Hazards Mitigation Plan for the Thurston Region, 4th Edition

Thurston County Annex

Adopted February 2024

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RESOLUTION NO. 16371

A RESOLUTION adopting the "Hazards Mitigation Plan for the Thurston Region, 4th Edition" and the plan's "Thurston County Annex."

WHEREAS, the Thurston County Board of County Commissioners recognizes the threat that hazards pose to people and property within Thurston County; and

WHEAREAS, Thurston County has actively participated in the Hazards Mitigation Planning Workgroup, which has established a comprehensive, coordinated planning process to reduce or eliminate the effects of these hazards; and

WHEREAS, Thurston County has prepared a multi-hazard mitigation plan, hereby known as "Hazards Mitigation Plan for the Thurston Region, 4th Edition" in accordance with federal laws; and

WHEREAS, Thurston County staff have identified, justified, and prioritized a number of proposed initiatives intended to mitigate impacts of future disasters to unincorporated areas of Thurston County; and

WHEREAS the adoption of this mitigation plan incurs no expense and does not impact the current Thurston County Budget;

NOW THEREFORE, the Board of County Commissioners of Thurston County, Washington, does resolve as follows:

1. Thursday County hereby approves and adopts the "Hazards Mitigation Plan for the Thurston Region, 4th Edition" and the plan's "Thurston County Annex" as its all-hazards mitigation plan.

2. Thurston County staff are authorized to include minor language changes required by the Federal Emergency Management Agency to obtain federal approval without Board re-adoption of the plan.

3. Thurston County staff are requested and instructed to pursue available funding opportunities for implementation of the mitigation initiatives outlined in both the core "Hazards Mitigation Plan for the Thurston Region" and the "Thurston County Annex".

4. Thurston County will, upon receipt of such funding or other necessary resources, seek to implement the proposed mitigation initiatives.

5. Thurston County will continue to participate in the updating and expansion of the "Hazards Mitigation Plan for the Thurston Region" in the years ahead.

ADOPTED: February 20, 2024

ATTEST:

BY: _____
Clerk of the Board

APPROVED AS TO FORM:
JON TUNHEIM
PROSECUTING ATTORNEY

BY: _____
Deputy Prosecuting Attorney

BOARD OF COUNTY COMMISSIONERS
THURSTON COUNTY, WASHINGTON

_____
TYE MENSER, Chair

_____
WAYNE FOURNIER, Vice-Chair

_____
CAROLINA MEJIA, Commissioner

2-21-24
GARY EDWARDS, Commissioner

_____
EMILY CLOUSE, Commissioner

Chapter 1: Plan Development Process

A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))

The following document serves as unincorporated Thurston County government's annex to the Hazard Mitigation Plan for the Thurston Region, 4th edition (hereafter referred to as the c*ore plan*). The core plan and its information referenced in this annex can be found on Thurston Regional Planning Council's website[1].

1.1 Hazard Mitigation Planning Team

Thurston County Emergency Services, Emergency Management Division, led the development of the county's update to its hazard mitigation plan annex with participation from key staff in the following county departments and offices: Community Planning and Economic Development, Public Works, Geodata Services, and Information Technology.

The following individuals served as the Thurston County Hazard Mitigation Planning Team.

Department/Title	Representative
Emergency Management, Manager	Kyle Bustad
Emergency Management, Coordinator	Brandon Cheney
Emergency Management, Coordinator	Cherie Carey
Emergency Management, Coordinator	Emily Schoendorf
Emergency Management, Coordinator	Sonya Kroese
Emergency Management, Coordinator	Mike Presswood
Emergency Services, Fiscal Manager	Joy Keene
Geodata Services, GIS Analyst III	Kelly Alfaro Haugen
Geodata Services, GIS Analyst II	Leslie Carman
Geodata Services, GIS Analyst II	Sarah Smith
Community Planning & Economic Development, Water Monitoring Supervisor	Mark Biever
Community Planning & Economic Development, Hydrogeologist	Kevin Hansen
Community Planning & Economic Development, Senior Planner	Brad Murphy
Community Planning & Economic Development, Building and Planning Manager	Brett Bures
Public Works, Strategic Planner	Shannon Shula
Public Works, Stormwater Operations Manager	Ryan Langan
Public Works, Water Resources Manager	Tim Wilson
Public Works, Road Operations Manager	Mike Lowman
Public Works, Water Resources Utility Planner	Shannon Peterson
Information Technology, Director	Sherrie Ilg
Board of County Commissioners, Climate Mitigation Senior Program Manager	Rebecca Harvey

