitigation, where appropriate, for new developments.

Transportation 4.10 Require development to include public and non-motorized transportation compatible designs in all projects.

Goal RE 2: Maintain natural environment features that support and enhance natural resource-based economic activities, wildlife habitats, traditional rural lifestyles, outdoor recreation, and open space.

Policy RE 2.2: Rural development should not preclude use of rural lands for agriculture and timber production and should avoid or mitigate impacts on existing agriculture or timber operations.

CASE STUDIES

Initial Research

The table below presents some initial research for counties with rural areas and GHG reduction strategies along the West Coast, Midwest, and Eastern United States, to give a range of perspectives and approaches. Further research has been conducted on selected counties on the West Coast and a strategy that applies to rural counties everywhere, following this chart.

Exhibit 1. GHG Reduction Efforts: Example Counties or Rural Area Strategies

Location	Description	Policies/Strategies – Links
Clackamas County, Oregon *See case studies below.*	Pacific Northwest County. State has growth management similar to Washington. Countywide population: 418,187 (2019).	Link: Community Greenhouse Gas Inventory for 2018 ▪ Organizes GHG emissions by origin location/scopes (3 scope categories are highlighted in the resource ▪ Measures reduction pathway required to meet the State of Oregon's Climate Goal ▪ Note: we will look more into efforts in Clackamas County to reduce GHG emissions

Location	Description	Policies/Strategies – Links
Cuyahoga County, OH	County on Great Lakes. Voluntary plan. Population is higher at 1,235,072.	Link: Action Plan Focus Areas ▪ Highlights strategies to both mitigate and adapt to climate change. ▪ Green Zoning and Land Use Codes.
Chester County, PA	County with rural areas. Voluntary study. Countywide population is: 524,989 (2019)	Link: Greenhouse Gas Reduction Report ▪ Suggests execution of an energy supply plan that will allow County to develop a sustainable electric power supply portfolio. ▪ Reduce energy demand and greenhouse gas emissions through sound land use. ▪ Enhance building performance standards. ▪ Note: Chester County Greenhouse Gas Reduction Task Force was formed in 2007; the above report is from 2010. ▪ The County is currently undergoing a Climate Action Planning process for 2020, which will expand on recommendations made in the 2010 Reduction Report
Yolo County, CA *See case studies below.*	County in Sacramento area with farming focus. Responding to state goals. Current Population: 220,500 (2019).	Link: Greenhouse Gas Emissions and Reduction Targets ▪ References State goals for GHG emission reductions and ties to each sector of the State's emissions inventory. ▪ "Implementation of the State's Climate Change Scoping Plan is expected to reduce the County's 2020 emissions by approximately 12.2% from projected levels." Link: Strategies and Measures ▪ Identifies 15 Reduction Measures (Primary Measures) to achieve GHG reduction and adaptation goals. ▪ Strategies include: ▫ Agriculture – aim to reduce GHG emissions associated with nitrogen fertilizer application and use of fossil fuels in field equipment and irrigation pumping. ▫ Transportation and Land Use – promote sustainable development patterns and

Location	Description	Policies/Strategies – Links
		investments in alternative transportation to reduce vehicle travel and associated emissions. ▫ Building Energy – increase energy and water efficiency in existing buildings…This strategy also proposes a community choice aggregation program that allows residents and businesses to purchase low and carbon-free electricity from energy providers. ▫ Solid Waste and Wastewater – Increase efficiency of methane control system at the County landfill. Methane control systems and low-impact development techniques that treat storm water on site. ▫ Adaptation – Direct county to incorporate strategies into existing plans, and develop new documents where appropriate.
Rural Green Partnership *See case studies below.*	Applies to range of local governments in rural areas.	Link: Rural Green Partnership ■ A set of policies that work with Federal, State, and Local governments, etc. to lower greenhouse gas emissions in every economic sector of rural America and spur economic growth. ■ Some Policies include: ▫ Incentivize sustainable forestry practices that sequester carbon while creating new markets for biomass to heat and power homes and businesses. ▫ Support the immediate and widescale deployment of carbon capture, utilization, and storage technologies (CCUS) on existing fossil fuel energy facilities to reduce GHG emissions. ▫ Incentivize land use practices, such as cover crops and no till farming, to sequester more carbon, and improve soil health and improve the lifecycle GHG benefits of biofuels.

Selected Case Studies

Three case studies have been selected which provide strategy ideas for greenhouse gas reduction, energy conservation, and other climate resilience measures, from the context of areas with similarities to Chelan County (rural geography, population, etc.) The selected case studies provide examples of policies and strategies that may work in the context of Chelan County. Further, they provide a model for counties and other jurisdictions who are beginning to have these conversations, and prioritizing climate resiliency and/or adaptation in their countywide planning initiatives and Comprehensive Plans.

We have also highlighted an example of a policy that can be adopted and applied virtually everywhere, in all contexts, as it provides a concrete set of policies that work well under the context of existing local and/or statewide codes, etc.

Clackamas County, Oregon

Size and Demographics: Clackamas County is a county with both urban and rural lands in the State of Oregon, and is part of the broader Portland Metropolitan Area, which encompasses the following counties:

- Multnomah County
- Washington County
- Yamhill County
- Columbia County
- Clark County, WA
- Skamania County, WA

Clackamas County is comprised of 1,893 square miles of land, with a majority of the populated areas clustered in the northwest part of the County, and most of the county is comprised of forestry, agriculture, and rural use (75% is in forest use; 54% in government ownership, mostly Mt. Hood National Forest) .[1][2][3] The county seat is Oregon City, OR, which as of 2019 had a population of 36,492. In rural areas, the economy has largely been timber and/or agriculture based, although over the years, residents have commuted to Portland, OR and Salem, OR for work. The northwest urban portion of the county has a diversified urban economy, allowing for more job sectors and opportunities.[4]

The County has developed an inventory of GHG emissions and is working on a Climate Action Plan to help fulfil Oregon State goals and requirements.

[1] Clackamas County Comprehensive Plan, Chapter 1: Introduction
[2] See: https://dochub.clackamas.us/documents/drupal/7ab8dd39-3a98-4471-8212-3b5cc5308957#:~:text=Seventy%2DFive%20percent%20of%20Clackamas,some%20type%20of%20forest%20use.&text=Clackamas%20County.,-With%20significant%20federal
[3] See public and private lands here: https://projects.oregonlive.com/maps/land-ownership/index.php.
[4] Clackamas County Comprehensive Plan, Chapter 8: Economics, Amended 2014

State of Oregon Climate Policies: The State of Oregon has a coordinated land use program which prioritizes the preservation of natural and/or working lands for resource use, etc. The land that is protected can store large amounts of carbon in biomass and soils.[5]

In March 2020, Governor Kate Brown issued Executive Order 20-04 on climate change. The order directed the state Department of Land Conservation and Development (DLCD), and other state agencies and commissions to identify potential actions within their current authority that reduce greenhouse gas emissions and mitigate climate change impacts.[6] EO 20-04 further adopts the following GHG Emission Reduction Goals:

- 45% below 1990 emissions levels by 2035
- 80% below 1990 emissions levels by 2050

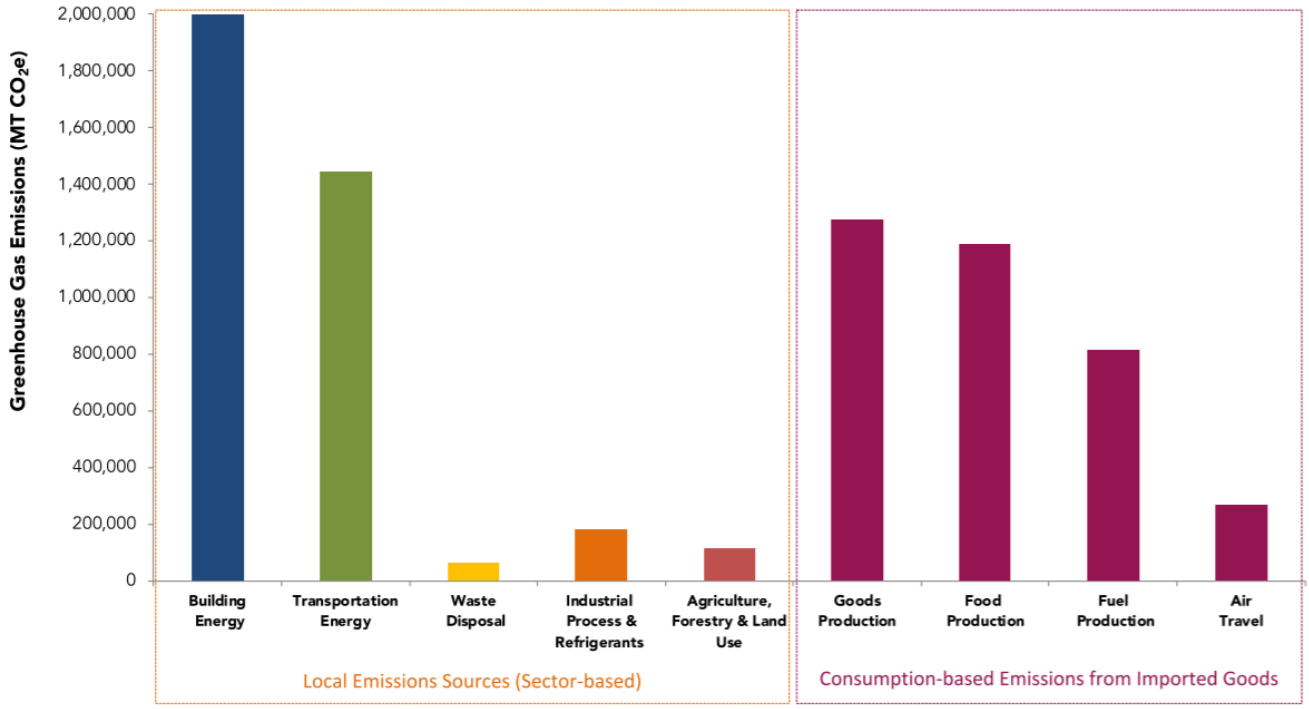
The State is in the process of developing a 2020 Climate Change Adaptation Framework, which will update the 2010 Framework. The Framework seeks to describe climate change drivers, resulting risks, potential responses, and agency needs under the following themes[7]:

- Economy
- Natural World
- Built Environment
- Public Health
- Cultural Resources
- Social Systems

County Emissions Inventory: The County prepared a Community Greenhouse Gas Inventory report utilizing a 2018 baseline, which was completed in June 2020.[8] The focus of the inventory was on local emission sources and consumption-based emissions. Larger emission sources included building energy and transportation emissions. Agriculture is a small source, but the County only measured emissions due to livestock and did not account for soil amendments or carbon sequestration in forest and agriculture lands.

[5] 'Land Use Planning and Climate Change,' Department of Land Conservation and Development. https://www.oregon.gov/lcd/CL/Pages/index.aspx
[6] Governor Brown's Executive Order on Climate Change (EO 20-04)
[7] 'Oregon's Climate Change Adaptation Framework.' https://www.oregon.gov/lcd/CL/Documents/ClimateChangeAdaptationFramework.pdf
[8] Clackamas County Climate Actions, August 2020 https://dochub.clackamas.us/documents/drupal/886aa54d-3425-46e8-881f-a83b55a8959c#:~:text=Clackamas%20County%20has%20participated%20since,greater%20savings%20and%20carbon%20reductions.

Exhibit 2. Clackamas County Emission Inventory Results



Future planned inventory elements include several applicable to a county with significant forestry and agricultural resources:

- Agriculture emissions accounted included methane emissions from livestock.
- Clackamas County includes significant unincorporated land area that is undisturbed and currently storing carbon in the trees and soil. As land is cleared for development, there is the potential to lose significant quantities of stored carbon and therefore should be included in a community GHG inventory.
- Clackamas County intends to estimate emissions from the application of soil amendments in Clackamas County agriculture (e.g. conventional nitrogen fertilizers).

Draft GHG Policies: Clackamas County is in the process of developing a Climate Action Plan, which the above referenced GHG Inventory report will help inform. The County has a goal of being carbon neutral by 2050. The County anticipates that in addition to State policies on energy conservation and electric vehicles, the County will need to take other measures to meet its goal.

County Operations: Regarding operations, the County has taken the following actions via" Operational GHG Reduction Actions," as follows[9]:

- Electricity is a large contributor of GHG emissions, impacting the carbon footprint; As a response, the Board supported a strategy to **purchase carbon-free electricity** through a combination of tools to minimize costs.

[9] Clackamas County Climate Actions, August 2020; pg. 9

- Replace and upgrade existing **EV Charging Stations**; this will support reduction of fleet emissions, commute emissions, and emissions by guests to County facilities.
- Incorporate energy efficiency and other sustainability considerations into the design and construction of new County facilities, via a **High-Performance Building Policy**.
- Continue to participate and increase investments into the **Strategic Energy Management** program, led by Energy Trust of Oregon.

Partners: As part of the Portland Metro Area, Clackamas County is involved with a variety of regional based planning and climate resilience efforts. Metro is the regional government, which includes cities in Clackamas County. The 2030 Regional Waste Plan highlights a variety of goals and actions the regional governing body intends to implement over the next ten years. Metro's recycling and composting efforts have already led to a reduction of 1.5 million tons of GHG emissions as of 2017.

Relevance to Chelan County: Areas of similarity between Clackamas County and Chelan County include operational efforts on energy conservation in public buildings and incentives for private development, multimodal transportation efforts, solid waste operations, and the need to retain and enhance forestry and agriculture, though the County's progress in this respect is limited.

Yolo County, California

Size and Demographics: Yolo County had a population of 220,500 as of 2019, and its seat is the City of Woodland, which had an estimated population of 60,548 in 2019. The county is located in the rich agricultural regions of California's Central Valley and the Sacramento River Delta.[10] The county is comprised of 1,021 square miles (653,549 acres), which includes incorporated and unincorporated areas, 32,325 acres and 621,224 acres, respectively. The following cities make up Yolo County: Davis, West Sacramento, Winters, and as referenced above, Woodland. Yolo County's primary economy is based in agriculture and has led the State in agricultural preservation practices for several decades.

State of California Climate Policies: Yolo County is planning under California's state policies and laws, which direct local cities and counties to adopt a General Plan under Government Code Section 65300. Yolo County's first General Plan was adopted in 1958 and was not comprehensively updated until 1983; the latest version was updated in 2009.

Regarding specific climate change and/or resiliency policies, The State of California passed the Global Warming Solutions Act of 2006 (AB 32), which required a sharp reduction of GHG emissions to 1990 levels by 2020. California reached its 2020 GHG emissions target four years earlier in 2016[11].

Governor Edmund G. Brown Jr. (Jerry Brown) established a GHG reduction target of 40% below 1990 levels by 2030; policy approaches that the then governor proposed were:

- Increasing use of renewable energy
- Sequestering carbon in lands
- Reducing petroleum in the vehicle sector

[10] County of Yolo, 2030 Countywide General Plan. https://www.yolocounty.org/home/showpublisheddocument?id=14470
[11] 2019 State Agency Greenhouse Gas Reduction Report Card. https://www.energy.ca.gov/sites/default/files/2020-08/2019_CalEPA_Report_Card_ada.pdf

Every year, the California Environmental Protection Agency (CalEPA) is required to prepare a report describing state agency actions to reduce GHG emissions, which includes a report card that measures GHG reductions and progress for each state agency and program/policy.

GHG Policies: Yolo County has strong land use policies that emphasize growth management, open space preservation, and agricultural protection. In 1982, the County adopted an Energy Plan, which was the first of its kind.[12] In 2007, the County became one of twelve charter members to sponsor the Cool Counties Initiative, which pledges each county collectively to reduce GHG emissions by 80% by 2050.

Yolo County's Climate Action Plan was adopted in 2011, and is comprised of strategies for GHG reductions, in addition to other land use and sustainability strategies.

Five strategies are highlighted in the CAP, as follows[13]:

- **Agriculture:** measures aim to reduce GHG emission associated with nitrogen fertilizer application and the use of fossil fuels in field equipment and irrigation pumping. The agriculture strategy also presents measures and actions to "sequester" or store carbon in agricultural and natural landscapes.
- **Transportation and Land Use:** measures implement General Plan Land Use and Circulation policies. These measures promote sustainable development patterns and investments in alternative transportation to reduce vehicle travel and associated emissions.
- **Building Energy:** measures are designed to increase energy and water efficiency in existing buildings, enhance energy and water performance in new construction, and encourage installation of building-scale renewable energy systems. This strategy also proposes a community choice aggregation program that would increase the ability for residents and businesses to purchase low and carbon-free electricity from a variety of energy providers.
- **Solid Waste and Wastewater:** presents one measure to increase the efficiency of the methane control system at the County landfill. Supporting measures include increasing or expanding the diversion of organic wastes, and construction and demolition wastes from disposal, as well as increased recycling services in the county. The strategy also provides supporting measures that address emissions resulting from the treatment and conveyance of sewage and storm water. Methane control systems and low-impact development techniques that treat storm water on-site are the primary approaches.
- **Adaptation:** describes how the County plans to address the potential effects of climate change on the existing and planned environment. These measures direct the County to incorporate strategies into existing plans, and to develop new documents where appropriate, to ensure that Yolo County remains responsive to the challenges created by climate change. Specific attention is given to impacts related to agriculture, water resources, sea level rise, wildfires, and public health.

In addition to the Climate Action Plan, Yolo County's General Plan (comprehensive plan equivalent), addresses climate change policies throughout each element, where appropriate. Specifically, the Conservation and Open Space Element addresses issues of climate change and includes and summary of

[12] Climate Action Plan, Yolo County. https://www.yolocounty.org/government/general-government-departments/community-services/planning-division/climate-action-plan#:~:text=In%202007%2C%20Yolo%20County%20became,emissions%20by%2080%25%20by%202050.
[13] Climate Action Plan, Strategies and Measures, Yolo County https://www.yolocounty.org/home/showpublisheddocument?id=17988

the county efforts to address climate change. In general, the plan aims to protect agricultural lands and direct future growth to existing cities, which allow for adequate protection of rural areas where agriculture is abundant.

Relevance to Chelan County: Areas of similarity between Yolo County and Chelan County are a focus on farming and agriculture. Additionally, it is relatively similar in size, although Chelan County has a smaller population, and includes incorporated and unincorporated lands. There is a focus on energy conservation in both counties, and steps are made to reduce GHG emissions associated with County operations.

Rural Green Partnership

Congresswoman Cheri Bustos of Illinois proposed a framework of principles and policies aimed at combatting climate change and spurring economic growth, through the Rural Green Partnership (RGP) in 2019.[14] The RGP proposes a set of policies that work in tangent with federal, state, and local governments, in addition to businesses, unions, non-governmental organizations, and other stakeholders to reduce GHG emissions in every economic sector of rural America. The proposal was introduced to the Select Committee on the Climate Crisis in August 2019.

The RGP Framework is guided by the following five principles:

- Expand and improve conservation programs that are respected and well known to farmers, and explore new markets for ecosystem services that establish economic incentives to adopt conservation practices that increase resilience, sequester more carbon in soil, crops and forests, prevent erosion and can be called up quickly and efficiently.
- Invest in rural infrastructure that will form the foundation of new green economic growth: including faster broadband speeds so farmers can take advantage of GPS from precision agriculture, an expanded grid, green infrastructure, and carbon dioxide pipelines to transport captured carbon to locations where it can be stored or utilized.
- Leverage zero and low interest loans, tax credits, and grants to incentivize new clean energy development and innovations that drive down GHG emissions.
- Increase basic and applied research funding for farming practices and sustainable land uses, clean energy technologies, energy storage, energy efficiency and carbon dioxide capture, storage, and utilization as well as extension efforts and technical assistance to ensure that government research outcomes are transferred effectively to stakeholders.
- Foster green workforce development at union and registered apprenticeship programs, community colleges, tribal colleges, technical training centers and other colleges and universities across rural America.

Proposed policies of the RGP include:

Agriculture, Land Use, and Forestry: focused on increasing soil organic carbon through soil health strategies that help farmers and ranchers manage risk by increasing long-term resiliency and adaptation

[14] https://bustos.house.gov/bustos-announces-rural-green-partnership-to-combat-climate-change-and-spur-economic-growth/

to extreme weather events. Regarding forestry, the RGP policies will rely on sustainable management, reforestation, and uses of forest products. Some specific policies include:

- Incentivize integrated crop and livestock operations to maximize the soil carbon sequestered in croplands.
- Expand grants, loans and tax incentives for farm and ranch operations that improve energy efficiency, energy generation and drive down GHG emissions through technologies like methane digestors.
- Incentivize sustainable forestry practices that sequester carbon while creating new markets for biomass to heat and power homes and business.
- Expand sustainable forestry practices such as pre-commercial thinning, establishing forest stewardship plans and developing fire resilient Wildland Urban Interfaces that reduce the incidence and intensity of fires and CO2 emissions, and further increase resources available for reforestation after catastrophic loss.

Electricity: electricity accounts for 28% of total U.S. GHG emissions; coal accounts for 27% of electrical production, which translates to two-thirds of carbon dioxide emissions. RGP policies propose a future that prioritizes clean and net-zero energy that also works to reduce GHG emissions from fossil fuel sources. Specific policies include:

- Extend and increase renewable (solar, wind, and biogas) tax credits that enable rural businesses, including farms, to adopt cleaner technologies, reduce costs, and raise income.
- Invest in and support community colleges, tribal colleges, technical schools, union and registered apprenticeship programs, colleges and universities that engage in workforce development programs for renewables and provide on-farm assistance for renewable deployment.
- Make available investment tools to municipalities, communities and extension services who form partnerships to build and deploy renewables locally.

Transportation: this sector is considered to be the leading emitter of GHG, at 29% of total GHG emissions in the U.S. RGP policies focus on the use biofuels, which have lower lifecycle GHG emissions than gasoline. Specific policies include:

- Incentivize land use practices such as cover crops and no till farming, to sequester more carbon, improve soil health, and further improve the lifecycle GHG benefits of biofuels.

Another focus is on expanding opportunities for Electric Vehicles and adequate infrastructure to accommodate these modes of transportation. Programs should focus on assisting rural businesses in the installation of EV charging stations/infrastructure to facilitate interstate EV travel through rural areas. Public transit is also an important focus in driving down GHG emissions in rural America; proposed policies on this front seek to support rural transit services that facilitate access to jobs, schools, and services.