[1] Thurston Regional Planning Council, *Hazards Mitigation Plan for the Thurston Region,* 2023, URL: https://www.trpc.org/160/Hazards-Mitigation-Plan

1.2 Hazard Mitigation Planning Team Development Activities

The following activities supported the development of the county's local hazard mitigation planning process.

Actions and Activities	Date
Cherie Carey and Thurston Regional Planning Council briefing to the Board of County Commissioners on hazard mitigation plan update project	7/15/2021
Meeting between Cherie Carey and Thurston Regional Planning Council: strategy for county annex plan development, review of planning team members	3/31/2022
Meeting with planning team members: project background, capability assessment, mitigation strategy review.	4/13/2022
Meeting between Cherie Carey, Vivian Eason, and Thurston Regional Planning Council to discuss public outreach and education	5/26/2022
Meeting with planning team members: mitigation action review, community survey engagement, capability assessment review.	6/08/2022
Meeting between Cherie Carey, Thurston Regional Planning Council and TetraTech on development of hazard risk and vulnerability analysis	
Email to Thurston Regional Planning Council: submission of Thurston County critical facilities inventory for risk assessment.	8/31/2022
Meeting between Brandon Cheney, Kevin Hansen & Mark Biever: risk assessment review, capacity and capabilities review, review of mitigation action items.	1/19/2022
Meeting with planning team members: hazard risk assessment review, planning policy review, mitigation strategy update and review	2/17/2023
Email to workgroup: review of mitigation initiative updates	6/1/2023
Meeting with planning team members: cost-benefit and prioritization of mitigation initiatives	6/9/2023
Meeting between Mark Biever and Rebecca Harvey: assessment of impacts on climate change for mitigation initiatives	7/14/2023
Meeting with planning team members: final prioritization of mitigation initiatives and capability assessment updates.	7/18/2023
Meeting between Cherie Carey and Thurston County Communicators Group to discuss education and outreach capabilities for hazard mitigation.	7/20/2023
Email correspondence between Brandon Cheney, Emily Schoendorf, and Geodata Center staff on administrative & technical GIS and data capabilities assessment.	8/9/2023
Meeting between Brandon Cheney and Tim Rubert (County Floodplain Manager) to assess County's National Flood Insurance Program (NFIP) compliance.	8/16/2023
Meeting between Brandon Cheney, Emily Schoendorf, Joy Keene and county financial managers to discuss financial capabilities for hazard mitigation.	8/23/2023
Meeting with planning team members: review of capabilities assessment and draft risk assessment; discussion on plan maintenance	8/29/2023
Draft version of Thurston County Annex sent to planning team members for review	9/7/2023
Meeting with planning team members; final review of Thurston County annex prior to official review; discussion on plan maintenance	9/27/2023
Thurston County Emergency Management briefing to the Board of County Commissioners regarding the adoption of the updated core plan and annex	1/24/2024
Board of County Commissioners adoption of the updated core plan and annex	2/20/2024

1.3 Thurston Region Stakeholder Involvement

A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))

Select representatives from the Thurston County Hazard Mitigation Planning Team engaged with key stakeholders and community representatives across the Thurston Region. As representatives within the Thurston Hazard Mitigation Planning Workgroup, planning team members participated in multi-jurisdictional stakeholder engagement activities as outlined in Chapter 6.0 of the core plan.

The following individuals from the Thurston County Hazard Mitigation Planning Team served as stakeholder representatives in the Thurston Hazard Mitigation Workgroup:

Department/Title	Representative
Emergency Management, Coordinator	Brandon Cheney
Emergency Management, Coordinator	Cherie Carey
Emergency Management, Coordinator	Mike Presswood
Emergency Services, Fiscal Manager	Joy Keene
Geodata Services, GIS Analyst II	Leslie Carman
Community Planning & Economic Development, Hydrogeologist	Kevin Hansen
Public Works, Strategic Planner	Shannon Shula

The above representatives engaged regional stakeholders during activities outlined in the planning and development process for the core plan update. In addition to contributing to the development of the core plan, these representatives relayed information from the multi-jurisdictional planning team to the local planning team to ensure input from external stakeholders across the region was considered in the planning and development of the Thurston County annex.

1.4 Opportunities for Public Participation in the Plan Development

A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))

Throughout the planning process, county staff and members of the planning team supported Thurston Regional Planning Council and the regional planning team to engage the public and share updates to the hazard mitigation plan with senior and elected officials through the following activities:

Actions and Activities	Date
Hazards Mitigation Plan project updates shared with Thurston County Emergency Management Council by county emergency management staff and TRPC	Monthly
Information and links to the mitigation plan update website posted to Thurston County Emergency Management's social media platforms (Facebook, Instagram, Twitter)	Continuous
Hazard Mitigation Plan updates shared during Thurston County Local Emergency Planning Committee (LEPC) meeting	1/27/2022
Hazard Mitigation Plan updates shared during Thurston County Local Emergency Planning Committee (LEPC) meeting	4/28/2022
Hazard Mitigation Plan survey announced in the county's *Friday Five* newsletter	6/10/2022
Thurston County Emergency Management staff attended a South Sound BBQ event with City of Lacey to share information on the Hazard Mitigation Plan update and survey.	7/10/2022
Hazard Mitigation Plan updates shared during Thurston County Local Emergency Planning Committee (LEPC) meeting	7/28/2022
Hazard Mitigation Plan updates shared during Thurston County Local Emergency Planning Committee (LEPC) meeting	10/10/2022
Hazard Mitigation Plan updates discussed with senior and elected officials at bi-annual Executive Seminar hosted by Thurston County Emergency Management.	12/12/2022
Updates to the Hazard Mitigation Plan updates discussed with senior and elected officials at bi-annual Executive Seminar hosted by Thurston County Emergency Management.	6/5/2023
Thurston County Emergency Management and Thurston Regional Planning Council staffed an informational booth on the Hazard Mitigation Plan update at the Thurston County Fair.	7/26/23 – 7/30/23
Hazard Mitigation Plan update information online open house and survey information shared by Thurston County Emergency Management staff at Yelm National Night Out event.	8/01/2023
Hazard Mitigation Plan online open house and survey posted on the county's *Friday Five Newsletter*	8/4/2023
Hazard Mitigation Plan update online open house and survey information and promotional video shared on Thurston County Emergency Management social media pages (Facebook, Instagram, Twitter)	8/8/2023
Hazard Mitigation Plan update online open house and survey information shared in Thurston GeoData newsletter	8/14/2023
Hazard Mitigation Plan update online open house and survey information shared on Thurston County Emergency Management social media pages (Facebook, Instagram, Twitter)	8/22/2023
Thurston County Emergency Management staffed Hazard Mitigation information booth with Thurston Regional Planning Council at Thurston County Preparedness Expo.	9/23/2023

1.5 Review and Incorporation of Existing Plans, Studies, and Technical Information into the Hazard Mitigation Plan Update

A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))

1.5.1 Reference Documents

In addition to documents referenced in the development of the core plan, the following additional documents were reviewed during the development of the county's annex:

FEMA, Local Mitigation Planning Policy Guide, FP 206-21-0002 / OMB #1660-0062, April 19, 2022. URL: https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-policy-guide_042022.pdf

Thurston Regional Planning Council, Hazards Mitigation Plan for the Thurston Region, 4th Ed., 2023, URL: https://www.trpc.org/1100/Plan-Documents

Thurston County Annex to the Hazards Mitigation Plan for the Thurston Region, 3rd Edition, June 13, 2017. URL: https://www.trpc.org/DocumentCenter/View/6153/ANNEX_ThurstonCounty