Commercial & Residential: 11% of total U.S. GHG emissions come from homes and businesses. Rural communities are especially hard hit due to the higher energy burden, especially for low-income households. Policies to address this in rural areas include:

- Expand energy efficiency and renewable energy programs for homes and buildings (new construction and retrofits)
- Increase R&D for supporting more distributed energy systems and integrated energy efficiency measures.
- Incentivize methane emission capture standards from landfills and the efficient recycling and use of food waste.

Industry: this sector is essential to the production of goods and raw materials that make up the backbone of the U.S. economy, yet industry accounts for 22% of annual GHG emissions nationally. Many industrial plants are located in rural areas and provide opportunities for jobs and hep to spur economic growth and activity. Industry is considered to be the only economic sector that is expected to increase GHG emissions in the next decades, thus policy solutions are essential to mitigating this reality. RGP proposes some of the following policies:

- Implement zero and low interest loans for Carbon capture, utilization, and storage (CCUS) infrastructure projects that transport carbon dioxide from industrial sources to locations in rural areas where it can be used or permanently stored in geologic sinks.
- Establish tax incentives, loans and grants for the development and use of bio-based and sustainable forestry products that lower GHG emissions.
- Provide tax incentives, grants, and technical assistance for rural business that invest in industrial energy efficiency.

United States Climate Policy: while parts of the country are just beginning to address climate change through various policies and mechanisms, the Clean Air Act (1970) provides a regulatory framework that regulates air emissions from stationary and mobile sources. This Federal Law mandates the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and regulate emissions of hazardous air pollutants.[15]

Relevance to Chelan County: while RGP is a proposed national initiative, it provides a comprehensive list of policies by sector that can be applied to a local context, including rural areas. The policies presented above provide pathways for rural areas to adopt measures to mitigate GHG emissions, by providing incentives which would make it more feasible, etc. Further, these policies acknowledge the importance of economic sectors such as industry and agriculture, which for many rural areas, are the backbone of their respective economies and livelihood.

STATE OF WASHINGTON CLIMATE POLICIES

The Washington Legislature enacted Revised Code of Washington (RCW) 70.235 (recodified as RCW 70A.45), Limiting Greenhouse Gas Emissions, into state law. This identifies GHG reduction targets:

- By 2020, reduce overall emissions of greenhouse gases in the state to 1990 levels, or ninety million five hundred thousand metric tons;

[15] 'Summary of the Clean Air Act.' https://www.epa.gov/laws-regulations/summary-clean-air-act

- By 2030, reduce overall emissions of greenhouse gases in the state to fifty million metric tons, or forty-five percent below 1990 levels;
- By 2040, reduce overall emissions of greenhouse gases in the state to twenty-seven million metric tons, or seventy percent below 1990 levels;

By 2050, reduce overall emissions of greenhouse gases in the state to five million metric tons, or ninety-five percent below 1990The state law applies only to actions taken by Washington State agencies and local governments. State regulations on GHG emissions include prerequisites for distribution of capital funds for infrastructure and economic development projects, where projects receiving funding must be evaluated for consistency with state and federal GHG limits and state VMT goals (RCW 70A.45.070).

> *Beginning in 2010, when distributing capital funds through competitive programs for infrastructure and economic development projects, all state agencies must consider whether the entity receiving the funds has adopted policies to reduce greenhouse gas emissions. Agencies also must consider whether the project is consistent with:*
>
> *(1) The state's limits on the emissions of greenhouse gases established in RCW 70A.45.020;*
>
> *(2) Statewide goals to reduce annual per capita vehicle miles traveled by 2050, in accordance with RCW 47.01.440, except that the agency shall consider whether project locations in rural counties, as defined in RCW 43.160.020, will maximize the reduction of vehicle miles traveled; and*
>
> *(3) Applicable federal emissions reduction requirements.*

The Washington Department of Ecology's 2018 report to the legislature indicates emissions have actually increased by about 6 percent between 2012 and 2015 (State of Washington Department of Ecology, 2018).

In 2011, the Washington State Department of Commerce released an updated Washington State Energy Strategy for 2012 (WSDOC 2011), which includes short- and long-term policy options to meet the following goals:

1. Maintain competitive energy prices that are fair and reasonable for consumers and businesses and support Washington's continued economic success.
2. Increase competitiveness by fostering a clean energy economy and jobs through business and workforce development.
3. Meet the state's obligations to reduce GHG emissions.

The Washington State Energy Strategy outlines strategies meeting these goals in the categories of transportation efficiency, building efficiency, distributed energy, and pricing.

The Washington Department of Ecology administers state rules (Chapter 173-441 WAC) requiring a number of industries that would exceed 10,000 metric tons per year to report emissions of greenhouse gas.

The energy used to heat, light, and power office buildings and other workspaces is a focus of 2019 laws adopting new standards that will increase the efficiency of these buildings and reduce emissions. The Legislature also increased efficiency standards for appliances.

PLANNING GUIDES

Much has come out of the planning and public policy sectors to address climate change in state and local contexts. Including climate policies in Comprehensive Plans, and addressing the climate in each element, allows jurisdictions to emphasize impacts to the climate as a result of future growth, etc.

Washington State Guidance on Climate Change

Many local governments in Washington are taking action to address climate change and propose a variety of mitigation measures in their planning processes, both operationally and within long range plans such as Comprehensive Plans. While this is not a specific requirement under the Growth Management Act (GMA), many are addressing climate change through land use and/or transportation planning; some are also adding optional elements into their comprehensive plans. According to the State Department of Commerce, comprehensive planning is a great venue to address the reduction of GHG and vehicle miles traveled.[16]

A 2008 report, "Planning for Climate Change: Addressing Climate Change through Comprehensive Planning under the Growth Management Act," provides guidance on policy and funding recommendations, in addition to current actions (as of 2008) taking place at the city and county level.

American Planning Association Guidance on Climate Change

The American Planning Association (APA) is a membership body comprised of professional planners, both practicing and retired. The APA is also the granting body of profession certification in the field of urban planning via the American Institute of Certified Planners (AICP).

In Winter 2020, the APA issued a "Climate Change Policy Guide,"[17] which directs practicing planners to take a lead on helping mitigate the impacts of climate change. The APA is committed to an outcome of net-zero GHG emissions by 2050, and to prepare for any negative effects of climate change going forward. Proposed policies in the report are informed by the APA's Comprehensive Plan Standards for Sustaining Places.

The below policies that are specifically highlighted, correspond to rural contexts.

State Policy A.4: Advocate for state climate change plans, policies, programs, and projects.

Livable Built Environment Policy B.1: Plan for multimodal transportation

Livable Built Environment Policy B.7: Implement green building design and energy conservation.

- Specific strategies include advocating for green building and design by providing strong incentives for new construction.

[16] WA State Department of Commerce, Climate Change. https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/climate-change/
[17] 'Climate Change Policy Guide,' APA, 2020. https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Climate-Change-Policy-Guide.pdf

- Adopt sustainability regulations – support energy and water efficient design and construction standards at state, local, and federal levels.

Harmony with Nature Policy C.1: enact policies to reduce GHG emissions.

- Develop GHG inventories, analysis methods, and action plans.
- Support energy and water conservation.
- Promote a circular economy – incorporate life-cycle cost analyses into planning processes.
- Eliminate waste – create regulations that required developers mimic natural systems in the built environment.
- Support sustainable forestry practices and agricultural practices.

Resilient Economy Policy D.3: promote regional clean energy strategies.

- Create municipal targets for renewable energy.
- Advocate for renewable energy when replacing aging infrastructure.
- Promote clean energy and energy efficiency to decrease the use of fossil fuels in energy production.
- Develop and use climate-protective tax incentives and other financial tools – grants, tax credits, research, etc.
- Promote local clean energy regulations and incentives – such as adopting, incentivizing, or removing barriers to entry for locally produced energy in zoning, development, and building codes.
- Promote partnerships – between public utilities and other public/private entities.

POLICY RELEVANCE FOR CHELAN COUNTY

The below conceptual policies are derived from the selected case studies and are highlighted as potential strategies of relevance to Chelan County. These concepts can be further developed into potential policy amendments in Deliverable 2.

Exhibit 3. Policy Concepts – Potential Suitability in Chelan County

Example Policy	Source (Element, Case Study)	Effect Resilience and/or GHG Reduction?	Partnership Opportunity?	Affect Large or Particular Geographies?	Affect County Lines of Business?
Support Agriculture Conservation Practices, e.g. cover crops and no till farming, and encourage retention/sequestration	RGP, Yolo County, Planning Guides	Both	Yes (VSP Work Group and Work Plan)	Countywide	No

Example Policy	Source (Element, Case Study)	Effect Resilience and/or GHG Reduction?	Partnership Opportunity?	Affect Large or Particular Geographies?	Affect County Lines of Business?
Incentives for Renewable Energy for Farms and Businesses	RGP, Planning Guides	Both	Yes (USDA, State)	Countywide	No
Sustainable Forestry Practices	RGP, Clackamas (future/pending)	Both	Yes (State, Federal)	Countywide	No
Energy Conservation in Public Buildings	Clackamas County & Yolo County Chelan County Code	Both	Yes	Parts of county where county infrastructure are located	Yes, County departments, buildings, etc.
Recycling and Diversion of Organic Waste and other Solid Waste Management	Yolo County Planning Guides Chelan County Solid Waste Management Plan (Chapter 5)	Both	Yes (Cities, Solid Waste Council)	Countywide; areas serviced by solid waste infrastructure	No – Public Works Implements Solid Waste Management Plan – integrate into Comp Plan.
Incentives for Private Development	RGP, Yolo County, Clackamas County, Planning Guides	Both	Yes (Cities, Real Estate)	Countywide	No

GRANT APPLICATION SUPPLEMENT: INITIAL INFORMATION AND INITIATIVES

Assessments Addressing Chelan County

- Climate Change Vulnerability and Adaptation in the North Cascades Region, Washington by the USDA, September 2014. Available: https://www.fs.fed.us/pnw/pubs/pnw_gtr892.pdf.
- Columbia River Basin Long-Term Water Supply and Demand Forecast, 2016 Washington State Legislative Report, Publication No. 16-12-001. Available: https://fortress.wa.gov/ecy/publications/documents/1612001.pdf.
- UW Climate Impacts Group, Icicle Creek Study: Mauger, G.S., Lee, S.-Y., Won, J.S. Effect of Climate Change on Streamflow in Icicle, Peshastin, and Mission Creeks (2017). Report prepared for Chelan County. Climate Impacts Group, University of Washington, Seattle. Available: http://dx.doi.org/10.7915/CIG2J6798
- Washington Department of Ecology and Chelan County: Final Programmatic Environmental Impact Statement for the Icicle Creek Water Resource Management Strategy, January 3, 2019. Available: https://www.co.chelan.wa.us/natural-resources/pages/environmental-review.

Relevant State and Local Strategies

- Safeguarding Our Lands, Waters, and Communities: DNR's Plan for Climate Resilience, February 2020. Available: https://www.dnr.wa.gov/publications/em_climateresilienceplan_feb2020.pdf?b0nq29
- Preparing Washington State Parks for Climate Change, Washington State Parks and Recreation Commission, June 2017. Available: https://parks.state.wa.us/DocumentCenter/View/11074/01-WA-Parks-Vulnerability-PDF.
- Climate Impacts Vulnerability Assessment, Prepared by the Washington State Department of Transportation for submittal to the Federal Highway Administration, November 2011. Available: https://www.wsdot.wa.gov/sites/default/files/2017/11/15/ENV-Climate-VulnerabilityAssessment.pdf.
- Climate Friendly Parks, North Cascades National Park Service Complex Action Plan. Available: https://www.nps.gov/subjects/climatechange/upload/NOCA-CFP-Action-Plan-508Compliant.pdf.
- Chelan Public Utility District. 2016 Integrated Resource Plan, available: https://www.chelanpud.org/docs/default-source/default-document-library/irp-2016.pdf. Transmission Fire Hardening, Chelan: http://www.chelanpud.org/docs/default-source/commission/fire-hardening-fact-sheet-and-letter.pdf.
- Chelan County. 2019. Chelan County Multi-Jurisdiction Natural Hazard Mitigation Plan; 2019 Plan Update. Chelan County Natural Resources Department. Wenatchee, Washington. Available: https://www.co.chelan.wa.us/files/natural-resources/documents/Multi_Jurisdiction_NHMP/2020-05-21_ChelanCoHMPUpdate_Vol1_FINAL.pdf.

Climate Resilience Community Conversations

- Community Conversations 2019-2020: https://www.co.chelan.wa.us/natural-resources/pages/county-wide-climate-resilience-planning

ATTACHMENT: DRAFT RESILIENCE STRATEGY

In this strategy:

Introduction

Wildfire

Snowpack & Streamflow

Flooding

Water Supply

Cross-Sector Strategies

Implementation & Coordination

Chelan County Climate Resiliency Strategy

OCTOBER 2020 DRAFT

COUNTY OF CHELAN

"Although the projected impacts of climate change can seem dire, our future doesn't have to be.

We have choices that can prevent the worst impacts of climate change."

-WA DNR Plan for Climate Resilience

Introduction

Climate change is expected to have wide-ranging impacts on life in Chelan County. In recent decades Washington State, including Chelan County, has experienced significant droughts, declining snowpack, and several extreme wildfire seasons. These events and conditions are expected to become more common as the climate continues to change. In early 2019, Chelan County began engagement with local and state partners aiming to build resilience to the impacts of climate change in the county.

This document is a result of multiple community workshops and community engagement throughout 2019 and 2020, and seeks to build a foundation for future climate resilience and adaptation work in Chelan County.

Purpose

What does building climate resilience mean? The Washington State Department of Natural Resources' (DNR) Plan for Climate Resilience defines resilience as: **"Being prepared for, and adapting to, current and future climate-related changes."** In alignment with DNR's definition, this document attempts to answer these key driving questions:

- Where are we heading based on current trends and expected changes?
- What does that mean for commerce, communities, residents of Chelan County as well as visitors?
- What are steps Chelan County and the greater community can take to build climate resilience?

INTRODUCTION

In answering these questions, the purpose of this document is to achieve two key benefits of county-wide climate resilience planning which were identified through community workshops: 1) improved communication and coordination, and 2) the opportunity to advance projects that provide multiple benefits.

This document is divided into four sections based on climate change impacts: Wildfire, Snowpack & Streamflow, Flooding, and Water Supply. For the given topic, each section presents an overview of observed and current trends, expected changes, impacts, current initiatives, and resilience strategies. The description of impacts in each of the four sections are based on impacts described in the reports listed in the section "How Our Partners are Preparing for These Changes" with additional input on local impacts from the planning team and community engagement. Resilience strategies are drawn from stakeholder discussions of priorities and gaps as well as a review of current initiatives and potential strengthening of activities in Chelan County.

Greenhouse Gas Scenarios

The amount of climate change we experience in the future depends on how much greenhouse gasses are emitted to the atmosphere. We cannot know how much greenhouse gases will be emitted or sequestered, so it is important to consider the range of potential impacts from different scenarios.

Greenhouse gas scenarios are plausible "what if" scenarios of future greenhouse gas concentrations in the atmosphere based on emissions and sequestration. These scenarios are used in climate models to determine how fast and how much the climate could change. Higher scenarios result in more warming at a faster rate, although warming is similar among the scenarios through mid-century.

In this report we describe impacts associated with low, moderate, and high scenarios. The low scenario refers to the Representative Concentration Pathway (RCP) 4.5, the moderate scenario refers to the Special Report on Emissions Scenarios (SRES) A1B, and the high scenario refers to RCP 8.5. The low scenario requires significant near-term reductions in greenhouse gas emissions, whereas the high scenario represents unbridled emissions through the end of the century. The scenarios referenced in this document are those used in the studies that generated the impacts information; not all studies used all scenarios.

For more information see Mauger et al. 2015. State of Knowledge: Climate Change in Puget Sound. https://cig.uw.edu/resources/special-reports/ps-sok/

Regional Climate Change Overview

There are multiple climate change impacts expected across Washington state and the Pacific Northwest, most of which will have specific consequences for Chelan County. Two of the main concerns related to climate change are rising temperatures and changes in seasonal precipitation—more in winter, spring, and autumn, less in summer.

Temperature

The Northwest and Washington state have warmed over the last century and this warming is expected to continue in the next century at a faster rate. The average year in the Northwest is 1.54°F warmer than during the first half of the 20th century, and the coldest day of the year between 1986 and 2016 was 4.78°F warmer than the coldest day historically between 1901 and 1960.[1]

Average annual temperature in Chelan County is expected to increase 4.6° F and 5.9° F by the 2050s[2] and 5.8° F and 9.7° F by the 2080s under a low and high greenhouse gas scenario respectively, relative to historical conditions.[3] Warming is expected in all seasons, with the most warming in summer months.

1 USGCRP, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., doi: 10.7930/J0J964J6.

2 Climate model projections are presented as 30-year averages centered on the given decade, e.g., the 2050s is the 30-year period from 2040 to 2069.

3 Projected changes in the climate described in this document are relative to the average of the historical period from 1971 to 2000 unless otherwise specified.

Extreme heat events are expected to become more frequent and extreme cold events are expected to become less frequent.

Natural climatic variability will continue to play an important role in the region's climate, amplifying or dampening the long-term trends driven by climate change. However, it should be noted that the magnitude of the projected change in temperature is large when compared to the natural climatic variability observed in the 20th century.

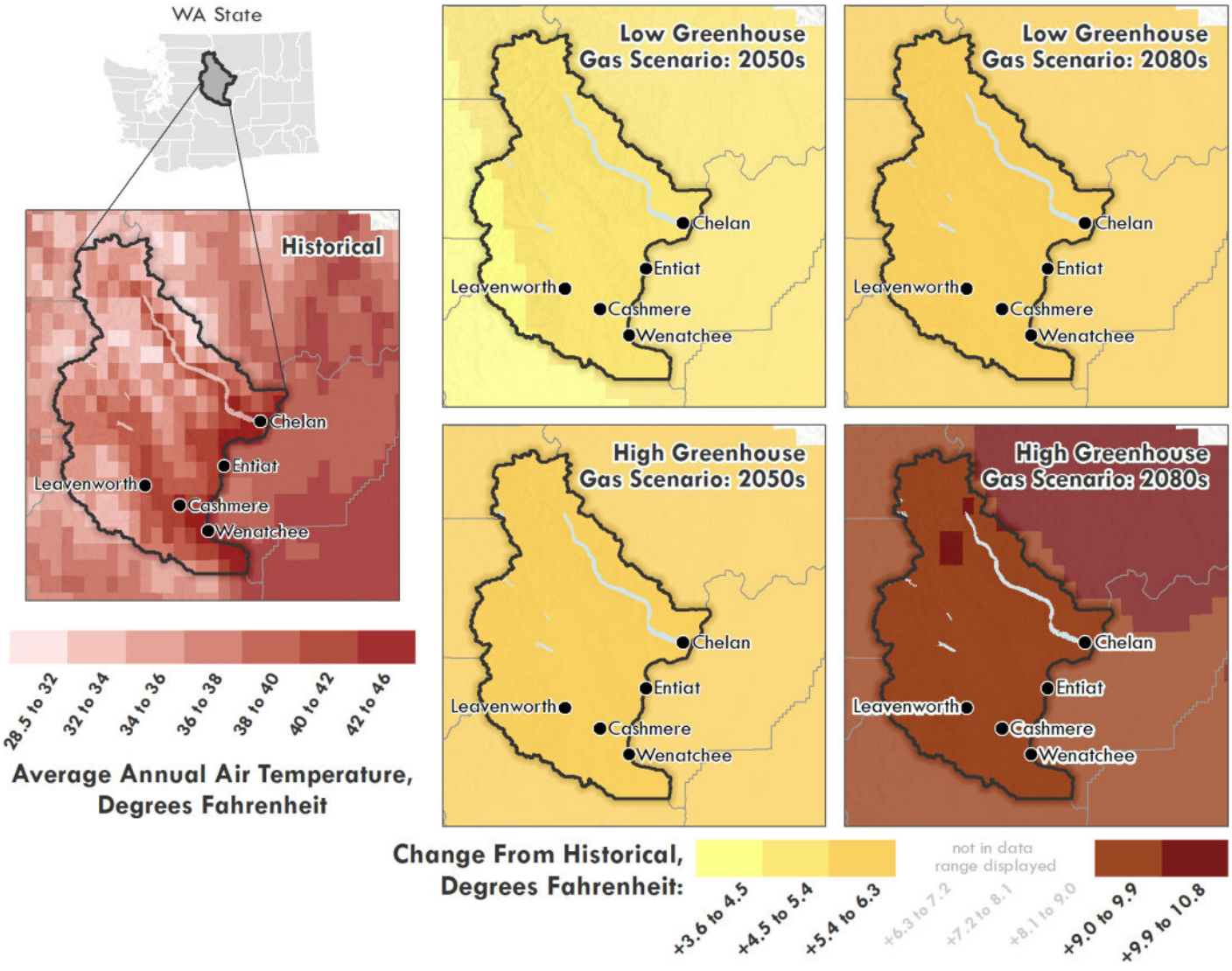
Precipitation

In Washington state, natural variability greatly influences regional precipitation patterns and year-to-year variability in precipitation is large compared to any long-term trend. Total precipitation for the year is expected to increase slightly on average, but will continue to be greatly influenced by year-to-year variability. Climate model projections of precipitation by

Exhibit 1. Projected Average Annual Air Temperature, Chelan County

Temperatures are expected to increase across Chelan county by 2050s and warming is expected to be greater for a high greenhouse gas scenario and for the 2080s.

Sources: Integrated Scenarios, 2015; BERK, 2020.