Thurston County Comprehensive Plan, December 23, 2020, URL: https://www.thurstoncountywa.gov/departments/community-planning-and-economic-development/community-planning/comprehensive-plan/current-comprehensive-plan

Thurston County Comprehensive Emergency Management Plan, June 29, 2021, URL: https://www.thurstoncountywa.gov/departments/emergency-management/emergency-plans/comprehensive-emergency-management-plan-cemp

Thurston County, Stormwater Capital Facilities Plan CFR Period 2018-2023, URL: https://www.thurstoncountywa.gov/departments/community-planning-and-economic-development-cped/community-planning/capital-facilities

Thurston County Shoreline Master Program, 2020, URL: https://www.thurstoncountywa.gov/departments/community-planning-and-economic-development-cped/community-planning/shorelines

Thurston County Climate Adaptation Plan, 2018, URL: https://www.trpc.org/DocumentCenter/View/4936/ClimatePlan_pgs1_103?bidId=

1.5.2 Geospatial Technical Information

Geographic information systems (GIS) data and maps maintained by the county's Geodata Center were referenced during the plan development process. Datasets referenced include parcel data, stream and waterbody boundaries, National Flood Insurance Program (NFIP) flood hazard zones and Flood Insurance Rate Maps (FIRMs), Light Detection and Ranging (LiDAR), landslide hazard data, roads, bridges, and contours.

Datasets produced for the plan's hazard risk and vulnerability assessment by consultant company TetraTech, and subsequent maps produced by Thurston Regional Planning Council, were also referenced during plan development. Datasets incorporated by TetraTech into the hazard risk assessment come from a variety of local, state, federal and nongovernmental sources. Additional information on technical information produced by TetraTech can be found in Chapter 2 of the core plan.

1.6 Integration of Hazard Mitigation Plan into other Planning Mechanisms

E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?

Thurston County recognizes that sustainability, resiliency, and mitigation all help facilitate community recovery. To that end, Thurston County has integrated the concepts and data developed for the Hazards Mitigation Plan for the Thurston Region directly or indirectly into many county plans and programs.

D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))

When appropriate, Thurston County Emergency Management staff coordinate with other county departments and elected offices to incorporate hazard mitigation planning into other planning mechanisms by providing mitigation planning staff as representees for various planning teams and project teams within the county.

1.6.1 Comprehensive Planning

Thurston County periodically assesses and updates its Comprehensive Plan[2]. In 2013, FEMA Region 10 cited Thurston County as an example community for integration of hazards mitigation into its comprehensive plans. The Thurston County Comprehensive Plan incorporates mitigation into many components of the plan including land use, capital facilities, environmental recreation & open space, and health. The county is currently underway with a project to review and update its comprehensive plan called Thurston 2045[3]. Among other changes, the update will include development of a new climate change element that will address hazard mitigation.

1.6.2 Comprehensive Emergency Management Planning

In addition to coordinating the development of the county's Hazard Mitigation Plan, Thurston County Emergency Management maintains and periodically updates preparedness, response, and recovery plans through its Comprehensive Emergency Management Plan (CEMP). In addition to mitigation being a key component that is integrated into the plan, the county also integrates the hazards risk and vulnerability assessment from the mitigation plan for use in updating the county's other risk assessments, including the Threat Hazard Identification and Risk Assessment (THIRA) and Hazard Identification and Vulnerability Assessment (HIVA). These risk assessments, drawn primarily from the hazard mitigation plan, serve as a foundation for the county's other emergency plans.

1.6.3 Floodplain Management & Planning

The county routinely updates its Flood Hazards Mitigation Plan in support of maintaining its participation in the Community Rating System (CRS). This plan draws extensively from the Hazards Mitigation Plan including hazard data, mitigation goals, objectives, and initiatives. In addition to this work, Thurston County has worked with FEMA on several Risk MAP projects to update Flood Insurance Rate Maps (FIRM) for the Chehalis River Basin (2020), Nisqually River (2021), and Thurston County lakes (2022).

[2] Thurston County, *Thurston County Comprehensive Plan,* 2020, URL: https://www.thurstoncountywa.gov/departments/community-planning-and-economic-development/community-planning/comprehensive-plan/current-comprehensive-plan

[3] Thurston County, *Thurston 2045,* URL: https://storymaps.arcgis.com/stories/4486b8288f054456a99f68a3b1087664

1.7 Plan Maintenance and Monitoring

D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))

With policy guidance provided by the Thurston County Emergency Management Council, who serves as the steering committee for the county's multi-jurisdictional hazard mitigation planning, Thurston County Emergency Management serves as the regional facilitator for monitoring and maintenance of the core plan for the Thurston region. Descriptions of the plan maintenance and monitoring activities led by the county are described in Chapter 5 of the core plan.

Unincorporated Thurston County's maintenance and monitoring schedule is modeled after the process described in Chapter 5 of the core plan. Prior to the annual monitoring meetings for the core plan, the Thurston Hazard Mitigation Planning Workgroup will convene to share updates and opportunities on projects. This information will then be summarized and shared with the multi-jurisdictional Hazard Mitigation Planning Workgroup. Other meetings will be convened as needed to coordinate plan implementation and information sharing between the Thurston County Hazard Mitigation Planning Team and plan implementation partners.

Thurston County will continue to promote public participation in the plan maintenance process by sharing information and updates on the plan events and activities listed below, including those listed in Chapter 5 of the core plan.

Ongoing Public Participation Actions and Activities	Frequency
Hazard mitigation information maintained on the Thurston County Emergency Management website[4]	Continuous
Hazard data and information maintained by Thurston County GeoData and made available through public facing online maps[5]	Continuous
Plan and project updates shared with the Thurston County Emergency Management Council	Monthly
Information booth on Hazard Mitigation and the Hazard Mitigation Plan staffed at Thurston County Preparedness Expo	Annually
Information booth on Hazard Mitigation and the Hazard Mitigation Plan staffed at Thurston County Fair	Annually
Publication and mailing of the Thurston County Flood Bulletin, which includes mitigation information	Annually
Seminars on hazard risks, mitigation, and preparedness hosted with partner agencies and community groups.	Upon request

[4] https://www.thurstoncountywa.gov/departments/emergency-management

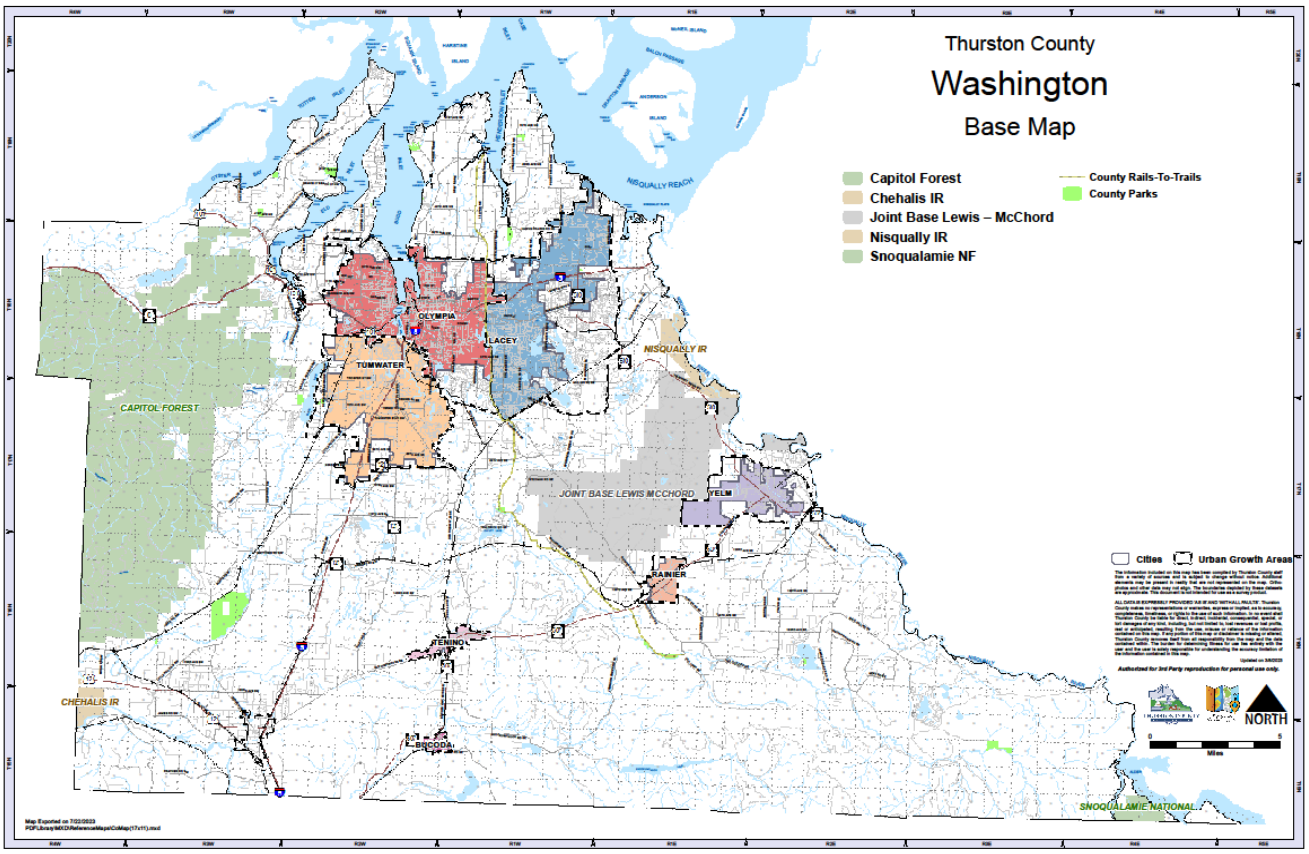
[5] Thurston County GeoData Center, *Online Maps,* URL: https://www.thurstoncountywa.gov/departments/geodata-center/all-map-options/online-maps