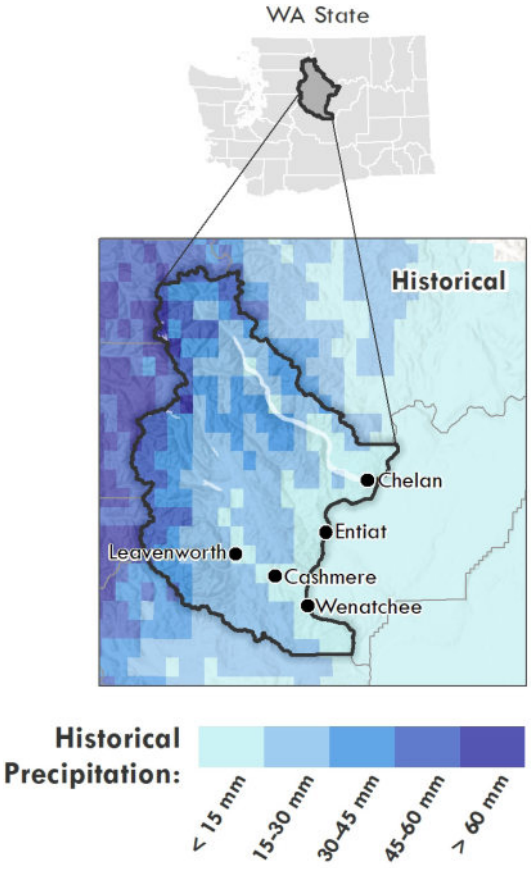
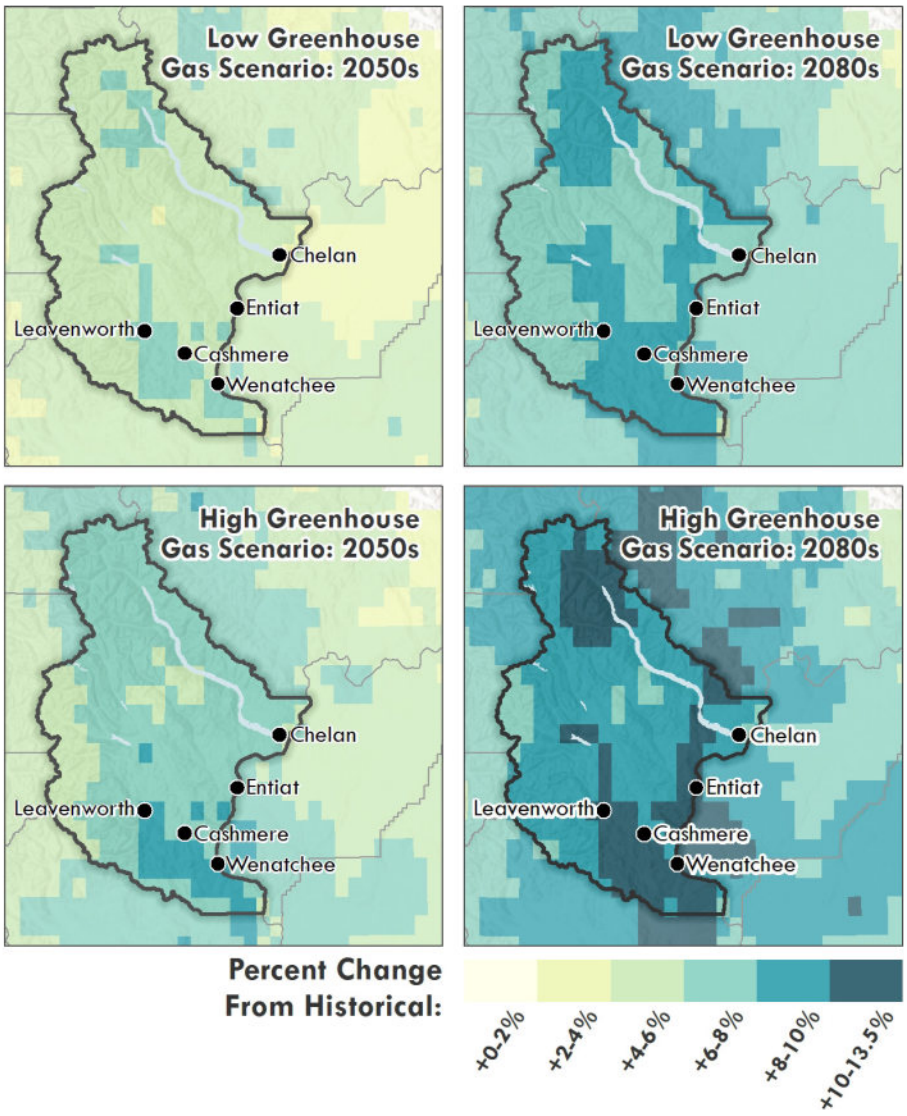


Exhibit 2. Total Annual Precipitation, Chelan County

Annual precipitation is expected to increase across Chelan county by 2050s and more precipitation is expected for a high greenhouse gas scenario and by the 2080s.

Sources: Integrated Scenarios, 2015; BERK, 2020.



season are mixed. Most models project less precipitation in summer, decreasing 6% and 8% by the 2050s for a low and high greenhouse gas scenario, respectively. Conversely, most models project more precipitation in winter, spring, and autumn.

It is not only average precipitation that is expected to change, but short-term heavy rainfall events are also expected to become heavier and more frequent. Across Washington state, the number of days with more than one inch of rain is projected to increase by 13% for the 2050s under a high greenhouse gas scenario.[4] The heaviest 24-hour rainfall events are expected to intensify by 22% and these events are expected to occur seven days per year on average by the 2080s compared to two days per year historically.[5]

4 Kunkel, K. E. et al., 2013: *Part 6. Climate of the Northwest U.S.*, NOAA Technical Report NESDIS 142-6.

5 Warner, M.D. et al. 2015. Changes in Winter Atmospheric Rivers along the North American West Coast in CMIP5 Climate Models. J. Hydrometeor,16, 118–128.

These changes in temperature and precipitation are expected to affect availability of water for fish, farming, and potable uses, fire and flood hazard potential, winter and summer recreation and tourism, and more as described later in this strategy.

How Our Partners are Preparing For These Changes

Building climate resilience depends not only on actions within and by Chelan County, but on the variety of agencies and landowners who have jurisdiction and ownership within the county. This section highlights the regional and statewide organizations who are developing plans and strategies, and taking actions to respond to climate change. Chelan County and partners can leverage these initiatives to build local resilience efforts.

National Park Service and US Forest Service (NPS and USFS): North Cascadia Adaptation Partnership and joint climate change vulnerability assessments on NPS and USFS land in and around Chelan County. See http://adaptationpartners.org/ncap/.

Washington State Department of Natural Resources (DNR): Recently released Plan for Climate Resilience in February 2020, a detailed agency-wide climate resilience effort. This DNR plan also articulates a series of statewide systems-level needs and opportunities supporting and facilitating community-level resilience planning and implementation. See https://www.dnr.wa.gov/climate-change.

Washington State Department of Fish and Wildlife (WDFW): Climate-resilient floodplain restoration and guidelines for incorporating climate change into culvert design and water crossing structures.

Washington State Parks (WSP): Statewide Parks climate vulnerability assessment and adaptation plan. See https://parks.state.wa.us/DocumentCenter/View/11074/01-WA-Parks-Vulnerability-PDF.

Washington State Department of Transportation (WSDOT): Incorporating climate smart design into roadways and culvert design, building resilient transportation systems, and undergoing climate impacts vulnerability assessment of WSDOT infrastructure and roadways. See https://www.wsdot.wa.gov/construction-planning/environment/sustainable/climate-change.

Confederated Tribes of the Colville Reservation: Natural resources vulnerability assessment completed to understand impacts of climate change on priority plants and animals within the Colville Tribes Traditional Territory, including on-reservation land as well as Okanogan Highlands and other off-reservation land. See https://www.colvilletribes.com/climate-change.

University of Washington Climate Impacts Group (UW CIG): Driving the science of climate impacts, and assisting with technical implementation of climate resilience planning region-wide, UW CIG is a critical participant to all of the climate vulnerability and resilience planning listed above, as well as this strategy document. See https://cig.uw.edu/.

Washington Department of Ecology Office of the Columbia River: The Office of the Columbia River Water Management Program seeks to meet current and future water needs along the Columbia River and its tributaries. They are working to resolve conflicts over water and provide water security in the face of drought and changing climate. See https://wrc.wsu.edu/project/water-supply-and-demand-forecast-2016/.

Placeholder for Letter of Support, Chelan County Board of Commissioners
Photo: Chelan County, 2020

Acknowledgements

This strategy was developed throughout 2019-2020 as a partnership among the following entities:

- Chelan County Natural Resources Department
- Chelan County Public Utility District
- Washington State Department of Natural Resources
- University of Washington Climate Impacts Group
- BERK Consulting
- US Environmental Protection Agency, Region 10
- Federal Reserve Bank of San Francisco
- Federal Emergency Management Agency

Over 100 people from Chelan County organizations and the wider community participated in several workshops, providing in person and survey feedback on the developing strategy, ultimately contributing invaluable input that has been reflected in the final strategy.

Lake Chelan
Photo: Unsplash, 2020

Wildfire

Community Feedback Highlights from Strategy Development Outreach

Success looks like, "...Building and communicating an awareness in our region that increased fire intensity and frequency is tied in part to climate change."

We need, "...Aggressive proactive thinning and burning, better/more outreach and education, reduced fuel loads, and more information-education about homeowner incentives to reduce fuels in the interface."

"As landowners, we become better neighbors by managing our properties to reduce the threat and impacts of wildfire, floods, invasive species, and other problems brought on by climate change."

2010 Swakane Fire
Photo: WA DNR

Observed / Current

Washington and Chelan County specifically have experienced several large wildfires in recent years. In 2015, the state saw its worst wildfire season in recent history with over 1 million acres burned, followed by another million acres burned in 2017. These recent wildfire seasons are not unprecedented in terms of the amount of acreage that burned historically in eastern and central Washington prior to fire exclusion with settlement, but they are uncharacteristic in terms of the acreage that burned at high severity.[6]

These wildfires are also unprecedented in terms of their impacts to the livelihoods and resources of the communities in which the they burned. Although it is difficult to characterize trends in wildfire at the small scale of Chelan County, several trends of increasing wildfire activity across the western U.S. are relevant to Washington and Chelan County.

- The area burned by wildfire in the western US has increased 12-fold from 1973 to 2012.[7]
- The number of large wildfires (> 100 acres) in the western US has increased by about seven fires per year from 1984 to 2011.[8] This trend in large wildfires is critical because the largest wildfires burn 99% of the area burned each year.
- Wildfire season length, defined as the time between the date of the first reported wildfire and the date the last wildfire is controlled, has increased across the western US for forested areas; the average length of the fire season has increased by 84 days for 2003 to 2012 compared to the 1973 to 1982 average.[9]

These trends of increasing wildfire activity are due to a combination of factors including population growth and development in the wildland-urban interface, a legacy of forest management, and warmer and drier summers that lead to drier fuels (i.e., live and dead vegetation). Increasing temperatures and water balance deficit

6 Haugo, et al. 2019. The missing fire: quantifying human exclusion of wildfire in Pacific Northwest forests, USA.

7 Westerling 2016. Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring.

8 Dennison et al. 2014. Large wildfire trends in the western United States, 1984-2011.

9 Westerling 2016. Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring.

(atmospheric demand for water) due to climate change account for about half of the observed increase in fuel dryness since the 1970s.[10]

Expected Changes

Wildfire activity is expected to increase across central and eastern Washington as temperatures continue to increase. The area burned by wildfire in forested areas of central Washington is projected to double by the 2020s and increase *4-fold by the 2040s,* relative to the 1980-2006 average, for a moderate greenhouse gas scenario.[11] Projected increases in area burned are less for grassland and shrub-steppe ecosystems in Washington, but these areas are still projected to see twice as much area burned by the 2040s.

It is important to note that these projections are for increases in area burned on average -- predicting fire in any given year or how big any particular wildfire season will be is not possible, despite the clear trend towards increasing area burned.

Projected increases in area burned in grassland and shrub-steppe ecosystems are due to wetter winters and springs that increase growth of fine vegetation

Impacts Due to Increasing Wildfire

Impacts listed here are potential consequences of changes in wildfire described in the section on expected changes. Consequences will vary locally and are likely to intensify with time as climate change intensifies unless adaptation actions are taken.

Health & Well-being

- More frequent evacuations.
- Economic losses due to property damage & business interruption.
- More hazardous air quality days.
- More smoke & fire exposure for agricultural workers.

Fish, Wildlife, & Habitat

- Habitat loss for species dependent on old forests.
- Reduced aquatic habitat quality due to sediment & warmer stream temperatures.
- More invasive species, especially in shrub-steppe ecosystems.

Recreation

- Closures & reduced access to recreation areas.
- Reduced tourism & outdoor recreation due to hazardous air quality.

Energy & Communications

- Increased damage to electric grid & communications infrastructure.

Agriculture

- Fire & smoke damage to agriculture infrastructure & crops .
- Crop loss & interruptions to the growing season.

10 Abatzoglou and Williams 2016. Impact of anthropogenic climate change on wildfire across western US forests.

11 Littell et al. 2010. Forest ecosystems, disturbance, and climatic change in Washington State, USA. Medium warming scenario is CMIP 3 emissions scenario A1B.

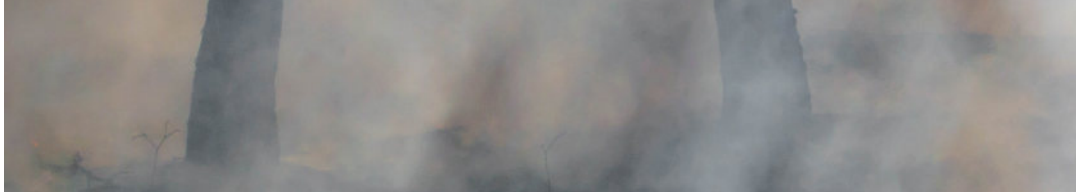
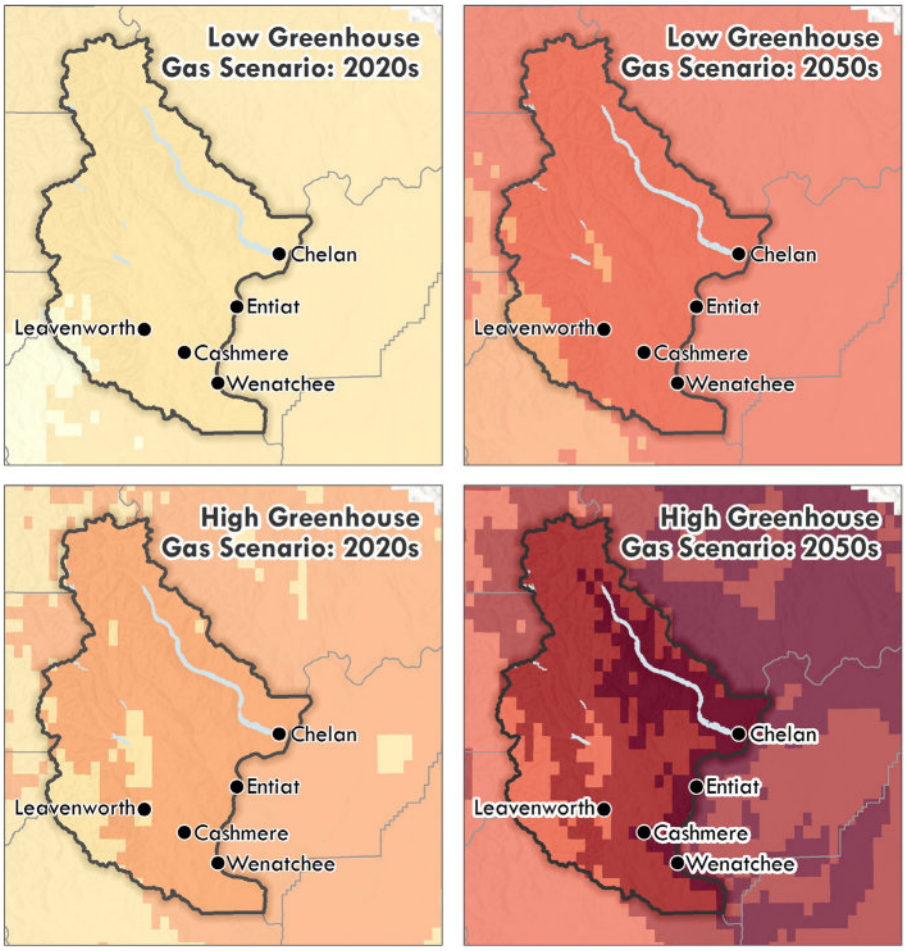


Exhibit 3. Extreme Fire Danger Days, Chelan County

The number of extreme fire danger days per year is expected to increase across Chelan county by 2020s and increase more for a high greenhouse gas scenario and by the 2050s.

Sources: Climate Toolbox, 2020; BERK, 2020.



fuels, which then dry and carry fire more easily in the summer. Projected increases in area burned in forested ecosystems are due to higher temperatures and drier summers that will dry fuels and enable wildfires to spread more easily. Fuel moisture in summer is an indicator of the climatic potential for wildfire. When fuel moisture is low there is significant potential for wildfires.

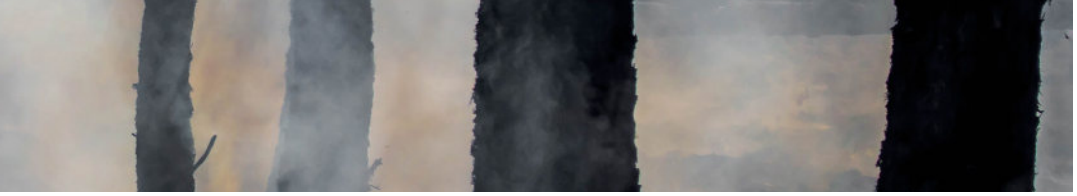
Summer (June–August) 100-hr fuel moisture[12] is projected to decrease across eastern Washington, particularly at higher elevations.[13] By the 2050s, average 100-hr fuel moisture in summer in Chelan County is expected to decrease by -6% for a low greenhouse gas scenario and -8% for a high greenhouse gas scenario.

Warmer and drier conditions are projected to increase the number of days with fire danger. By the 2050s, days with extreme fire danger[14] are expected to increase by nine days for a moderate greenhouse gas scenario and 13 days for a high greenhouse gas scenario. More extreme fire danger days are expected throughout the wildfire season and will be most noticeable early and late in the season.

12 Fuel moisture means the amount of water in vegetation available to a fire, and is shown as a percent of the dry weight of that specific fuel. (NOAA, 2020).

13 The Climate Toolbox: Climate Mapper (https://climatetoolbox.org/tool/Climate-Mapper).

14 Extreme fire danger days are defined as the days when 100-hr fuel moisture is below the historical (1971 - 2000 average).



Current Initiatives

Below is a selection of initiatives and projects underway which are contributing to building resilience to a changing wildfire season and more wildfires.

Chelan County Multi-Jurisdictional Natural Hazard Mitigation Plan: Completed in May 2020, this plan specifically addresses wildfire as a key natural hazard to plan for in Chelan County, offering a comprehensive look at the effects of wildfire on the Chelan County communities.

Chelan County Community Wildfire Protection Plan: Updated and adopted in 2018, this is a multi-jurisdictional effort directly working towards wildfire protection. Specific goals include improving response capabilities, creating fire-resilient landscapes, and promoting fire adapted communities. These goals are consistent with the direction established in the Washington State Wildland Fire Protection 10-Year Strategic Plan.

Chelan County Public Utility District Fire Hardening: Multiple initiatives including hardening transmission infrastructure against fire risk (e.g., replacing wood with steel structures), clearing vegetation from high risk transmission infrastructure, and painting poles with fire retardant paint.

Cascadia Conservation District Wildfire Preparedness & FirewiseUSA®: Education and outreach materials focused on wildfire prevention and what to do when wildfire occurs. In coordination with the National Fire Protection Association (NFPA), Cascadia offers wildfire risk assessments, wildfire preparedness tips, wildfire toolkits, FirewiseUSA ® landscape guides (i.e., fire-resistant vegetation), and other materials to help build homeowner and community resilience to wildfire.

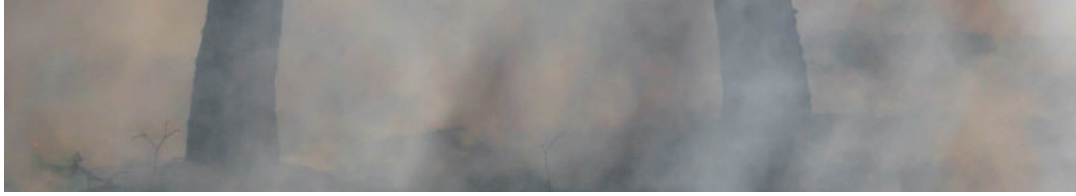
Landowner Assistance: Financial assistance and cost sharing is available to landowners to help reduce fuels. There are programs administered through multiple organizations including Washington DNR's Landowner Assistance Program and Cascadia Conservation District.

Fire Districts: Fire Districts in Chelan County offer outreach and education, support community wildfire preparedness, and can provide on-site wood chipping or fuel wood removal from properties, reducing the risk of wildfire spread (e.g., Fire District 1, Lake Wenatchee Fire and Rescue, and others).

Wildland Urban Interface Codes: Chelan County and the cities of Chelan and Wenatchee have adopted Wildland-Urban Interface standards. Chelan County regulates roofing materials, and the cities regulate roofing, siding, landscaping, access, and other provisions.

20-Year Forest Health Strategic Plan for Eastern Washington: Partners in the county are implementing multiple activities and initiatives linked to the 20-Year Forest Health Strategic Plan for Eastern Washington including landscape evaluations for forest health planning areas, forest health treatments by forest collaboratives, and landowner assistance.

2015 Chelan Complex Fire
Photo: Ben Brooks



Resilience Strategies

The strategies presented in the section below are in alignment with goals already adopted as part of Chelan County's wildfire response policy. Notably, the Chelan County Community Wildfire Protection Plan presents a number of goals related to building community resilience, including improving response capabilities, creating fire resilient landscapes, promoting fire adapted communities, protecting the economy, and utilizing existing plans and guidelines. The strategies below build on these goals, and aim to tailor them to building climate resilience around increased wildfire in Chelan County.

Exhibit 4. Wildfire Climate Resilience Strategies

Strategy	Status	Leads and Partners	Resources Needed
Build awareness of increasing wildfire risk and preparedness of Chelan County Communities	Moderate/Partial	• Chelan County Fire Marshall • Cities • Fire Districts • Organizations serving vulnerable populations	$: Coordinator
Coordinate and improve emergency preparedness systems, particularly early detection[1]	Unknown	• Chelan County Fire Marshall • Fire Districts	$: Coordinator
Develop fire safe places in fire prone areas with wildland urban interface policies and codes[2]	Moderate/Partial Varying levels of land use policies and development regulation oversight in rural and urban areas	• Chelan County Community Development Department • Individual city planning and building departments	$$$: Incentives, especially for upgrading existing structures for greater fire resilience $: Staff

2010 Swakane Fire
Photo: WA DNR

Resilience Strategy Table Legend

Status
- Early/Limited
- Moderate/Partial
- Mature/Robust

Resources Needed
- $: < $100,000
- $$: $100,000 - $500,000
- $$$: > $500,000 +

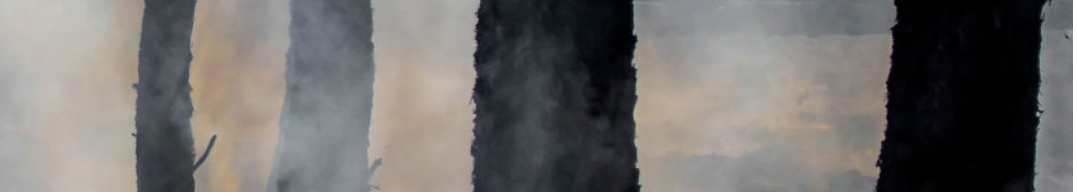


Exhibit 4. Wildfire Climate Resilience Strategies (cont.)

Strategy	Status	Leads and Partners	Resources Needed
Create fire adapted communities	Moderate/Partial Chelan County Community Wildfire Protection Plan details a series of mitigation actions, and contains extensive wildfire hazard mapping Participation in Firewise USA® program	• Chelan County (with many local and regional partners) • Fire Departments • Individual landowners	$$$: Funding to implement mitigation goals $: Education and outreach surrounding resources available to individual landowners for building local fire resilience (e.g., fuel reduction)
Protect critical facilities (also see flooding)	Early/Limited Mapping of critical facilities has been prepared	• Chelan County • Cities • Chelan PUD & Other Utilities • School Districts • Fire Districts	$$$: Funding to implement improvements
Coordinate ecological recovery programs for areas subject to fire in forested and shrub-steppe lands	Early/Limited Conservation practices funded in some burned areas (e.g., NRCS)	• USFS • WDNR • WDFW • Conservation District • Chelan Co. Natural Resources Department	$$$: Planning and Reserve funding
Monitor exotic and invasive species on resource and natural lands and prioritize protection and enhancement of such areas	Moderate/Partial	• USFS • WDNR • WDFW • Conservation District • Chelan Co. Natural Resources Department • Chelan Co. Noxious Weed Board	$$: Funding to implement improvements
Continue to build partnerships across agencies to monitor and respond to climate changes and vulnerabilities in forested and shrub-steppe lands	Early/Limited	• USFS • Bureau of Reclamation • NRCS • WDNR • WDFW • Conservation District • Chelan Co. Natural Resources Department	$: Staff resources to develop and maintain partnerships
Proactively address fire resiliency through activities such as: pre-fire monitoring, maintenance/forest treatment, thinning, prescribed fire, and managed natural fire	Early/Limited	• USFS • WDNR • Chelan Co. Fire Marshall • Fire Districts	$$$: Program development and ongoing implementation
Air quality: education, training, and responses to protect people and communities during and after wildfire	Early/Limited	• Washington Department of Ecology Central Regional Office • Chelan-Douglas Health District • Organizations serving vulnerable populations	$$: Staff resources to plan and respond

1 This appears to be a proposal for Zone F Entiat in the Chelan County Community Wildfire Protection Plan 2018 Update. Here it is meant to be broader in application across county.

2 This is proposed as a business incentive for offering discounted materials in Zone G Fire Adapted Communities near Lake Wenatchee in the Chelan County Community Wildfire Protection Plan 2018 Update. Here it is meant to be broader in application across county.

Snowpack & Streamflow

Community Feedback Highlights from Strategy Development Outreach

We need "...prioritization of water use as snow packs decrease, and to investigate ways water can be stored near the source to hopefully utilize when runoff is low."

Support "...well-developed watershed planning groups in key watersheds and combined interagency long-term vision."

"I would like to see more urgency and recognition that declining snowpack and instream flow and seasonal changes in temperature and runoff are a major threat to our economy and quality of life."

Observed / Current

Washington's snowpack and glaciers are in decline due to rising temperatures. These changes will have consequences for streamflow across the state.

While snowpack varies year-to-year, spring snowpack in the Washington Cascades declined by about 30%, on average, between 1955 and 2016.[15] This decline in snowpack is primarily driven by rising temperatures, but also reflects natural variability in the climate over that period.

Glaciers in the North Cascades are also losing mass. Between 1900 and 2009, glacier area in the North Cascades decreased approximately 56% (+/-3%).[16] Glacier meltwater contributes to streamflow particularly in summer months when runoff[17] from precipitation and snowmelt are low.[18] In the Stehekin River watershed between 1993 and 2009, an average of 11% of total summer runoff originated from meltwater contributions from the three glaciers within the watershed.[19]

Expected Changes

Snowpack is expected to further decline with warming in the future. In Chelan County, average spring snowpack is projected to decline 26.9% and 33.5% by the 2050s and 36.2% and 53.5% by the 2080s under a low and high greenhouse gas scenario, respectively (Exhibit 5).

Wenatchee River
Photo: David Seibold, 2016

15 Mote et al. 2018. Dramatic declines in snowpack in the western US. *Nature Climate and Atmospheric Sciences*.

16 Dick, K. Glacier Change in the North Cascades, Washington: 1900-2009. *Dissertations and Theses* (2013) doi:10.15760/etd.1062.

17 Runoff is all water originating from precipitation and snow and glacier melt that flows over land, subsurface, and into shallow groundwater.

18 Granshaw, F. D. & Fountain, A. G. Glacier change (1958–1998) in the North Cascades National Park Complex, Washington, USA. *Journal of Glaciology* 52, 251–256 (2006).

19 Riedel, J., and M. A. Larrabee. 2011. North Cascades National Park Complex glacier mass balance monitoring annual report, Water year 2009: North Coast and Cascades Network. Natural Resource Technical Report NPS/NCCN/NRTR—2011/483. National Park Service, Fort Collins, Colorado.

Winter Orchard
Photo: Pictoscribe, 2019

Impacts Due to Less Snowpack & Altered Streamflow

Impacts listed here are potential consequences of changes in snowpack and streamflow described in the section on expected changes. Consequences will vary locally and are likely to intensify with time as climate change intensifies unless adaptation actions are taken.

Health & Well-being

- Greater risk of waterborne diseases in drinking water due to pathogens in flood waters & high runoff events.

Fish, Wildlife, & Habitat

- Warmer stream temperatures during low flow periods.
- Reduced habitat quantity due to lower summer flows.
- Reduced aquatic habitat quality.
- More favorable conditions for invasive fish & aquatic species.

Recreation

- Less summer water availability for river recreation.
- Shorter & more limited winter recreation season.
- Less winter recreation tourism and revenue for businesses.
- Changes in inflows and reservoir elevations.

Energy & Communications

- More winter & less summer hydropower generation.

SNOWPACK & STREAMFLOW

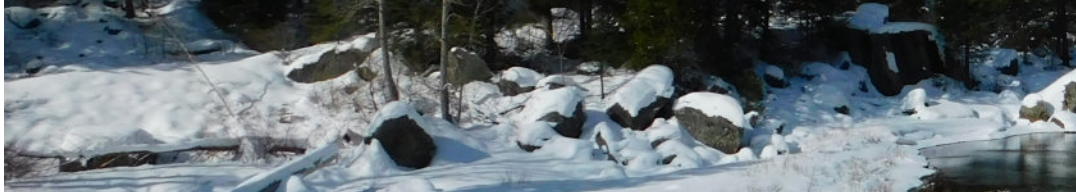
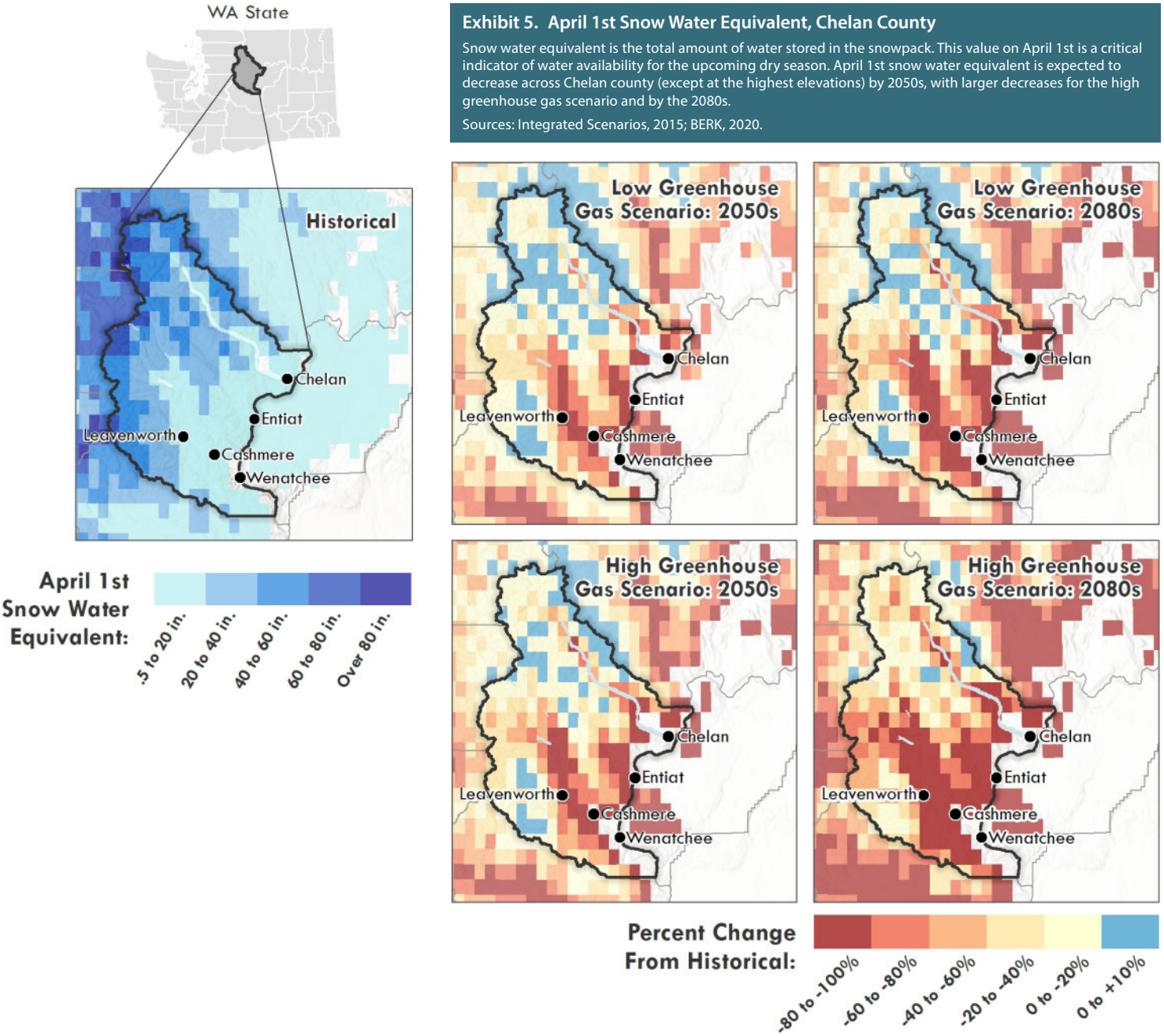


Exhibit 5. April 1st Snow Water Equivalent, Chelan County

Snow water equivalent is the total amount of water stored in the snowpack. This value on April 1st is a critical indicator of water availability for the upcoming dry season. April 1st snow water equivalent is expected to decrease across Chelan county (except at the highest elevations) by 2050s, with larger decreases for the high greenhouse gas scenario and by the 2080s.

Sources: Integrated Scenarios, 2015; BERK, 2020.



Streamflows are typically lowest and present the greatest challenges for competing instream and out of stream uses in late summer. Higher temperatures, less snowpack, earlier snowmelt, declining glacier mass, and less summer rain are all expected to contribute to lower streamflows in summer months. Total runoff in August, which includes any surface water flows in addition to subsurface runoff in shallow groundwater, is projected to decline 20.4 % and 26.1% by the 2050s and 27.2% and 36.1% by the 2080s, under a low and high greenhouse gas scenario, respectively (Exhibit 6).

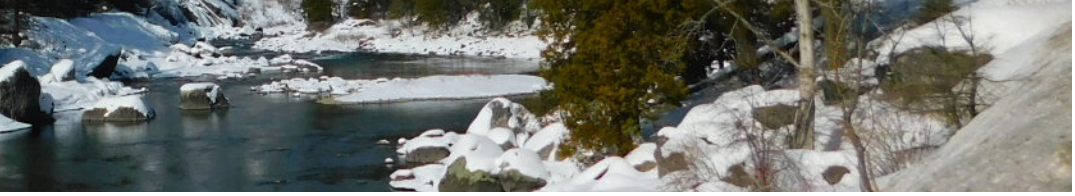
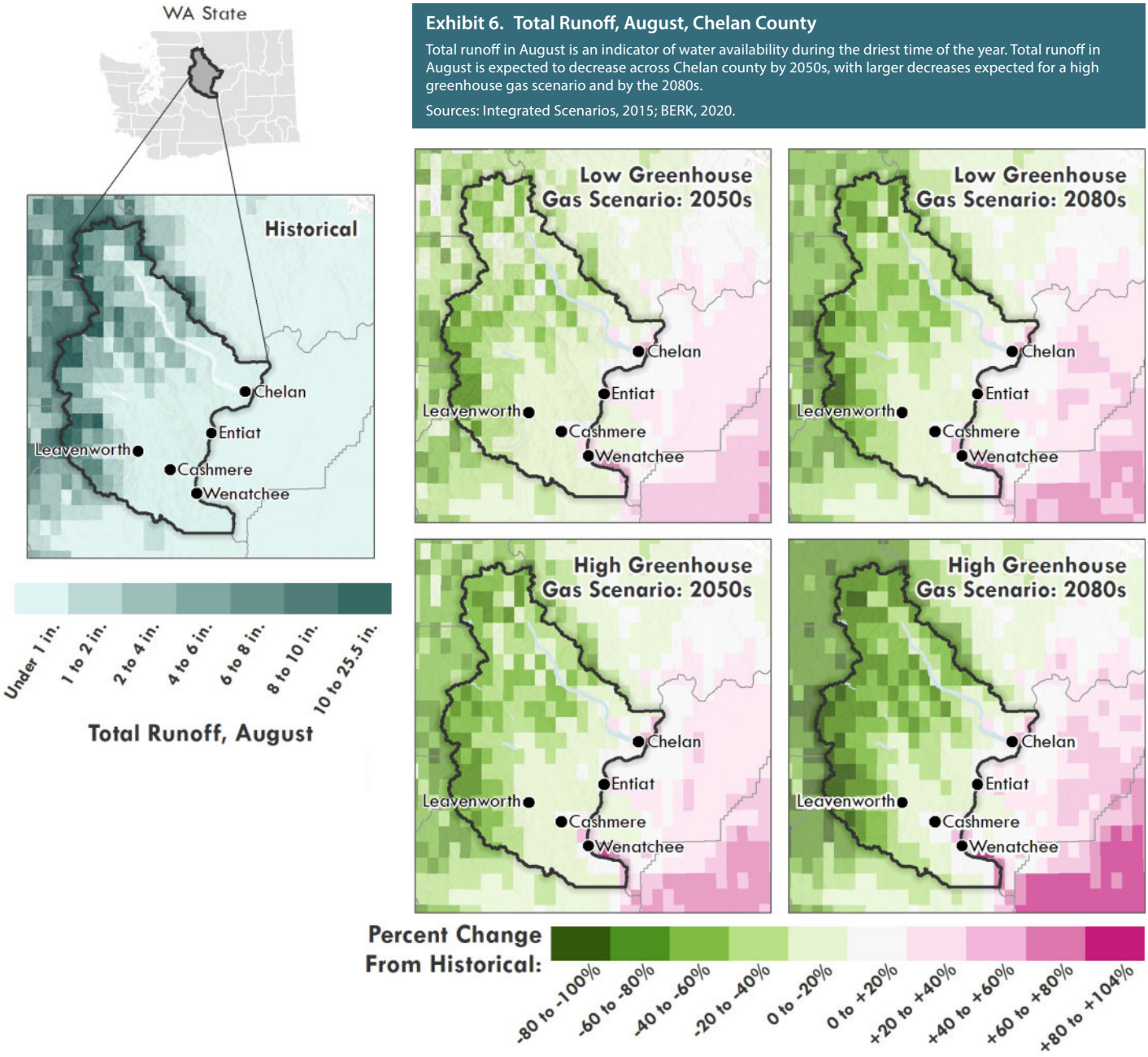


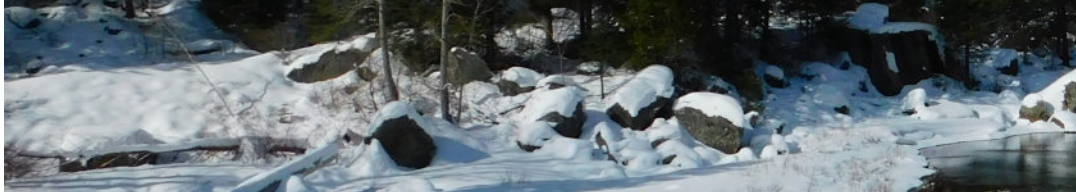
Exhibit 6. Total Runoff, August, Chelan County

Total runoff in August is an indicator of water availability during the driest time of the year. Total runoff in August is expected to decrease across Chelan county by 2050s, with larger decreases expected for a high greenhouse gas scenario and by the 2080s.

Sources: Integrated Scenarios, 2015; BERK, 2020.



In the Entiat River (near the City of Entiat) average summer streamflow (June - August) is projected to decline by 38% by the 2040s and 54% by the 2080s under a moderate greenhouse gas scenario, relative to the 1916-2006 average. The 7Q10 streamflow (the lowest 7-day average streamflow with a 10-year return interval) provides on indication of water quantity and habitat quality for fish and aquatic species. The 7Q10 flows are projected to decline in the Entiat River. For a moderate greenhouse gas scenario, 7Q10 flows are projected to decline 3% by the 2040s and 7% by the 2080s, relative to 1916-2006.



Current Initiatives

Icicle Work Group: A joint effort between Chelan County and the Washington State Department of Ecology, this group seeks to find collaborative solutions for water management within the Icicle Creek Watershed. They are developing a water resource management strategy comprised of projects that, among other goals, protects streamflow that provides healthy habitat, meets water quality objectives, and is resilient to climate change. Asking the question, how do we hold back water in absence of snowpack to benefit streamflow and water supply?

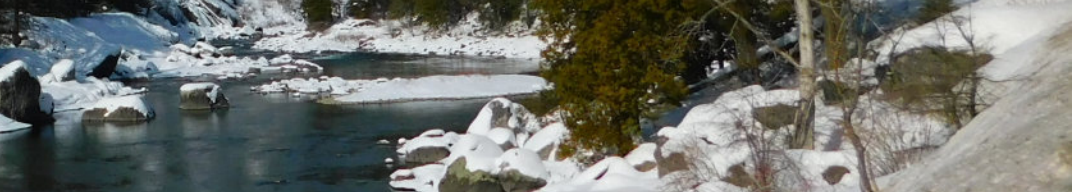
City of Leavenworth Water Improvement Project: The City received grant funding to install widespread advanced metering infrastructure, so customers can remotely detect leaks and monitor water usage in real time. One goal of this project is to reduce water demand as snowpack and streamflow changes.

WDFW Culvert Sizing Guidance: The Washington Department of Fish and Wildlife is working with UW CIG to develop climate resilient culvert guidelines, which will help guide installation of new culverts and bridges in Chelan County (and statewide) in order to accommodate changing streamflow.

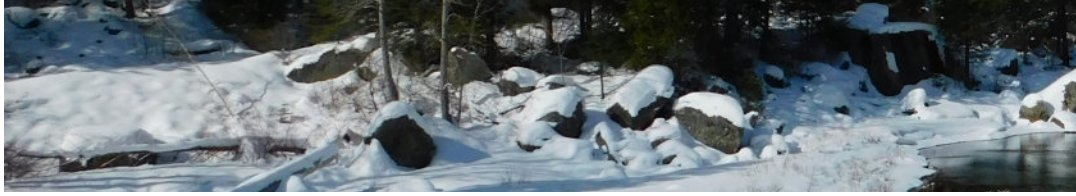
Mission Ridge Ongoing Snowpack Monitoring and Snow Creation: As a recreation-based business based on snowpack, Mission Ridge is preparing for long-term changes by keeping a close eye on year-to-year snowpack. While some recent years have had record snowfall, inconsistency is the consistency here, and they are seeing high variability in snowpack between seasons.

Stemilt-Squilchuck Water Storage: This effort explores using water storage as streamflow shifts to capture water when it is more available.

Watershed Plans: Watershed plans are approved for Lake Chelan, Entiat, Wenatchee and Stemilt-Squilchuck with water quality and quantity and fish and wildlife habitat measures. Implementation strategies include streamflow monitoring and community water metering.



Winter on the White River
Photo: Pictoscribe, 2008



Resilience Strategies

The strategies in this section build upon policy and efforts already adopted throughout the county. Specifically, the Icicle Creek Work Group Vision & Guiding Principles provide a framework for thinking about building resilience to changing snowpack and streamflow. As stated in the vision, The Icicle Creek Work Group seeks to find collaborative solutions for water management within the Icicle Creek drainage to provide a suite of balanced benefits for existing and new domestic and agricultural uses, non-consumptive uses, fish, wildlife, and habitat while protecting treaty and non-treaty fishing interests. This vision is largely in alignment with building climate resilience, and helped to frame the development of the below strategies.