Chapter 2: Planning Area Profile

2.1 Geographic Profile

The county contains a total area of 737 square miles, or 471,713 acres. Approximately 688 square miles (440,545 acres), or 93 percent of the total area, lies in unincorporated Thurston County. The remaining seven percent is divided among the seven incorporated cities and towns of Olympia, Lacey, Tumwater, Bucoda, Rainier, Tenino, and Yelm. Timber harvest and other natural resource uses historically cover much of the region, and still dominate land use across rural parts of the county. Residential uses spread from urban areas along transportation routes, up through the Puget Sound peninsulas in the northern end of the county, and around many lakes. Major landowners in the unincorporated county include the State of Washington (including Capitol Forest), the federal government (including Joint Base Lewis-McChord and Nisqually Wildlife Refuge), and private timber companies.[6]

Thurston County includes landforms varying from coastal lowlands in the north county, to cascade foothills in the southeast. Generally, the county is a region of prairies and rolling lowlands, broken by minor hills and a few peaks which rise to elevations of about 2,900 feet. There are over 90 miles of Puget Sound coastline, three major river basins, and over 100 lakes and ponds in Thurston County.[6]



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[6] Thurston County, *Thurston County Comprehensive Plan, pg.1-8*, December 23, 2020,

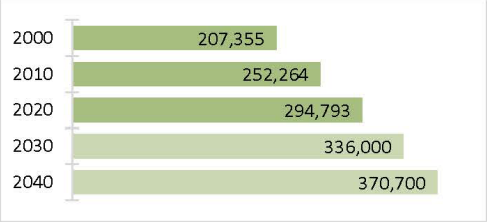
[7] Thurston County Geodata Center, *County Base Map*, August 5, 2023

2.2 Demographics, Households, and Housing

Thurston County **2022 Statistical Profile**

Demographics

Population – Estimates & Projections



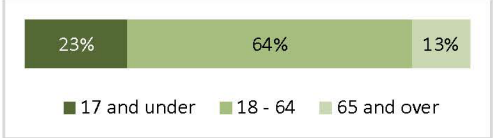
Average Annual Population Growth

2000-2010:	2.0% per year
2010-2020:	1.6% per year

Language Spoken at Home (2016-2020)*

English Only	88.7%
Spanish	4.2%
Korean	0.9%
Chinese	0.5%
Vietnamese	1.0%
Tagalog	0.8%
Other Language	3.9%
TOTAL	100.0%

Age (2010)



Median Age: 39

Race & Ethnicity (2020)

Race

White	73%
Black & African American	3%
American Indian & Alaska Native	2%
Asian	6%
Native Hawaiian & Other Pacific Islander	1%
Other Race	4%
Two or More Races	12%
TOTAL	**100%**

Ethnicity

Hispanic or Latino	10%
Not Hispanic or Latino	90%
TOTAL	**100%**

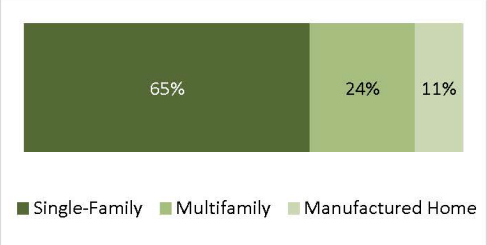
Households & Housing

Households (2020)

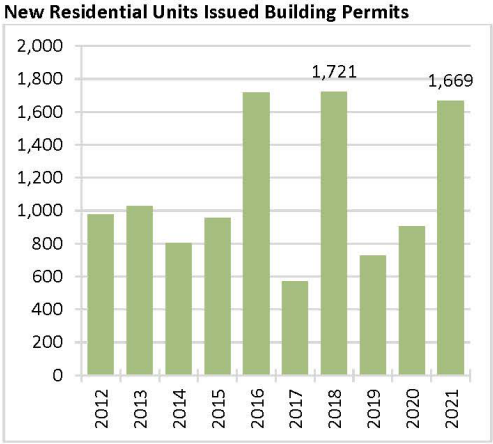
Total Households:	115,397
Average Household Size:	2.51

Median Home Sale Price (2021): $455,000

Existing Housing Units (2022)



New Residential Units Issued Building Permits



**Estimates based on survey data and may have a large margin of error.* *Updated Nov. 2022*

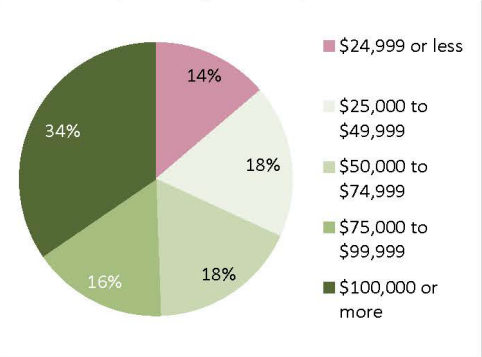
2.3 Employment and Income

Thurston County **2022 Statistical Profile**

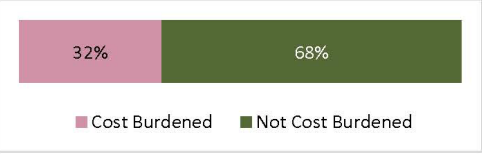
Employment & Income

Median Household Income*

Households by Income (2016-2020)*



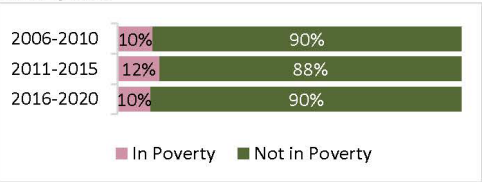
Cost Burdened Households (2016-2020)*



Cost Burdened	36,254
*Severely Cost Burdened***	*15,064*
Not Cost Burdened	76,069
TOTAL Households	**112,323**

***Severely cost burdened households are a subset of cost burdened households.*

Poverty Rate*

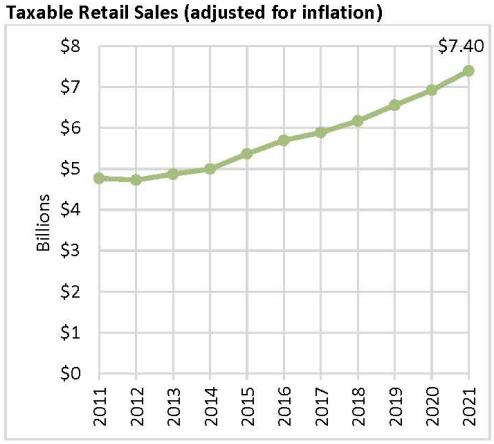


Jobs (2017 Estimate)