Icicle Creek
Photo: Pictoscribe, 2019

Resilience Strategy Table Legend

Status
- Early/Limited
- Moderate/Partial
- Mature/Robust

Resources Needed
- $: < $100,000
- $$: $100,000 - $500,000
- $$$: > $500,000 +

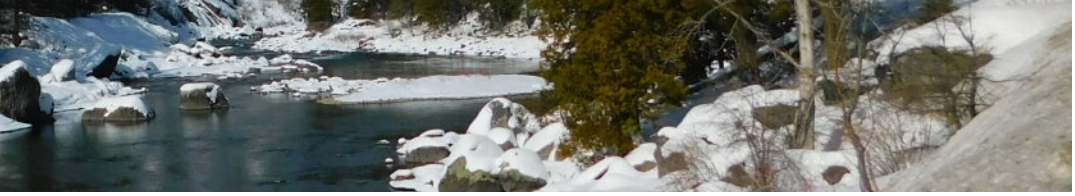


Exhibit 7. Snowpack & Streamflow Climate Resilience Strategies

Strategy	Status	Leads and Partners	Resources Needed
Collect local data to support climate resiliency including weather stations/ SNOTEL, seasonal wind patterns, etc.	Early/Limited	• Natural Resources Conservation Service (NRCS)	$$: Funding for infrastructure improvements
Identify and support data collection opportunities to quantify forest management effects on snowpack in order to support development of forest-snow-streamflow model.	Early/Limited	• Chelan Co. Natural Resources Department • WDFW • USFS (and other fed. Agencies)	$: Initial funding for identifying data needs; $$: Funding to implement data collection
Encourage watershed-scale community building to adapt to changing streamflow and snowpack within the watershed. For example: • Irrigation efficiencies and returning diverted water back into streams during critical flow periods. • Forestry practices and riparian enhancement that improve water-holding capacity and reduce stream temperatures. • Critical areas restoration to maintain or reduce stream temperatures, and restore flow patterns. • Management of invasive or non-native aquatic species that thrive in warmer waters. • Prioritization of water use as snowpack decreases	Early/Limited Limited watershed-scale community building implementation in Icicle Creek Watershed—extend to other priority areas of Chelan County.	• Chelan County • Chelan PUD • UWCIG • WDNR	$$$: Funding to develop climate resilience strategies that leverage watershed plans
Promote and encourage water efficiency and conservation	Moderate/Partial Ongoing	• Chelan Co. Natural Resources Department • Chelan PUD • Conservation District • Irrigation Districts • Municipal Service Providers • Agricultural Producers	$$$: Funding for infrastructure improvements $$: Funding for agricultural conservation practices
Reduce impacts of climate change to aquatic systems through stream-habitat improvement and connectivity	Moderate/Partial In progress implementation of watershed plans	• Chelan Co. Natural Resources Department • Chelan PUD • Conservation District • WDNR • WDFW • Non-Governmental Organizations	$$$: Funding to implement watershed and habitat plans

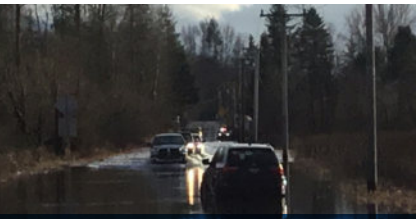
Flooding

Community Feedback Highlights from Strategy Development Outreach

"Rebuild riparian plant communities, active floodplains, and buffer zones--these all help ameliorate effects of floods."

"The cascading effects that climate induced flood events could have on our environment could have cascading impacts to key ecosystem function and services."

We need "...mechanisms for rapid-response to damaged areas and ability to leverage government resources at an accelerated rate to reduce the overall impacts."



Turn Around, Don't Drown Outreach
Photo: WSDOT, 2020

Observed / Current

In central Washington, floods often occur in the foothills of the Cascade Range as the snowpack rapidly melts in late spring and early summer. In some areas, flooding can also occur during winter when high temperatures cause heavy winter rainfall that also melts existing snowpack.[20] Small watersheds in central Washington can experience small-scale flash floods during summer thunderstorms or cloudburst events.

The convergence of Icicle Creek and the Wenatchee River in Leavenworth, the reach of the Wenatchee River between Cashmere and Wenatchee, and the Wenatchee River headwaters are areas particularly vulnerable to flooding in Chelan County.[21]

Expected Changes

Climate change is expected to increase both the frequency and magnitude of floods in and around Chelan County. A shift from snow to rain at mid-elevations, increasing cool season precipitation, greater sediment transport, and heavier rainfall will work in combination to increase the frequency of floods and volume of flood water. As warming continues, a greater fraction of winter precipitation will fall as rain rather than snow, increasing winter runoff[22] and streamflow volumes. In Chelan County, total cool season (October to March) runoff is projected to increase 27% and 39% by the 2050s and 43% and 74% by the 2080s for a low and high greenhouse gas scenario, respectively.

At the Entiat River near the City of Entiat, natural streamflow volume associated with the 100-year flood event is projected to increase 41% by the 2040s and 88% by the 2080s under a moderate greenhouse gas scenario, relative to the 1916-2006 average.[23]

20 What causes floods in Washington State? Fact Sheet 228-96. By: David L. Kresch and Karen Dinicola. https://doi.org/10.3133/fs22896.

21 Chelan County Flood Control Zone District. 2017. Chelan County Comprehensive Flood Hazard Management Plan. Chelan County Flood Control Zone District, Public Works Department. Wenatchee, Washington.

22 Runoff is all water originating from precipitation and snow and glacier melt that flows over land, subsurface, and into shallow groundwater.

23 Hamlet, A.F. et al., 2013. An overview of the Columbia Basin Climate Change Scenarios Project: Approach, methods, and summary of key results. Atmosphere-Ocean 51(4): 392-415, doi: 10.1080/07055900.2013.819555.

Landslide and Highway Closure
Photo: WSDOT, 2020

Impacts Due to More Frequent & Larger Floods

Impacts listed here are potential consequences of changes in flooding described in the section on expected changes. Consequences will vary locally and are likely to intensify with time as climate change intensifies unless adaptation actions are taken.

Health & Well-being

- Greater flood risks to communities & homes.
- More road closures & reduced access.

Energy & Communications

- More frequent spilling at hydroelectric projects.
- Loss of potential hydropower generation.

Fish & Habitat

- Greater mortality of juvenile fish & eggs.
- Reduced slow-water habitat.

Infrastructure

- More flood damage to roads & utility infrastructure.
- Greater need for emergency response & flood mitigation resources.
- Decreased effectiveness of existing flood protection infrastructure.
- Greater risk of landslides.
- More road, culvert, & bridge maintenance & replacement.

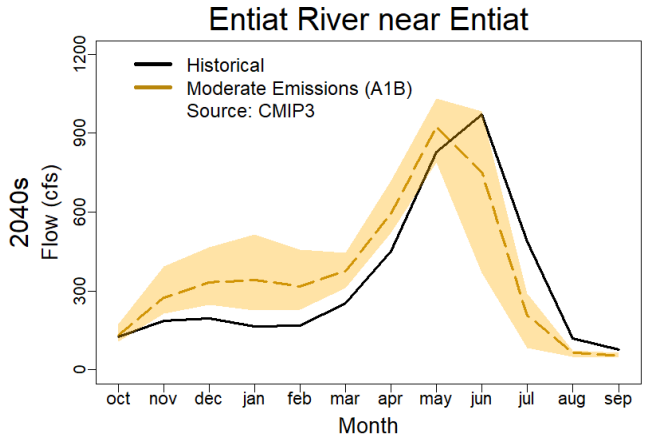
Recreation

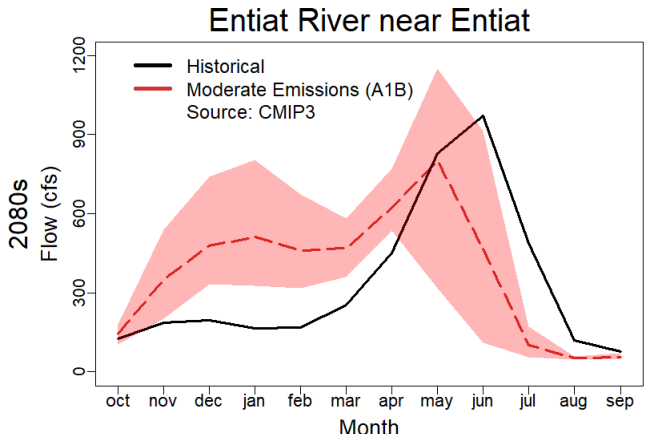
- Reduced access to trails & other recreation facilities.
- Relocation of trails, campgrounds, & other recreation facilities.

Exhibit 8. Average Monthly Streamflow of Entiat River

Hydrographs describe the change in streamflow behavior throughout the water year. The x-axis represents time, months of the year, and the y-axis shows streamflow in cubic feet per second. These hydrographs illustrate an increase in winter streamflow and a shift in timing of peak streamflow to earlier in the year.

Source: Hamlet et al., 2013, hydrographs developed by UW CIG.





US 97 Washout

Photo: Randy Sears, 2009

Exhibit 8 shows hydrographs of the average monthly streamflow at the Entiat River near Entiat (left) for the 2040s and (right) the 2080s under a moderate greenhouse gas scenario. The black line on each graph represents the average monthly historical streamflow (1916-2006) at this location. The shaded areas show the range of projected changes in average monthly streamflow.

Monthly hydrographs illustrate projected changes in streamflow of the Entiat River, which include higher winter streamflow and earlier peak streamflow (Exhibit 9). These projected increases in winter and spring streamflow are expected to increase flooding.

Current Initiatives

Chelan County Comprehensive Flood Management Plan: This 2017 plan provides mitigation measures and actions around a wide range of alternatives, all aimed at protecting life and property within Chelan County. While limited in budget, it does address climate change specifically. Some objectives that build climate resilience are minimizing new development in high-risk areas, working cooperatively with public

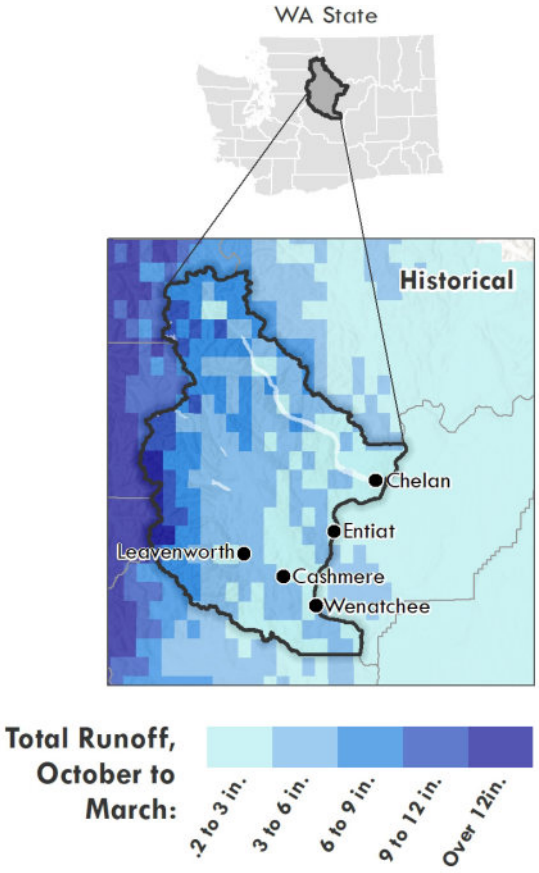
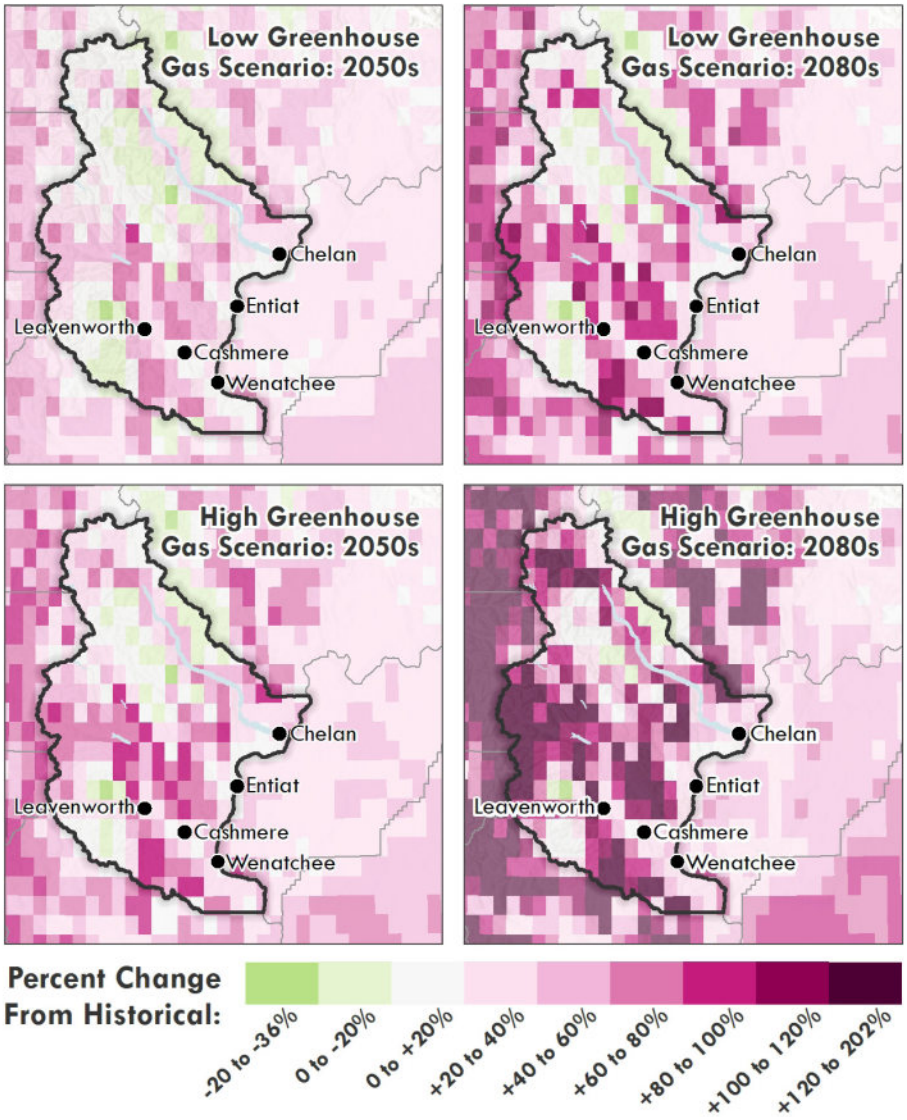


Exhibit 9. Total Runoff, 6-month October-March, Chelan County

Total runoff in the cool season is an indicator of the amount of water that can contribute to high stream flows and flooding during autumn and winter. Total cool season runoff is expected to increase in some areas of Chelan county by the 2050s, with larger and more widespread increases expected for a high greenhouse gas scenario and by the 2080s.

Sources: Integrated Scenarios, 2015; BERK, 2020.



agencies and stakeholders, and considering flood hazard management policies that promote resiliency and sustainable operations of critical facilities.

Culvert Sizing Guidance: Both WDFW and UW CIG are working on climate change adapted culvert design. The new culvert sizing guidance aims to better accommodate flood events which may be more extreme as a result of climate change impacts.

City of Cashmere Levee Management Plan: There are three major levees that protect Cashmere from major flood events. This is a joint project between Chelan County and Cashmere, this plan provides a maintenance, vegetation management, and capital improvement plan that balances the need of flood risk reduction with aquatic species living in the Wenatchee River.

WDFW Emergency Hydraulic Project Approval (HPA) Permitting: This is an effort by WDFW to streamline the

emergency HPA permitting process, which are needed for all building or other work related activities that divert or change the flow of water. In cases where flooding is happening or water diversion is quickly needed, WDFW can issue a verbal approval of a project.

WSDOT Climate Impacts Assessment: This statewide project assesses critical transportation routes and infrastructure within Chelan County in terms of vulnerability to climate impacts. WSDOT considers future climate risks during project design and when preparing long-term plans. They document how climate change and extreme weather variability are considered and propose ways to improve resilience.

Resilience Strategies

In 2017, the County adopted the Chelan County Comprehensive Flood Management Plan. The strategies below seek to build upon the goals already adopted within the Flood Management Plan. That plan aims to protect life, protect property, maintain operation of critical facilities, increase awareness of flood risk, and protect/restore the natural and beneficial functions of floodplains. All of these goals support building climate resilience, and the strategies below build upon those goals and put them in the context of climate resilience.

Rocky Reach Dam
Photo: Chelan PUD, 2016

Resilience Strategy Table Legend

Status
- Early/Limited
- Moderate/Partial
- Mature/Robust

Resources Needed
- $: < $100,000
- $$: $100,000 - $500,000
- $$$: > $500,000 +

Exhibit 10. Flood Resilience Strategies

Strategy	Status	Leads and Partners	Resources Needed
Improve flood warning and information dissemination.	Early/Limited Multi-jurisdiction coordination underway and continued dialogue needed	• Chelan Co. Flood Control District • Chelan PUD • USACE • USFS • Washington Dept. of Ecology • WDFW • Irrigation and Reclamation Districts	$$: Expanded regional funding among partners $$$: Local and countywide grant funding
Assess risk management, and prepare for rapid response during the flood event.	Early/Limited Multi-jurisdiction coordination underway and continued dialogue needed	• Chelan Co. Flood Control District • Fire Districts • Chelan Co. Public Works • Cities Public Works	$$$: Local and countywide grant funding
Evaluate and improve stormwater management and infrastructure for high-intensity rainfall events	Moderate/Partial Variable based on stormwater management plans	• Chelan Co. Public Works Departments • Cities' Public Works Departments • Chelan PUD • WSDOT • WDFW	$$$: Funding to implement improvements $: Staff
Protect and upgrading or relocation of vulnerable critical facilities locations vulnerable to flooding[1]	Early/Limited Mapping has been prepared	• Chelan County • Cities • Chelan PUD • School Districts • Fire Districts • Telecommunication Providers	$$$: Funding to implement improvements
Revise transportation infrastructure: • Improve transportation infrastructure where needed, e.g., enlarging road crossings • Remove or redesign roads that disrupt floodplain function or intercept precipitation and ground water and accelerate its movement into stream systems.	Early/Limited WSDOT Climate Smart Design initiated	• Chelan Co. Public Works • Cities Public Works • WSDOT	$$$: Funding to implement improvements
Plan for post-flood restoration. Replant bare, disturbed, and recently burned areas to increase infiltration and slow movement of water. Provide restoration to stabilize ecosystems.	Moderate/Partial Watershed plans and riparian plantings in selected areas Conservation practices funded in some burned areas (e.g., NRCS)	• Chelan Co. Natural Resources Department • Conservation District • USFS • WDFW • WDNR	$$: Planning, and Reserve funding

1 An objective in Chelan County Multi-Jurisdiction Natural Hazard Mitigation Plan.

Water Supply

Community Feedback Highlights from Strategy Development Outreach

Success looks like "...a county that uses water very efficiently so that even when the climate changes are in full force, we can have a high quality of life, strong economy, and great environment that supports fish, wildlife, and the rest of our ecosystem."

"Conservation and efficient use of water resources should be an explicit, high priority in all strategies and work regarding water resources."

"Chelan County has a good head start on developing water budgets and water banks. This strategy integrates increased planning efforts, leveraging resources to promote water storage solutions, and building public awareness around drought risk and mitigation."

Lake Wenatchee
Photo: Pictoscribe, 2009

Observed / Current

Significant changes in average annual streamflow have not been observed in rivers of central Washington including Stehekin River and the Wenatchee River in Chelan County. However, substantial declines in streamflow have been observed in the driest years. Between 1948 and 2006, streamflow declined in dry years by about 22% and 38% in these Chelan County rivers. These declines suggest that since mid-century, dry years have been getting drier.[24]

Peak streamflow in spring is shifting earlier in the year in response to declines in snowpack. Between 1948 and 2002, the timing of peak spring streamflow advanced 16 days in response to warming and associated declines in snowpack.[25]

Expected Changes

Total annual precipitation is not expected to change substantially, with only a marginal increase in average precipitation projected by most models. The most consequential change to water supply will be a shift in the timing of natural water availability throughout the year.[26] If unmitigated, this shift in the timing of water availability may create challenges for adequate water supply when water demand is greatest.

Water Supply

Higher winter temperatures are projected to increase the fraction of winter precipitation that falls as rain rather than snow, decreasing snowpack and shifting snowmelt earlier in spring (See Snowpack and Streamflow & Floods sections). Due to these changes in the climate, winter water supply is projected to increase and summer

24 Luce, C. H. & Holden, Z. A. Declining annual streamflow distributions in the Pacific Northwest United States, 1948–2006. *Geophys. Res. Lett.* **36**, L16401 (2009).

25 Stewart, I. T., Cayan, D. R. & Dettinger, M. D. Changes toward Earlier Streamflow Timing across Western North America. *J. Climate* **18**, 1136–1155 (2005).

26 Snover et al. 2013. Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers.

water supply is projected to decrease throughout the Columbia River Basin and in the watersheds of Chelan County specifically.

Based on the 2016 Columbia River Basin Long-term Water Supply and Demand Forecast, unregulated surface water supply in the Columbia River Basin for the wet season, November through May, is expected to increase by 31% (+/- 9%) by the 2030s (relative to the 1981-2011 average).[27] Conversely, unregulated surface water supply for the dry season, June through October, is expected to decrease by -10% (+/- 8%) for the same time period due to earlier spring runoff and drier summers.[28] The Columbia River Basin Long-term Water Supply and Demand Forecast will be updated in 2021; the specific numbers for these projections may change, but the seasonal pattern is unlikely to change.

The expected change in seasonal water supply for any watershed within the Columbia Basin, including the Wenatchee, Entiat, and Chelan watersheds, varies depending on local conditions and the elevation of the watershed.[29] Mid-elevation watersheds near the current snowline where snowmelt is a major contributor to streamflow are expected to experience the largest changes in streamflow timing and seasonal supply. The Wenatchee and Chelan watersheds are expected to see increases in surface water supply in October to March and decreases in June and July. The Entiat watershed shows more change in monthly average flows and slightly different timing, with increases in November to March and decreases in May to July.

Impacts Due to More Winter, Less Summer Water

Impacts listed here are potential consequences of changes in water supply described in the section on expected changes. Consequences will vary locally and are likely to intensify with time as climate change intensifies unless adaptation actions are taken.

Health & Well-being

- Less summer water availability for drinking water systems.
- Increases in municipal water demand.

Energy & Communications

- Greater demand for water to meet increasing hydropower. demand with population growth.

Fish & Habitat

- Greater challenges to meeting instream flows for fish.

Agriculture

- Less summer water availability for irrigation.
- More frequent and higher magnitude water curtailments, especially in spring and summer.
- Seasonal changes in irrigation demand.

27 Columbia River Basin Long-term Water Supply and Demand Forecast. 2016. Publication No. 16-12-001.

28 Runoff is all water originating from precipitation and snow and glacier melt that flows over land, subsurface, and into shallow groundwater.

29 Columbia River Basin Long-term Water Supply and Demand Forecast. 2016. Publication No. 16-12-001.

Lake Chelan and Columbia River
Photo: Doc Searls, 2010

Across Chelan County specifically, total runoff during the cool season (October to March) is expected to increase 27% and 39% for the 2050s and 43% and 74% by the 2080s for a low and high greenhouse gas scenario, respectively. In contrast, total runoff during the warm season (April to September) is expected to decrease 8% and 11% for the 2050s and 12% and 22% by the 2080s for a low and high greenhouse gas scenario, respectively.

Water Demand

For Chelan County, maximum air temperatures in summer (June to August) are expected to increase by 6.3° F and 8.1°F by the 2050s, and by 7.5°F and 12.8°F under a low and high greenhouse gas scenario. Most climate models also show decreases in summer precipitation, although summer precipitation in this region is already low and is difficult to project because much of it comes in convective storms which are challenging for climate models to simulate.

In the near-term (through the 2030s) agricultural water demand for the Columbia River Basin, which makes up about 80% of the water demand in the region, is forecasted to decrease slightly.[30] This decrease is primarily due to warmer and wetter conditions in spring that lead to an earlier and shorter growing season, with a resulting shift in the timing of water demand. Expected changes in the crop mix towards crops that require less water also contribute to this slight decrease. As temperatures continue to increase, this decline in water demand for irrigation may not continue as the gains made by shifting to lower-water-use crops diminish.

For Chelan County specifically and the watersheds within the county, future changes in water demand for irrigation are less clear. The crop mix of Chelan County is dominated by fruit trees, rather than the mix of annual crops, fruit trees, and pasture seen across the Columbia River Basin as a whole. In addition, development pressures in Chelan County may lead to shifts in land use rather than shifts in crop mix in the future. Land use changes are not captured in the Long-Term Water Supply and Demand Forecast, yet could affect agricultural and municipal water demands in the future. Irrigation timing for fruit trees is also less flexible relative to annual crop mixes, as trees continue to need water after harvest so decreases in irrigation demand in response to changes in growing season and seasonal water supply are not as obvious. These changes in water supply and demand could lead to increased frequency of curtailment to water rights holders, particularly in the early irrigation season.[31]

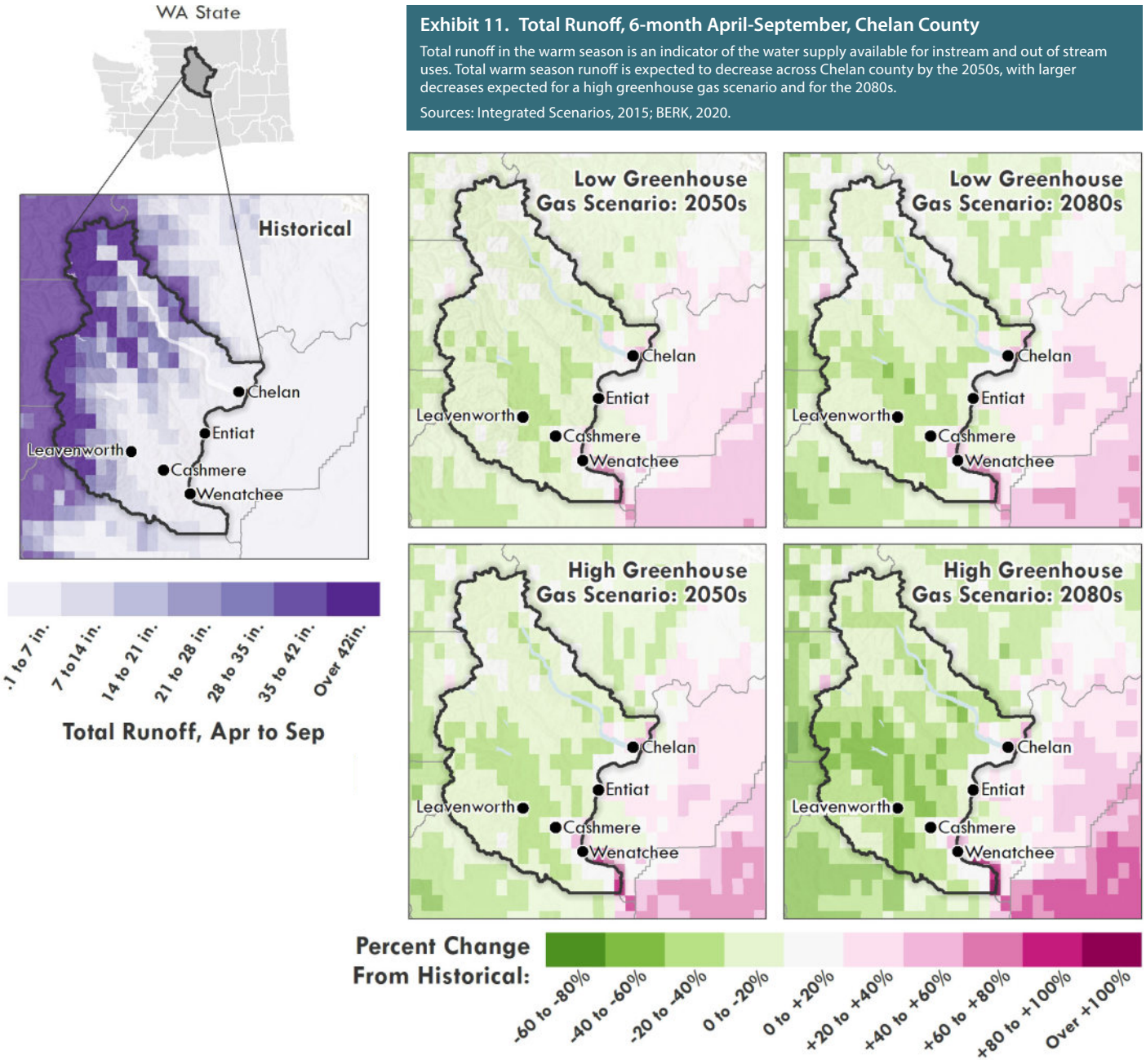
30 Columbia River Basin Long-term Water Supply and Demand Forecast. 2016. Publication No. 16-12-001.

31 Columbia River Basin Long-term Water Supply and Demand Forecast. 2016. Publication No. 16-12-001.

Exhibit 11. Total Runoff, 6-month April-September, Chelan County

Total runoff in the warm season is an indicator of the water supply available for instream and out of stream uses. Total warm season runoff is expected to decrease across Chelan county by the 2050s, with larger decreases expected for a high greenhouse gas scenario and for the 2080s.

Sources: Integrated Scenarios, 2015; BERK, 2020.



Communities and resources most vulnerable to the altered timing of water supply and demand will be those that depend on surface water from mid-elevation watersheds, which are most susceptible to the effects of warmer temperatures on snowpack and streamflows. Additional vulnerability to the altered timing of water supply and demand may be enhanced or mitigated depending on options for changing season of use in current water rights.

Current Initiatives

Icicle Work Group: As mentioned above, this is joint effort between Chelan County and the Washington State Department of Ecology, in addition to what is listed in the Snowpack and Streamflow section, the work group is also addressing water storage and supply. They are considering high-elevation small scale storage, groundwater recharge (flooding), and run-of-river dams to create hydroelectricity to reduce the costs of pumping.

City of Leavenworth Water Improvement Project: See Snowpack and Streamflow.

Chumstick and Mission Creek Alluvial Storage: This is a series of projects to increase stream complexity in key watershed areas to slow flow and increase infiltration. The project is underway with county funding, and monitoring is in place to evaluate the goal of water conservation through stream restoration.

Chelan Natural Resources Department Wenatchee Basin Modeling: This alluvial water system model was implemented to determine the amount and severity of stream incision across the watershed, and to model the potential benefit that could accrue to water supply from reducing stream incision.

Chelan County Voluntary Stewardship Program: Agriculture producers in Chelan County can participate in an alternative approach to address critical area protection and promote viable agriculture. The producers have implemented a number of conservation practices including irrigation efficiencies, opting for less water intensive irrigation, and upgrading/ maintaining systems to minimize water waste.

Rock Island Dam
Photo: Chelan PUD, 2016

Resilience Strategies

The strategies for building a climate resilient water supply are in alignment with Water Supply Policy 3.1 of the Chelan County Comprehensive Plan (2017). This policy supports data collection for water quality and quantity which can be used to evaluate land uses and development, including improving county tracking and coordination efforts with public water providers, supporting varying regulations on a WRIA (Water Resource Inventory Area—watershed planning areas) or sub basin level, encouraging the development of outreach/education materials, and analyzing water banks and other alternatives for areas where physical availability of water is at risk.

Resilience Strategy Table Legend

Status
- Early/Limited
- Moderate/Partial
- Mature/Robust

Resources Needed
- $: < $100,000
- $$: $100,000 - $500,000
- $$$: > $500,000 +

Exhibit 12. Water Supply Resilience Strategies

Strategy	Status	Leads and Partners	Resources Needed
Develop rural water management through water budgets, exempt well tracking, voluntary metering, water banks, water markets, or other measures	Moderate/Partial Partial tracking in various basins (e.g. WRIA 45 and 46); partial establishment of reserve quantities; no water banks.	• Chelan County • Chelan PUD • Irrigation Districts	$$$: Funding to implement watershed plans, well tracking program, and water bank
Promote increased water storage solutions that help agricultural producers adapt to changing conditions and decrease production losses due to lack of water availability	Moderate/Partial Watershed Plans, ongoing	• Chelan County • Irrigation Districts	$$$: Funding to implement watershed plans
Consider greywater systems and water re-use	Early/limited	• Chelan PUD • Municipal Water Providers • Irrigation Districts	$$$: Funding to implement
Agricultural and municipal water conservation and efficiency efforts in watersheds where these conservations efforts can lead to overall decreases in water demand	Moderate/Partial Awareness and information by special districts	• Municipal Water Providers • Irrigation Districts	$$: Incentives, conservation practices
Drought planning to increase water conservation, plant drought-tolerant species, and build awareness around individual risk from drought	Moderate/Partial Multi-Jurisdiction Natural Hazard Mitigation Plan addresses Awareness and information by special districts	• Chelan County • Cascadia Conservation District • Chelan PUD • Municipal Water Providers • Irrigation Districts • Agricultural producers • Residents • Organizations serving vulnerable populations	$: Coordinator/staff $$: Incentives, conservation practices

Cross-Sector Strategies

Community Feedback Highlights from Strategy Development Outreach

"Build capacity to help the members of our community that are the most vulnerable."

We need to develop "...priorities for vulnerable populations, holistic measures for ecosystems and environment resilience, sustainable farming practices, and multi-lingual education and outreach."

This strategy "...will give clear expectations to all in the county as to how they can be a part in dealing with the Climate Crisis. Chelan County can become a leader in this goal being carried out throughout the region."

Following are strategies that cut across the subjects addressed in this Climate Resilience Strategy. These strategies would address multiple hazards or expected climate conditions. Because they address multiple needs and communities, they have the potential to be the most sustainable and cost-effective efforts.

Three activities stand out in terms of potential effectiveness and stakeholder interest:

1. Forest health as advancing water processes and fire resilience;
2. Water storage as a response to extreme low flow and flood water, fire response, and water supply; and
3. Community engagement and awareness efforts to advance all strategies and empower individuals and organizations.

Benson Vineyards, Mason
Photo: Unsplash, 2020

2015 Chelan Complex Fire
Photo: Ben Brooks

Exhibit 13. Cross-Sector Climate Resilience Strategies

Strategy	Status	Leads and Partners	Resources Needed
Coordinated Water Resources, Wildfire, and Flood Resilience Efforts			
Conduct research and modeling to understand relationship between snowpack, forest health, and water supply	Early/limited	• USFS • WDNR • WDFW • Chelan Co. Natural Resources Department	$$: Model and implementation strategy
Seek funding for measures to protect and restore fish and wildlife habitats and ecosystem function to support resilience in response to fire and flood events	Moderate/Partial	• USFS • WDNR • WDFW • Conservation District • Chelan Co. Natural Resources Department	$$: Funding to implement improvements
Provide for water storage near sources to address low stream flow, flooding, fire-fighting, and water supply needs	Early/Limited	• Chelan Co. Natural Resources Department • Conservation District • Irrigation Districts • Municipal Service Providers	$$$: Funding for infrastructure improvements
Refine and leverage previously developed hydrologic model (DHSVM) for Chelan County to test relevant forest management scenarios to understand combined benefits for fire fuels reduction, snowpack retention, and summer streamflow	Moderate/Partial	• Chelan Co. Natural Resources Department	$$: Ongoing funding needed to refine and produce test scenarios
Convene a panel of experts to review recent and on-going initiatives related to forest management effects on snowpack and water supply to synthesize current efforts and findings, identify critical data gaps, and prioritize next steps to transition from research efforts to forest management applications	Early/Limited	• Chelan Co. Natural Resources Department • USFS • WDNR • WDFW • UW CIG	$: Funding to coordinate expert panel

Exhibit 13. Cross-Sector Climate Resilience Strategies (cont.)

Strategy	Status	Leads and Partners	Resources Needed
Public Health and Safety			
Assess the capacity of health systems to respond to emerging health and safety threats and to integrate climate preparedness into their hazard response plans and daily operations	Early/limited	• Chelan-Douglas Health District	$$: Planning and education
Develop priorities and strategies to proactively implement climate change adaptation measures for the most vulnerable and underserved populations	Early/Limited	• Chelan-Douglas Health District • Organizations serving vulnerable populations	$: Staff resources to coordinate and engage
Build capacity to assist the most vulnerable people and communities to prepare and respond to threats such as wildfires and flooding.	Early/Limited Multi-jurisdiction coordination underway and continued dialogue needed	• Chelan Co. Flood Control District • Fire Districts • Chelan County Public Works • Cities Public Works • Organizations serving vulnerable populations	$$: Planning and education
Identify locations where changes in surface and groundwater flow due to climate change (e.g., larger floods, erosion, fire) could result in new or greater releases of toxic substances to the environment	Early/Limited Multi-jurisdiction coordination underway and continued dialogue needed	• Chelan Co. Flood Control District • Fire Districts	$$: Planning and education
Sustainable Business			
Partner with agricultural producers to encourage sustainable farming practices that are aligned with future climate conditions to address adequate water supply and conservation, opportunities for voluntary ecological enhancements in climate vulnerable areas, and other strategies	Moderate/Partial Awareness and information by special districts	• Irrigation Districts • NRCS • Conservation District • Chelan Co. Natural Resources Department	$$: Incentives, conservation practices
Improve and promote the range of weather-independent and all-season tourism and recreation opportunities.	Early/Limited	• Chelan County • Cities • Wenatchee Valley Chamber of Commerce • Chelan Douglas Regional Port Authority • Recreation Providers	$$: Evaluation, incentives

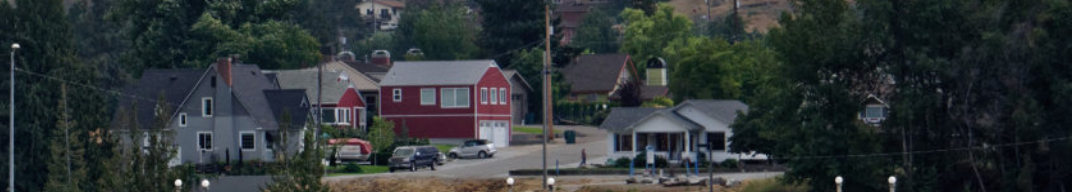


Exhibit 13. Cross-Sector Climate Resilience Strategies (cont.)

Strategy	Status	Leads and Partners	Resources Needed
Community Engagement and Awareness			
Education and outreach on collective and individual efforts to address water conservation, energy conservation, and fire and flood preparedness	Early/Limited	• Chelan PUD • Irrigation Districts • Municipal Water Providers • Chelan Co. Flood Control District • Fire Districts • Chelan County • Cities • Organizations serving vulnerable populations	$: Staff resources to coordinate and engage
Ensure climate resilience outreach and education efforts are multi-lingual to engage all members of the community	Early/Limited	• Chelan-Douglas Health District • Organizations serving vulnerable populations	$: Staff resources to coordinate and engage

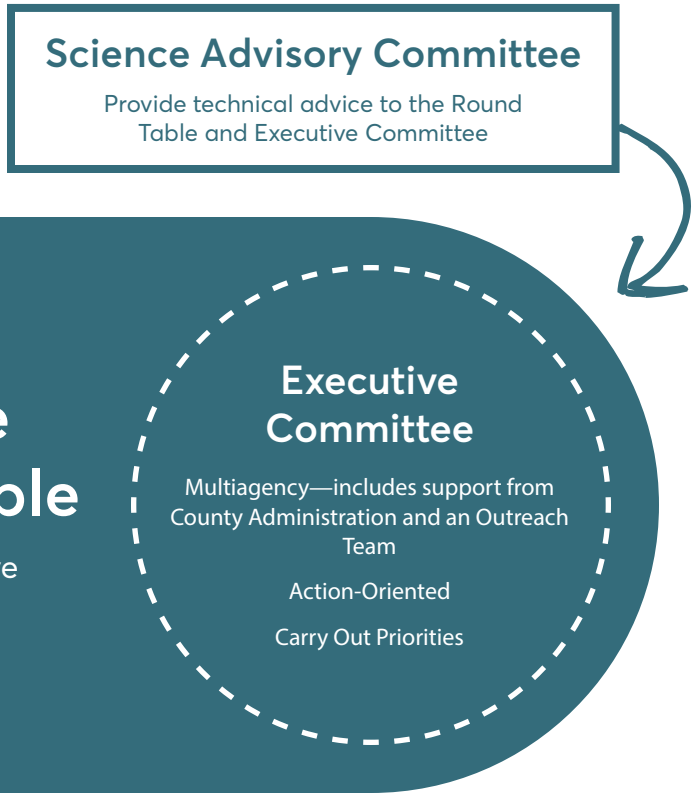
Sugarloaf Overlook
Photo: Shaun Seaman, 2019

Next Steps: Implementation & Coordination

This Climate Resilience Strategy depends on multiple entities anticipating, managing, and responding to climate change in a coordinated fashion. Implemented effectively, this climate resilience strategy will sustain the community, economy, and environment.

For the greatest chance at success, an inclusive and adaptive "Climate Round Table" would be formed to move this Climate Resilience Strategy forward. The Climate Round Table will be open to anyone with an interest in climate resilience. Governmental and non-governmental agencies and community stakeholders can take part. Exhibit 14 presents a possible structure for organizing implementation of this strategy and the Round Table moving forward.

Exhibit 14. Implementation Round Table Organizational Structure
Source: BERK, 2020.



Wenatchee Open House
Photo: Chelan PUD, 2019

The Climate Round Table will help prioritize and coordinate strategies and actions, and leverage existing resources. The Round Table will phase near-term and long-term activities, develop order of magnitude costs, identify lead entities, and develop metrics for evaluation and adaptive management. A "Science Advisory Committee" will provide technical advice to the Round Table and Executive Committee. An Executive Committee made up of a core group of the Round Table will be nimble and help carry out the Round Table direction.

The Round Table and Executive Committee will be supported by an Administrator and an Outreach Team. An early action of the Round Table would be to prioritize strategies within this document and delegate actions to members of the Round Table in order to build ownership over different strategic actions for building climate resilience.

For more information:

Chelan County Natural Resources · (509) 667-6533 · Mike.Kaputa@co.chelan.wa.us ·

https://co.chelan.wa.us/natural-resources/pages/county-wide-climate-resilience-planning

Chelan County Climate Policy Integration

Deliverable 2 Comprehensive Plan Audit Matrix and Summary

INTRODUCTION

Chelan County has developed an interagency climate resiliency strategy and brought it to stakeholders for review over 2019 and 2020. The Commerce GMA-Climate Change Planning-Grant is a unique opportunity for Chelan County to jump-start the integration of its climate resiliency strategy into its Comprehensive Plan, with the added consideration of greenhouse gas (GHG) reduction efforts where suited to a rural county.

This document is designed to meet the following Commerce Grant steps and deliverable – to consider the trends and conditions in Step 1, and audit the Comprehensive Plan for potential ways in which the policies could be augmented or amended:

- Step 2.1 Based on Action 1, we will prepare an audit of the Chelan County 2017-2037 Comprehensive Plan. For each Plan Element, we will develop a matrix summarizing climate impacts, policy implications, relevant initiatives (see Step 1), current Comprehensive Plan policies (e.g. energy conservation and fire management), and alternative Comprehensive Plan policies for each element including: land use, rural, resource, housing, capital facilities, utilities, economic development, parks and recreation, shoreline, and transportation.
- Step 2.2 We will identify options for alternative policies considering their potential effectiveness for relative emission reductions and climate adaptation. For example, by considering resiliency measures and incentives for greenhouse gas reduction, the County can advance its economic development goals to diversify the existing economic base to focus on long-term sustainable economic development throughout the County and advance a multijurisdictional approach to economic development.

The result is an audit matrix and summary. The matrix appears on pages 3 and following. The summary appears below.

SUMMARY OF AUDIT

Exhibit 1 and Exhibit 2 audit the 2017 Comprehensive Plan regarding how well the Plan addresses the draft climate resilience strategy and existing County code addressing greenhouse gas reduction.

Through the audit some recommendations are made to add, amend, or augment Comprehensive Plan policies or text. Many of the added or amended policies would not represent a change in County policy but rather synthesize policies in existing system plans that were prepared after adoption of the County's Comprehensive Plan. These relevant plans include:

- Chelan County Community Wildfire Protection Plan 2019
- Chelan County Comprehensive Flood Hazard Management Plan 2017
- Chelan County Natural Hazard Mitigation Plan 2019
- Chelan County Solid Waste Management Plan 2017
- Comprehensive Emergency Management Plan (CEMP) 2020

Some climate resilience strategies would benefit from added or amended policies, such as forest and shrub-steppe enhancement; drought tolerant development and landscaping; watershed scale community building; building data networks for snowpack and streamflow; increasing community awareness and education about wildfire, flooding, and resilience; enhancing agriculture and recreation sustainability; and others. These concepts would build off of existing policies and planning efforts (e.g. watershed plans) but provide more guidance and direction.

Exhibit 1. Draft Resilience Strategy Matrix

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Wildfire Strategies				
Build awareness of increasing wildfire risk and preparedness of Chelan County Communities	Partial: Park & Recreation Element, Goal PR1, Policy PR 1.4	Countywide forests, agriculture, rural, urban. County focus on resource lands and unincorporated communities (Plain, Peshastin, Manson, Malaga, etc.).	Community Development Fire Prevention and Investigation Natural Resources Emergency Management	The County could include a policy about building awareness, working in partnership, and reference to Chelan County Community Wildfire Protection Plan 2019 that was developed post 2017 Comprehensive Plan. See Proposed: Policy FL 3.1.
Coordinate and improve emergency preparedness systems, particularly early detection	Not in Comprehensive Plan	Countywide	Emergency Management Fire Prevention and Investigation Public Works	This strategy is not addressed in the Comprehensive Plan; however, it is referenced in the 2020 Comprehensive Emergency Management Plan (CEMP). The County could include a policy to improve emergency preparedness systems and reference the CEMP adopted in 2020. See Proposed: Policy FL 3.3.
Develop fire safe places in fire prone areas with wildland urban interface policies and codes	Partial, Policy FL 1.7, Policy RE 3.6, RE 3.7	Countywide	Community Development Fire Prevention and Investigation Natural Resources Emergency Management	The County has adopted some wildland urban interface codes though last amended in the Year 2000. There are newer model codes. (CCC 15.40.050) See Proposed: Policy FL 3.2.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Create fire adapted communities	Incremental permit review: Policy FL 1.7, CF 1.20	Countywide, focus on unincorporated areas	Community Development Fire Prevention and Investigation Emergency Management	Chelan County Community Wildfire Protection Plan highlights fire adapted communities as a goal. See Proposed: Policy FL 3.1.
Protect critical facilities	Comprehensive Plan (Capital Facilities Element) references Flood Hazard Management Plan in text but does not identify policies about flooding or other hazards and critical facilities.	Countywide, focus on unincorporated areas	Community Development Emergency Management Fire Prevention and Investigation Public Works	Mapping of critical facilities has been prepared in the 2019 Natural Hazard Mitigation Plan and the 2017 Comprehensive Flood Hazard Management Plan. A more explicit policy consistent with these resource plans could be added to the Comprehensive Plan. See Proposed: Policy CL 1.4.4.
Coordinate ecological recovery programs for areas subject to fire in forested and shrub-steppe lands	Partial: Park and Recreation Element Vision and Conservation/ acquisition Goal PR1, Policy 1.4	Countywide federal and state forest land, and shrub-steppe in Stemilt-Squilchuck basin and other predominantly agricultural or rural areas.	Natural Resources Fire Prevention and Investigation	Adding a policy in the Land Use or Resource Element would highlight the strategy and it would apply to private and public lands. See Proposed: Policy CL 1.18.
Monitor exotic and invasive species on resource and natural lands and prioritize protection and enhancement of such areas	Reference to invasive species is found in the Park and Recreation Element, though there is no policy.	Countywide, unincorporated	Natural Resources Fire Prevention and Investigation	Suggest adding a policy in the Resource or Parks and Recreation elements. See Proposed: Policy CL 1.18.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Continue to build partnerships across agencies to monitor and respond to climate changes and vulnerabilities in forested and shrub-steppe lands	Not addressed.	Countywide federal and state forest land, and shrub-steppe in Stemilt-Squilchuck basin and other predominantly agricultural or rural areas.	Natural Resources Fire Prevention and Investigation Emergency Management Community Development Public Works	Add policy in Land Use or Resource Element focused on interagency and cross-sector strategies and partnerships. Leverage expertise of agencies to address climate changes in forested and shrub-steppe lands. See Proposed: Policy CL 1.18.
Proactively address fire resiliency through activities such as: pre-fire monitoring, maintenance/forest treatment, thinning, prescribed fire, and managed natural fire	Partial, Policy FL 1.7, Policy RE 3.6, RE 3.7. Policies focus on private development. Monitoring, prescribed fire, and other aspects not addressed.	Countywide	Community Development Fire Prevention and Investigation Natural Resources	The landscape level approach is not addressed in the Comprehensive Plan, and a policy could be added such as to the Resource Element. Concepts in the strategy are in the Community Wildfire Protection Plan 2019. Coordination with other state and federal entities could be part of the policy. See Proposed: Amended Policy FL 1.7.
Air quality: education, training, and responses to protect people and communities during and after wildfire	Policy NSL 1.1 and Policy NS 1.3	Countywide	Community Development Emergency Management Fire Prevention and Investigation Natural Resources	Policies are sufficient. Some added rationale text could help highlight air quality associated with wildfire. See Draft Rationale Text: under Policy NSL 1.1.
Collect local data to support climate resiliency including weather stations/SNOTEL, seasonal wind patterns, etc.	Policy 3.1, generally	Countywide	Natural Resources Public Works	Could address issue in policy and text of Capital Facilities Element and Resource Element. Focus on being a support (e.g. facilitate placement, leverage funding) to entities that are responsible for these facilities. See Proposed: Policy NS 1.4.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Identify and support data collection opportunities to quantify forest management effects on snowpack in order to support development of forest-snow-streamflow model.	No	Countywide	Natural Resources Emergency Management Fire Prevention and Investigation	Same as above. Covered by Proposed: Policy NS 1.4 and Policy FL 3.5.
Encourage watershed-scale community building to adapt to changing streamflow and snowpack within the watershed. For example: ▪ Irrigation efficiencies and returning diverted water back into streams during critical flow periods. ▪ Forestry practices and riparian enhancement that improve water-holding capacity and reduce stream temperatures. ▪ Critical areas restoration to maintain or reduce stream temperatures, and restore flow patterns. ▪ Management of invasive or non-native aquatic species that thrive in warmer waters. ▪ Prioritization of water use as snowpack decreases.	Policy CL 1.17	Countywide	Natural Resources Community Development Public Works	Watershed planning is highlighted in the Comprehensive Plan as a way to address issues relating to endangered and threatened species listings and water quantity issues. The Comprehensive Plan Resource Element could highlight watershed plans and focused community building efforts in Icicle Creek and propose long-term efforts in other basins, e.g. Entiat. See Proposed: Policy CL 1.19.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Promote and encourage water efficiency and conservation	Policy CF 1.6	Countywide	Natural Resources Public Works Community Development	The Comprehensive Plan specifically highlights this and emphasize education of users on methods to conserve water. No additional policy edits are needed.
Reduce impacts of climate change to aquatic systems through stream-habitat improvement and connectivity	Partial – through watershed planning efforts; Resource Element also highlights policies related to aquatic systems and critical areas	Countywide	Natural Resources	This is partially addressed in the Comprehensive Plan and will required adequate funding for implementation of watershed plans and habitat plans. See Proposed: Policy CL 1.20.
Flood Resilience				
Improve flood warning and information dissemination.	No	Countywide	Emergency Management Public Works	Not explicitly discussed in the Comprehensive Plan, although there are multi-jurisdictional efforts underway. The Flood Control Zone District is tasked with flood warning and emergency response. See Proposed: Policy CL 1.4.1.
Assess risk management, and prepare for rapid response during the flood event. Evaluate and improve stormwater management and infrastructure for high-intensity rainfall events	Partial – Capital Facilities Element references Flood Hazard Management Plan in text but does not identify policies about flooding or other hazards and critical facilities.	Countywide, focus on unincorporated area	Community Development Emergency Management Public Works	Chelan can leverage plans including the 2017 Comprehensive Flood Hazard Management Plan and 2019 Natural Hazard Mitigation Plan A more explicit policy consistent with these resource plans could be added to the Comprehensive Plan. See Proposed: Policy CL 1.4.1.
Protect and upgrading or relocation of vulnerable critical facilities locations vulnerable to flooding	See above.	Countywide; County infrastructure	Community Development Emergency Management Public Works	This is referenced in the Chelan County 2017 Comprehensive Flood Hazard Management Plan. See above. See Proposed: Policy CL 1.4.4.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Revise transportation infrastructure: ▪ Improve transportation infrastructure where needed, e.g., enlarging road crossings. ▪ Remove or redesign roads that disrupt floodplain function or intercept precipitation and ground water and accelerate its movement into stream systems.	Partial – Transportation Element (Policy 5.4) addresses improving infrastructure to minimize impacts to hydrologic systems and water quality, though not necessarily due to flooding /floodplain management.	Countywide	Public Works Emergency Management Natural Resources	Improvements to transportation infrastructure is referenced in the Comprehensive Plan, although there is not a specific mention on redesign of roads related to disruption of floodplain function, etc. A policy or text in the Transportation Element or Capital Facilities Element could help highlight this strategy. Broad design standards for consideration could be made (e.g. WDFW Water Crossing Design guidelines and the UWCIG Climate Robust Culvert Design project and Culvert Design Tool). See Proposed: Transportation Element Policy 5.4.
Plan for post-flood restoration. Replant bare, disturbed, and recently burned areas to increase infiltration and slow movement of water. Provide restoration to stabilize ecosystems.	Partial – Policy CL 1.12 & reference to Flood Hazard Management Plan	Countywide	Emergency Management Natural Resources Public Works	Restoration of critical areas is referenced in the Comprehensive Plan, which would include any frequently flooded areas, wildlife habitat, etc. The Comprehensive Flood Hazard Management Plan touches on ecological restoration and floodplain restoration, etc. Addressing post-flood restoration in the Resource Element could support this strategy. See Proposed: Policy CL 1.4.3.
Water Supply				
Develop rural water management through water budgets, exempt well tracking, voluntary metering, water banks, water markets, or other measures	Capital Facilities Element & Land Use Element/Policy 3.1	Countywide	Natural Resources Public Works	Policy appears sufficient, and the County is implementing the policy with codes. The County can continue to leverage existing efforts and watershed plans, etc.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Promote increased water storage solutions that help agricultural producers adapt to changing conditions and decrease production losses due to lack of water availability	Partial – Capital Facilities Element; Policy CF 1.6 (water conservation/watersheds)	Countywide; agricultural and rural areas	Natural Resources	Reference watershed plans in Resource and Capital Facilities Elements. The watershed plans identify water storage for agricultural and other uses. WSDA, USDA, Conservation District, WSU, and Irrigation Districts may be other sources of policy or implementation. See Proposed: Policy LU 3.8.
Consider greywater systems and water re-use	No	Countywide	Natural Resources Community Development	Consider referencing greywater/water re-use in a policy and text. Reference watershed plans. WA State Department of Health for more information on greywater reuse. Chapter 246-274 WAC is specific to greywater reuse for subsurface irrigation. See Proposed: Policy LU 3.9.
Agricultural and municipal water conservation and efficiency efforts in watersheds where these conservations efforts can lead to overall decreases in water demand	Yes – Policy CF 1.6 (Capital Facilities Element); Goal LU 3/Policy 3.1 (Land Use Element)	Countywide	Natural Resources Public Works Community Development	Policy CF 1.6 supports and encourages water conservation measures by local purveyors and educates users on methods to conserve water. Agricultural water conservation is not addressed. See Proposed: Policy LU 3.7.
Drought planning to increase water conservation, plant drought-tolerant species, and build awareness around individual risk from drought	Partial – water conservation generally addressed. Drought-tolerant plants not addressed.	Countywide	Community Development Facility Maintenance	Water conservation methods, education on conservation, and policies aimed at protecting water quantity are addressed in the Comprehensive Plan. Other resources include the Natural Hazard Mitigation Plan, which also contains drought maps. Reference to the Natural Hazard Mitigation Plan could be made in text and in policies. See Proposed: Policy CF 1.6.1.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Cross-Sector Strategies				
Conduct research and modeling to understand relationship between snowpack, forest health, and water supply	No	Countywide	Natural Resources	Address in Resource Element policies and text. See Proposed: Policy FL 3.5.
Seek funding for measures to protect and restore fish and wildlife habitats and ecosystem function to support resilience in response to fire and flood events	Partial – fish and wildlife habitat protection, Policy CL 1.3.	Countywide; natural habitat areas, critical areas, etc.	Natural Resources	Protection of fish and wildlife habitat, and critical areas are referenced in the Comprehensive Plan. This is a good starting point to address habitat resilience to fire and flood events. See Proposed: Policy CL 1.4.3.
Provide for water storage near sources to address low stream flow, flooding, fire-fighting, and water supply needs	Partial – Land Use Element; Resource Element; Capital Facilities Element (CF 1.6)	Countywide	Community Development Natural Resources	Resources on watershed planning, and water systems may be helpful. Leverage efforts by the Chelan Co. PUD. See Proposed: Policy LU 3.8.
Refine and leverage previously developed hydrologic model (DHSVM) for Chelan County to test relevant forest management scenarios to understand combined benefits for fire fuels reduction, snowpack retention, and summer streamflow	No	Countywide	Natural Resources	This specific strategy can be supported by a general policy about collecting data for forest management and snowpack, which would also address other similar strategies. See Proposed: Policy FL 3.5.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Convene a panel of experts to review recent and on-going initiatives related to forest management effects on snowpack and water supply to synthesize current efforts and findings, identify critical data gaps, and prioritize next steps to transition from research efforts to forest management applications	No	Countywide	Natural Resources	Address as part of a policy to support ongoing data collection and stakeholder engagement in resilience. See Proposed: Policy FL 3.5.
Assess the capacity of health systems to respond to emerging health and safety threats and to integrate climate preparedness into their hazard response plans and daily operations	No	Countywide	Emergency Management	Refer to Emergency Management Plan and build off strategies identified, including relying on partners like Chelan-Douglas Health District. Apply specific strategies on health systems/infrastructure to assess capacity. Funding resources needed for planning and education. See Proposed: Policy FL 3.3.
Develop priorities and strategies to proactively implement climate change adaptation measures for the most vulnerable and underserved populations	No	Countywide	To be determined liaison Department to other entities that would do the work	Could reference priorities in Comprehensive Plan text in relation to policies supporting adaptation and partnerships. See Proposed: Policy FL 3.3 and text associated with Policy CL 1.19.
Build capacity to assist the most vulnerable people and communities to prepare and respond to threats such as wildfires and flooding.	No	Countywide	Emergency Management Flood Control Zone District Natural Resources	Reference in Comprehensive Plan in text supporting policies on adaptation and preparation for wildfire and flooding. See Proposed: Policy FL 3.3.

Draft Resilience Strategy	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
Identify locations where changes in surface and groundwater flow due to climate change (e.g., larger floods, erosion, fire) could result in new or greater releases of toxic substances to the environment	No	Countywide	Flood Control Zone District Fire Prevention and Investigation Emergency Management	Add as a policy, e.g. in Resource Element. See Proposed: Policy CL 1.21.
Partner with agricultural producers to encourage sustainable farming practices that are aligned with future climate conditions to address adequate water supply and conservation, opportunities for voluntary ecological enhancements in climate vulnerable areas, and other strategies	Partial – Resource Element	Countywide; agricultural areas	Natural Resources	Add policies encouraging incentives for sustainable farming practices and encouraging farmers/agricultural producers to address issues related to changing climate conditions. This policy could also reference support for the Voluntary Stewardship Program that also is a voluntary incentive based program addressing sustainable practices. See Proposed: Policy AL 1.10.
Improve and promote the range of weather-independent and all-season tourism and recreation opportunities.	Partial – Policy ED 2.1	Countywide	No	Tourism is encouraged year-round and is referenced in the Comprehensive Plan. As part of the Comprehensive Plan text, the rationale could be augmented with a discussion of the potential trends of climate change and the potential for all-season tourism and recreation opportunities. See Proposed: Policy LU 12.4.

Exhibit 2. Chelan County Code Greenhouse Gas Reduction Policies, Chapter 13.20

Chelan County Code Section	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
13.20.010 (1) Public Education and Outreach Policy Details. Promote and expand recycling programs, purchasing policies, and employee education to reduce the amount of waste produced.	Policy CF 1.12 addresses coordination of recycling.	Countywide	Solid Waste Management	Greater reference could be made to relevant policies or strategies or Comprehensive Plan text addressing recycling and waste reduction in Chapter 4 of the Solid Waste Management Plan, 2017. See Proposed: Rationale text under CF 1.12.
13.20.010 (2) Transportation-Oriented Policy Details. Provide safe and convenient access for pedestrians and bicyclists to, across and along major transit priority streets.	Transportation element addresses all referenced modes.	Countywide, unincorporated	Public Works	No added policies appear to be needed.
13.20.010 (3) Land Use Policy Details. Evaluate local plans to align with, support, and enhance any regional plans that have been developed consistent with Chelan County's efforts to achieve reductions in GHG emissions when practicable.	GHG reductions not addressed.	Countywide, unincorporated	Community Development	Potential strategies for rural county addressed under separate cover (Action 1 of Grant).
13.20.010 (4) Other Policy Details. (A) Coordinate with other agencies in the region to develop and implement effective waste-to-energy technologies and other innovative GHG reduction options.	Not addressed.	Countywide	Public Works	Energy recovery is addressed in the Solid Waste Management Plan, 2017. Consider adding it in the Capital Facility Element. See Proposed: Policy CF 1.14.1.

Chelan County Code Section	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
(B) Chelan County is a region with an abundance of renewable hydroelectric energy sources. It is our policy to promote development which recognizes and efficiently utilizes this renewable source of energy.	Partial – Policy UE 3.5 regarding Stehekin	Countywide, unincorporated	Public Works	Could expand Policy UE 3.5. Likely need to partner with Chelan PUD. See Proposed: Policy UE 3.6 below UE 3.5.
(C) Recognize that Chelan County is the beneficiary of state and national forest lands in addition to significant developed orchard lands which accommodate carbon sequestration, having a positive effect on carbon emissions in the region. (Res. 2010-103, 11/9/10).	Not addressed	Countywide, forestlands and agricultural lands	Natural Resources	Add policy in Resource Element. See Proposed: Policy FL 1.8.
13.20.020 Publicly owned buildings. The board of Chelan County commissioners hereby adopts the following policies and/or procedures that will benefit its natural resources: (1) All new publicly funded county-owned buildings shall be of energy-efficient design if cost effective.	Policy CF 1.27	County facilities, public buildings	Facility Maintenance	No policy needed.

Chelan County Code Section	Addressed in Comprehensive Plan?	Affect Large or Particular Geographies?	County Departments Involved	Discussion
13.20.020 (2) When deemed necessary by the board of county commissioners, the county may conduct energy audits of its publicly owned buildings, evaluate potential conservation measures, and then carry out those measures if appropriate and cost effective.	Policy CF 1.27	County facilities, public buildings	Facility Maintenance	Could add concept of energy audits as a means to encourage energy conservation to rationale associated with Policy CF 1.27. See Proposed: Amendments to Policy CF 1.27.

Chelan County Climate Policy Integration

Deliverable 3 Draft Comprehensive Plan Amendments

Introduction

Chelan County has developed a climate resiliency strategy with federal, state, and local partners, and brought it to stakeholders for review over 2019 and 2020. The Commerce GMA-Climate Change Planning-Grant allows the County to start the integration of its climate resiliency strategy into its Comprehensive Plan. The County can also incorporate greenhouse gas (GHG) reduction efforts where suited to a rural county, such as Chelan County Code Greenhouse Gas Reduction Policies, Chapter 13.20.

The proposed policy and text changes to the Comprehensive Plan are based on a Comprehensive Plan audit matrix in Deliverable 2. This document accomplishes the following grant step:

- Step 3.1 Following the Plan audit in Action 2, under Action 3 we will develop a complete draft of amendments to the Chelan County 2017-2037 Comprehensive Plan integrating climate change goals, objectives and policies into Growth Management Act required elements.

The document will be part of a docket application and evaluated in 2021, to accomplish the following:

- Step 3.2 Share the draft with County officials and the public (see Action 4).
- Step 3.3 Develop revisions to the proposed goals, objectives and policies for a public hearing and adoption process (see Action 4).

The final Deliverable 3 consists of draft and revised amendments.

The document is organized in the order of Comprehensive Plan Elements. Track changes show additions and deletions to text and policies. Consultant editorial notes are in blue text.

Proposed Policy Amendments

CHAPTER 2 LAND USE ELEMENT

GOAL LU 3: Protect water quality and quantity.

Rationale: The protection of water quality and quantity is important for the public health, the local economy, the environment, and helps to maintain the high quality of life.

Policy 3.1: Support data collection for water quality and quantity which can be used to evaluate land uses and development. Including but not limited to:

- Support the implementation of watershed plans to address water quantity and quality including instream flows. Continue to plan reserves for future population growth and track exempt well use.
- Improve County tracking and coordination efforts with public water providers.
- Evaluate the existing exempt well and reserve tracking system for expansion Countywide.
- Consider varying regulations for each WIRA or sub-basin based on water quantity and quality concerns.
- For areas where physical availability is potentially limiting, support studies on safe sustaining yield of water in relation to planned growth.
- Support mitigation measures including infrastructure projects.
- Support analysis of water bank options, or other alternatives, where instream flow reserves are exhausted, or where there are concerns over legal or physical availability.
- Support development of outreach/educational materials to residents, interest groups and developers.
- Amend the County Comprehensive Plan to reflect new data and revise land uses as appropriate.
- Water source priorities are as follows, in order of priority:

    1. Connection to an existing public water system where available;
    2. Where a public water system is not available, implementation of a new public water system consistent with DOH and CDHD requirements; and
    3. Individual well outside the service of a public water system.

***

Policy LU 3.7: Promote municipal and agricultural water conservation and efficiency efforts in watersheds to manage water demand.

Rationale: Due to climate change, the most consequential change to water supply will be a shift in the timing of natural water availability throughout the year, which may create challenges for adequate water supply when water demand is greatest.

Policy LU 3.8: Allow for water storage near sources to address low stream flow, flooding, firefighting, and water supply needs consistent with watershed plans and development regulations.

Rationale: Due to climate change the water availability timing may change and alter how to provide an adequate water supply when water demand is greatest. Review watershed plans and other irrigation and water district plans for potential strategies and solutions.

Policy LU 3.9: Compatible with state and health district rules, allow for greywater systems and promote water re-use.

Rationale: Greywater could be used for irrigation to conserve potable water.

Goal LU 12: Encourage development and maintenance of recreational facilities and opportunities to meet the needs of residents and visitors.

***

Policy LU 12.4: Improve and promote the range of weather-independent and all-season tourism and recreation opportunities.

Rationale: Anticipated changes in temperature and precipitation are expected to affect availability of winter and summer recreation and tourism, e.g. shorter winter recreation periods and less summer water availability. Adaptation to seasonal conditions would be important to the local economy.

CHAPTER 4 RESOURCE ELEMENT

III. Chelan County Agricultural Lands

Chelan County contains agricultural lands that are important to the economy of the area. It must be recognized that in order to continue to exist, orchards must remain profitable. In an attempt to encourage existing and future agricultural development as a viable land use and a significant economic activity within the County, agricultural lands of long term commercial significance have been designated according to the U.S. Soil Conservation Service's classification for prime and unique farmland soils, and criteria outlined in WAC 365-190-050. These areas have been identified on the land use map designated as Commercial Agricultural Lands (AC). The Growth Management Act defines "long term commercial significance" to include the growing capacity, productivity, and soil composition of the land for long-term commercial production, in consideration with the land's proximity to population areas, and the possibility of more intense uses of the land. ***

GOAL AL 1: Support the viability of agriculture and encourage the continued use of rural and resource lands for agriculturally related land uses.

Goal Rationale: The County benefits from a commercially significant and viable agricultural industry.

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Policy AL 1.6: Support public and private programs and efforts to ensure the viability of the agricultural industry.

Rationale: Strong agricultural markets and a supportive regulatory environment are two of the necessary components of a healthy agricultural industry. Attempts to secure these will be beneficial to the general welfare of the County.

***

Policy AL 1.10: Through the Voluntary Stewardship Program and other programs, encourage agricultural producers to implement sustainable farming practices anticipating future climate conditions, address

adequate water supply and conservation, voluntarily implement ecological enhancements in climate vulnerable areas, and other strategies.

Rationale: Soil health strategies, water conservation, cover crops and no till farming, and other conservation practices can improve resilience to climate change.

V. Chelan County Forest/Timber Lands

Forestland is defined as "land primarily devoted to growing trees for long-term commercial timber production on land that can be economically and practically managed for such production…and has long-term commercial significance," RCW 36.70A.030.

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Land Use Designation/Siting Criteria: Commercial Forest Lands

The growth management process requires identification of forest lands of long-term commercial significance as part of the growth management process. The identification of these lands is an attempt to conserve and encourage existing and future forest practice land uses as a viable, permanent land use and a significant economic activity within the County. Forest land also provides recreational opportunities, scenic value and wildlife habitat. In addition, the identification and land use regulations of the commercially significant forest lands will provide protection for forest lands from encroachment and incompatible land uses. The Growth Management Act defines "long term commercial significance" to include the growing capacity, productivity, and soil composition of the land for long-term commercial production, in consideration with the land's proximity to population areas, and the possibility of more intense uses of the land.

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Comment: New subsection to be added to support new goal and policies.

Wildfire and Resilience

Washington and Chelan County specifically have experienced several large wildfires in recent years uncharacteristic in terms of the acreage that burned at high severity, and significant in terms of- impacts to the livelihoods and resources of affected communities. -Trends of increasing wildfire activity are due to a combination of factors including population growth and development in the wildland-urban interface, a legacy of forest management, and warmer and drier summers that lead to drier fuels (i.e., live and dead vegetation). Wildfire activity is expected to increase across central and eastern Washington as temperatures continue to increase.

Fire-adapted communities are defined as "a knowledgeable, engaged community where actions of residents and agencies in relation to infrastructure, buildings, landscaping and the surrounding ecosystem lessen the need for extensive protection actions and enable the community to safely accept fire as part of the surrounding landscape."[1]

[1] See Fire Adapted Communities Learning Network, Frequently Asked Questions: https://fireadaptednetwork.org/about/frequently-asked-questions/.

The County, State, and Special Districts are working to build resilience to a changing wildfire season and more wildfires with plans and activities including:

- Chelan County Comprehensive Emergency Management Plan, 2020
- Chelan County Multi-Jurisdictional Natural Hazard Mitigation Plan, 2020
- Chelan County Community Wildfire Protection Plan, 2018-2019
- Chelan County and cities' Wildland Urban Interface Codes addressing roofs, vegetation, etc.
- Chelan County Public Utility District, fire hardening efforts (pole materials, vegetation management, paint, etc.)
- Fire Districts education and support for community and homeowner wildfire preparedness
- Cascadia Conservation District Wildfire Preparedness & FirewiseUSA® education materials, wildfire risk assessments, etc. to help build homeowner and community resilience to wildfire
- Washington State Department of Natural Resources (DNR), Wildland Fire Protection 10-Year Strategic Plan
- Washington State DNR, 20-Year Forest Health Strategic Plan for Eastern Washington

From these plans and efforts, this Comprehensive Plan includes a goal and policies to address the County's role in coordinating emergency management, managing land use, and partnering with other entities to promote forest conservation and management to protect and respond to wildfires.

Forest/Timber Resource Lands: Goals & Policies

Goal FL 1: Conserve forest lands of long term commercial significance. Encourage sustainable timber production in rural and resource lands as a viable, permanent land use and a significant economic activity within the community.

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Policy FL 1.7: Use the permit review process to promote implementation of forest management practices that minimize the potential for catastrophic wildfires. In partnership with state and federal agencies and property owners, proactively address fire resiliency through activities such as: pre-fire monitoring, forest treatment, thinning, prescribed fire, and managed natural fire.

Rationale: The potential for catastrophic forest fires ~~as in 1994~~ should be reduced. Coordination with other state and federal entities is necessary as most forest land is in federal or state hands. The Community Wildfire Protection Plan addresses several resiliency efforts.

Policy FL 1.8: Recognize state and national forest lands and orchard lands accommodate carbon sequestration, having a positive effect on carbon emissions in the region.

Rationale: Chelan County contains extensive forest lands and agricultural lands that can absorb carbon emissions.

Goal FL 2: Icicle River Valley: Where appropriate, encourage sustainable timber production in the Icicle Valley.

***

Goal FL 3: Build community resilience and support forest management that reduces and responds to wildfire risk.

Policy FL 3.1: In partnership with state and local entities, build awareness of increasing wildfire risk, encourage wildfire preparedness, and create fire adapted communities.

Rationale: Chelan County can play a role in sharing information and coordinating strategies to prepare communities for resilience to wildfires. The Chelan County Community Wildfire Protection Plan identifies area-specific wildfire preparation and protection strategies.

Policy FL 3.2: Develop fire safe places in fire prone areas through wildland urban interface policies and codes.

Rationale: Chelan County implements fire and building standards as new or altered development is proposed, and continues to monitor and apply newer codes to development in hazard areas.

Policy FL 3.3: Work with partners to integrate climate preparedness into hazard response plans. Coordinate emergency preparedness systems, increase early detection capabilities and communication. Respond to emerging health and safety threats. Assist the most vulnerable people and communities to prepare and respond to threats such as wildfires and flooding.

Rationale: The County Sherriff's Emergency Management Office produces the Comprehensive Emergency Management Plan (CEMP) providing mitigation, preparedness, response, and recovery activities for wildfire and other emergencies and provides it to a range of state, regional, and local agencies. The County develops the CEMP on behalf of the cities of Cashmere, Chelan, Entiat, Leavenworth, and Wenatchee through an interlocal agreement.

Policy FL 3.5: Work in partnership with federal, state, and local entities to test relevant forest management scenarios to understand combined benefits for fire fuels reduction, snowpack retention, summer streamflow, and water supply.

Rationale: Snowpack accumulation and melt rates are related to forest structure as well as climate. Forest management practices could increase snow water storage, change the timing of snowmelt, and support stream flow and fish habitat.[2]

VI. Chelan County Natural Systems/Critical Areas

The Growth Management Act states that counties should "protect critical area." Critical areas include the following areas and ecosystems: (a) wetland; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.

The County has completed the planning process for developing these goals and policies and corresponding regulations following an extensive citizen participation process.

[2] See Goeking, Sara and Tarboton, David, Forests and Water Yield: A Synthesis of Disturbance Effects on Streamflow and Snowpack in Western Coniferous Forests, Journal of Forestry, 2020: https://www.fs.fed.us/rm/pubs_journals/2020/rmrs_2020_goeking_s001.pdf.

Natural Systems: Critical Area Goals & Policies

GOAL CL 1: Identify and protect critical areas from adverse environmental impacts while providing for reasonable use of private property.

Goal Rationale: Preservation of critical areas will help protect the environment and maintain and enhance the quality of life. Implementation regulations should provide for reasonable use of private property.

***

Policy CL 1.4: Regulate development in floodplains to protect property and mitigate the loss of floodplain storage capacity.

Rationale: The loss of floodwater storage results in a potentially greater level of destruction to downstream properties from the resultant higher flood elevations and water flow velocities.

Policy CL 1.4.1: Improve flood warning and information dissemination. Assess risk management, and prepare for rapid response during the flood event.

Rationale: Climate change is expected to increase both the frequency and magnitude of floods in and around Chelan County. The Flood Control Zone District is tasked with flood warning and emergency response, but other agencies also support.

Policy CL 1.4.2: Evaluate and improve stormwater management and infrastructure for high-intensity rainfall events.

Rationale: As warming continues, a greater fraction of winter precipitation will fall as rain rather than snow, increasing winter runoff and streamflow volumes.

Policy CL 1.4.3: Seek funding for measures to protect and restore fish and wildlife habitats and ecosystem function to support resilience in response to flood events. Plan for post-flood replanting and restoration to increase infiltration and slow movement of water and to stabilize ecosystems.

Rationale: As a result of increased flooding, effects on habitat could include greater mortality of juvenile fish and eggs and reduced slow-water habitat.

Policy CL 1.4.4: Relocate, upgrade, or protect critical facilities from wildfire and flooding.

Rationale: Wildfire and floods can affect facilities and services important to emergency response. The County has mapped critical facilities in its Natural Hazard Mitigation Plan and Comprehensive Flood Hazard Management Plan.

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Policy CL 1.12: Encourage the restoration and enhancement of critical areas.

Rationale: The enhancement and restoration of critical areas improves the functions and values they provide.

***

Policy CL 1.17: Support ongoing watershed planning efforts.

Rationale: Watershed planning is essential to address a variety of issues including endangered and threatened species listings and water quantity issues.

Policy CL 1.18: Continue to build partnerships across state, federal, and local agencies to monitor and respond to climate changes and vulnerabilities in forested and shrub-steppe lands. Monitor exotic and invasive species and prioritize protection and enhancement. Coordinate ecological recovery programs for public and private areas subject to fire in forested and shrub-steppe lands.

Rationale: The effects of climate change could include habitat loss and more invasive species, especially in shrub-steppe ecosystems. Climate change also includes a higher risk of wildfire, and with that natural hazard, a need to recover habitat, reduce erosion, and restore ecological conditions.

Policy CL 1.19: Encourage watershed-scale community building to adapt to changing streamflow and snowpack within the watershed.

Rationale: Spring snowpack in the Washington Cascades has declined in recent decades and is expected to further decline with warming in the future. Watershed scale community building efforts can help local communities understand and respond to the effects of changes to streamflow and snow pack. Community-building could address a range of resiliency measures such as: forest practices, riparian enhancement, restoration addressing stream temperatures and flow patterns, management of invasive or non-native aquatic species, irrigation efficiencies, and prioritization of water use as snowpack decreases. An example of community building is the Icicle Work Group, a joint effort between Chelan County and the Washington State Department of Ecology. Within these community building efforts, the County could develop priorities and strategies to proactively implement climate change adaptation measures for the most vulnerable and underserved populations.

Policy CL 1.20: Reduce impacts of climate change to aquatic systems through improvement of in-stream-habitats and floodplain connectivity.

Rationale: The effects of climate change on aquatic systems include warmer stream temperatures during low flow periods, reduced habitat quantity due to lower summer flows, reduced aquatic habitat quality, and more favorable conditions for invasive fish and other aquatic species.

Policy CL 1.21: Identify locations where changes in surface and groundwater flow due to climate change could result in new or greater releases of toxic substances to the environment.

Rationale: Through hazard management planning the County can identify locations at risk of toxic release due to larger floods, erosion, or fire.

Natural Systems: Air Goals & Policies

GOAL NS 1: Protect and maintain air quality.

Goal Rationale: The protection of air quality is important for the public health, the local economy, the environment, and helps to maintain the high quality of life enjoyed by County residents and visitors alike.

Policy NSL 1.1: Support future and ongoing air quality monitoring programs.

Rationale: Monitoring of air quality helps to determine the impacts of growth and development to air quality. Should air quality problems arise, determining the sources of air quality degradation, and educational and regulatory tools to maintain or improve air quality would be necessary. The State of Washington Department of Ecology monitors and track emissions to make sure levels of outdoor air pollutants meet federal and state air quality standards. Ongoing sources of emissions can include

transportation, industry, commercial, agriculture, residential, and others. Air quality can also be affected during and after natural hazards like wildfire.

Policy NS 1.2: Promote industrial development that meets air quality standards and is compatible with adjacent property.

Rationale: Air pollution can cause health problems, obscure visibility, create unpleasant odors and damage animal and plant life.

Policy NS 1.3: Support public awareness of air quality, including wood stove standards and burning restrictions as adopted by the Department of Ecology.

Rationale: Federal and state agencies set air quality standards for outdoor air. The purpose of these standards is to prevent air pollution from reaching levels that hurt human health. When an area does not meet an air quality standard, the state must develop a plan to clean up the air.

Policy NS 1.4: Leverage funding with partners and facilitate proper placement of facilities that collect local climate data including precipitation, wind velocity, temperature, humidity, sunshine, etc.

Rationale: To support an understanding of snowpack, stream flows, wildfire risk, and other conditions important for climate resiliency, watershed planning, emergency management, etc. the County could support federal and state agencies adding stream gages, weather stations, SNOTEL, and other facilities on public lands including forest lands.

Natural Systems: Icicle Valley Goals & Policies

Goal NS 2: ICICLE RIVER VALLEY: Encourage retention of the scenic character and environmental quality of the Icicle Valley.

Goal Rationale: The preservation of the scenic and environmental qualities of the Icicle Valley, ensures the retention of significant open space and recreational opportunities, and critical areas.

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CHAPTER 6 CAPITAL FACILITIES ELEMENT

Policy CF 1.5 Water Systems: Ensure water plans are consistent with the County's Comprehensive plan and the Growth Management Act.

Rationale: Effective comprehensive planning requires consistency among plan elements and plans.

Policy CF 1.6 Water Systems: Support and encourage water conservation measures by local purveyors and educate users on methods to conserve water.

Rationale: Water is a limited resource. Coordination of water use on a watershed basis is encouraged.

Policy CF 1.6.1: Water Systems: Support drought planning to increase water conservation, plant drought-tolerant species, and build awareness around individual risk from drought.

Rationale: The County's Natural Hazard Mitigation Plan addresses drought. The County can implement incentives for development to incorporate drought tolerant landscaping or other design features that conserve water.

Policy CF 1.7 Water Systems: Ensure that individual and public water systems are permitted through the Chelan-Douglas Health District, the Department of Health and the Department of Ecology for appropriate separation requirements and environmental impacts.

Rationale: Seeking domestic water without respect to existing septic/drain field systems, wells and stormwater systems to reduce potential of contamination of the domestic water or negatively impacting existing wells.

Policy CF 1.8 Water Systems: Standards shall be reviewed to ensure appropriate treatment and disposal of stormwater to protect domestic water sources from degradation.

Rationale: Storm water discharges are necessary but must be accomplished in an environmentally safe manner.

***

Policy CF 1.12 Solid Waste: Coordinate with other jurisdictions in the development of recycling programs to reduce waste and to protect the environment.

Rationale: Staff works closely with all regions of the state, particularly the central and eastern counties. Forming a coalition for a voice of continued state support allows all the Chelan County to provide innovative approaches to solid waste disposal. Consistent with Chelan County Code, Chapter 13.20 promoting and expanding recycling programs, purchasing policies, and employee education can reduce the amount of waste produced and support climate goals.

Policy CF 1.13 Solid Waste: Support a multi-jurisdictional approach to disposal of moderate-risk hazardous waste.

Rationale: This policy urges governmental entities in the region to give a high priority to instituting a medium hazardous waste collection program for appropriate disposal at a designated facility.

Policy CF 1.14 Solid Waste: Provide opportunities for the community to regularly and efficiently dispose of household moderate-risk waste and agricultural hazardous waste material.

Rationale: Funding of hazardous waste disposal is critical due to the nature of the material and dangerous handling requirements. Continuous funding assistance is needed by the State, due to the taxes collected on hazardous waste for prevention. Ongoing outreach to the state continues for the needs to fund the collection of hazardous waste. Currently, a facility is under construction and plans for operations where hazardous waste is prevented from contaminating our environment. This policy is intended to stress the importance of providing opportunities for disposal of household hazardous waste and agricultural industry generated hazardous waste.

Policy CF 1.14.1 Solid Waste: Within the priorities of the Chelan Solid Waste Management Plan allow for effective waste-to-energy technologies.

Rationale: Per the County's Solid Waste Management Plan, when used with an energy recovery system, incineration can also produce steam and/or electricity for sale. This can help the County meet its climate policies in Chelan County Code Chapter 13.20.

Policy CF 1.15 Solid Waste: Maintain and update the Chelan Solid Waste Management Plan.

Rationale: Solid Waste management planning and implementation is individual to the County and its source of funding. Programs will be coordinated with other jurisdictions for the success, efficiency and necessity to solve regional waste disposal problems.

Policy CF 1.27 Public Buildings and Facilities: Encourage energy audits and the use of energy conservation design strategies in new construction and the rehabilitation of public facility structures.

Rationale: Energy conservation design strategies for public facilities will help to conserve resources and maintain budgets within anticipated available funding capacities.

CHAPTER 7 UTILITY ELEMENT

Policy UE 3.5: Stehekin Area: Enhance the County's hydroelectric power generation capabilities through improvements to system efficiency, maintenance of hydroelectric facilities, and protection of facilities from erosion and flooding.

Policy UE 3.6 Countywide: Promote development which recognizes and efficiently utilizes renewable sources of energy like hydropower.

Rationale: Chelan County is a region with an abundance of renewable hydroelectric energy sources.

CHAPTER 11 TRANSPORTATION ELEMENT

V. Goal 5 – Environmental Stewardship

Avoid and minimize negative environmental and societal impacts from the transportation system and enhance the natural and social environment when possible.

5.1 Consider and be respectful of the rural and historic character of the county while implementing the transportation element.

5.2 Encourage the development and implementation of transportation demand management programs appropriate for the various communities in the County.

5.3 Coordinate with and adhere to regional, State, and Federal agencies on reducing air quality impacts.

5.4 Consider refinements to roadway design standards so as to minimize impacts on hydrologic systems, including surface and groundwater quality.

- Improve transportation infrastructure where needed, e.g., enlarging bridge crossings.
- Remove or redesign roads that disrupt floodplain function or intercept precipitation and ground water and accelerate its movement into stream systems.
- Consider applying culvert design standards that address fish passage, stream functions and processes, floodplain function, and climate change effects.

5.5 Provide flexibility on the width of pavement and lanes to allow for narrower lanes while still assuring that roadways function safely for cars and trucks, public transportation, bikes, pedestrians, and other service vehicles. The use of alternatives to impervious surface materials, wherever possible, should also be considered.

5.6 Develop alternatives to transportation improvement projects when significant adverse environmental impacts have been identified.

5.7 Develop and apply mitigation strategies to reduce unavoidable adverse environmental impacts of transportation improvements.

Chelan County Climate Grant: Public Participation Plan

Introduction

Chelan County is a rural county of over 77,000 people experiencing the effects of climate change including warming winters, lower snowpack, and increasing temperatures that exacerbates wildfire season and affects in-stream flows, flood severity, and water use. County landscapes, habitats, homes, and businesses are at risk from wildfire and floods. The County is facing tension around water use, interface of development in fire prone areas, changes to agricultural and forestry practices, and changes to winter and summer tourism and recreation.

To meet these needs and concerns, Chelan County has been collaborating with Washington Department of Natural Resources, the Chelan County Public Utilities District, and the University of Washington Climate Impacts Group towards the development of the Chelan County Climate Resiliency Strategy. A draft was developed in fall 2020, drawing from community engagement in 2019 and 2020 (See County-Wide Climate Resilience Planning).

Chelan County received a Commerce GMA-Climate Change Planning-Grant to integrate its Climate Resiliency Strategy into its Comprehensive Plan. The grant steps include:

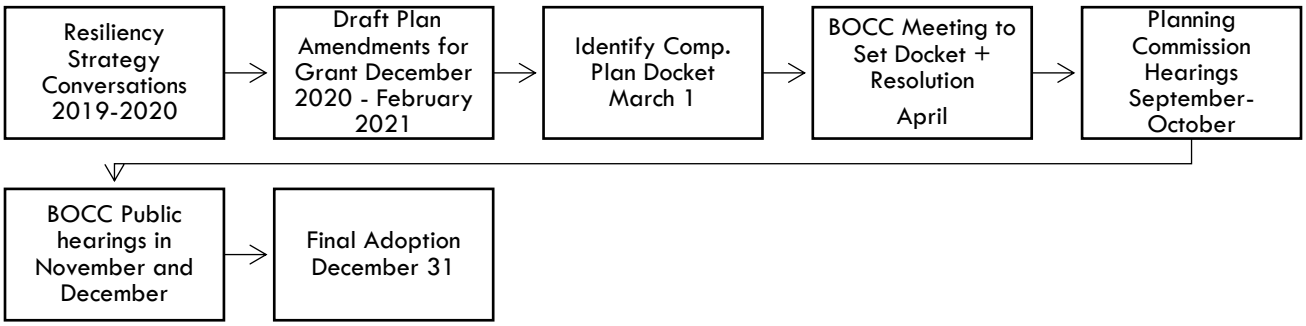
- Action 1: Identify Trends and Conditions
- Action 2: Audit Comprehensive Plan
- Action 3: Prepare Comprehensive Plan Policies
- Action 4: Conduct Public and Legislative Process

The result of the process will be Comprehensive Plan goals, objectives, and policies integrated across plan elements to incorporate strategies and incentives to increase resiliency and reduce greenhouse gas emissions in the context of a rural county. The completion of the grant will include submittal of the draft Comprehensive Plan amendments as part of the County's docket process in spring 2021 for consideration and final adoption in late 2021. This document presents a public participation process to develop draft Comprehensive Plan amendments and share them with the public, stakeholders, and decision makers (Deliverable 4.1).

Docket Process and Schedule

Chelan County provides a process to amend its Comprehensive Plan annually through Chapter 14.14 Comprehensive Plan Amendments (Figure 1).

Figure 1. Comprehensive Plan Docket 2021 – Process Chapter 14.14 Comprehensive Plan Amendments



The grant includes developing draft amendments and adding them to the docket in spring 2021. The resolution setting the grant and proposed draft goals and policies will be provided to the Washington State Department of Commerce in spring 2021, with more review following through the legislative process per County Code.

Public Participation Methods

This Public Participation Plan includes several methods to build awareness of climate change impacts and gain input on the integration of climate resiliency goals, objectives, and policies into the Comprehensive Plan. The steps and anticipated schedule are identified below.

Activity	Anticipated Schedule
Awareness: Add Text and Fact Sheet for County website	February-March 2021
Information Sharing: Story Map*	February-March 2021
Draft Policy Development: Share Draft Text with Stakeholders	▪ County Departments and Climate Resiliency Strategy Partners Review: February 2021 ▪ Submit Draft for Docket Review by March 1, 2021
Docket Review: Board of County Commissioners	▪ Possible Board of County Commissioner work session to share docket items submitted in March. ▪ Board of County Commissioner Public Meeting to set docket in April. ▪ Board of County Commissioner approve Resolution setting docket in April.
Docket Legislative Hearings: Planning Commission and Board of County Commissioners	▪ Planning Commission public hearing and deliberation through September/October 2021.* ▪ Board of County Commissioner public hearing and deliberation through November/December 2021.

* *Optional method of obtaining feedback on the topic of climate resiliency or draft goals, objectives, and policies include a survey as part of the story map or in early Planning Commission review phases.*