Resource, Construction, Utilities	11,400
Manufacturing, Wholesale Trade	7,500
Retail, Accommodation, Food	25,700
Transportation, Warehousing	3,300
Services	51,000
Finance, Insurance, Real Estate	10,400
Government	39,500
Total Jobs**	**148,700**

***Numbers may not add due to rounding.*

Taxable Retail Sales (adjusted for inflation)



LEARN MORE about statistics, trends, analyses and comparisons for Thurston County and its jurisdictions at The Profile: www.trpc.org/theprofile.

Thurston Regional Planning Council
2411 Chandler Ct SW
Olympia, WA 98502
info@trpc.org
Ph: 360-956-7575

**Estimates based on survey data and may have a large margin of error.* *Updated Nov. 2022*

[8] Thurston Regional Planning Council, *The Profile,* 2022, www.trpc.org

Chapter 3: Risk Assessment

B1. Does the plan include a description of the type, location and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))

3.1 Introduction

Chapters 4.0 through 4.9 of the core plan include detailed descriptions and information on the nine natural hazards that have affected or are likely to affect Thurston County in the future. The Risk Assessment includes hazard profiles that describe the hazards, their causes, sources, severity, effects and impacts, probability of occurrence, historical occurrences, geographic extent or delineation, and the portion of the population, assets, and essential facilities potentially exposed to the hazard. Hazard maps for the county are included at the end of this chapter, in Section 3.6.

3.2 Hazard Risk Summary

B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))

Chapters 4.0 through 4.9 of the core plan include summaries of the vulnerabilities and impacts on Thurston County communities for each of the assessed hazards. Because the core plan treats the entire county as the planning area, of which unincorporated Thurston County makes up approximately 93 percent, the core plan's risk assessment is the definitive risk assessment for Thurston County. Below is a summary of the hazard risk rankings for Thurston County:

Summary Assessment of Thurston County's Hazard Risks

Hazard Type	Risk Ranking Score	Hazard Risk Rating
Earthquake	34	High
Wildfire	34	High
Severe Weather	18	Medium
Flood	18	Medium
Landslide	18	Medium
Sea-Level Rise	18	Medium
Tsunami	12	Low
Volcanic Lahar	6	Low
Dam Failure	6	Low

3.3 Impacts from Changes in Development

E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?

Thurston County's population has increased from 272,700 in 2016 to 294,793 in 2020, with an estimated population of 143,335 residing in unincorporated Thurston County. Since the 2017 plan update, unincorporated Thurston County has issued 1,749 residential building permits for new homes with an estimated total of 36,220 residential structures as of 2023. By 2030, the county is estimated to increase the number of residential structures in unincorporated areas to 39,050. Additionally, Thurston County is experiencing more commuter and visitor traffic. This includes more people commuting to work, shopping, and recreating in Thurston County and passing through the County to work, shop, and recreate in surrounding areas of Pierce, Lewis, Mason, and Grays Harbor counties. Thurston County is at the crossroads from Portland to Seattle and from the Cascades to the coast. Therefore, despite all the positive actions Thurston County has taken to reduce and minimize the risk and exposure to hazards, the population exposed to hazards at any given time is greater. This net growth in population and new development has influenced impacts on all hazards assessed in the plan as described below.

3.3.1 Earthquake Impacts

The entire planning area of unincorporated Thurston County is impacted by earthquake hazards. Therefore, growth in population and new development since the last plan update has led to an increased vulnerability to earthquake in the county. However, new development is subject to existing seismic hazard area codes under the county's Critical Areas Ordinance (Chapter 24.16) which regulates development of structures, roads, bridges, and utilities in areas of high liquefaction susceptibility as determined by the best available geological survey data from United States Geological Survey and Washington State Department of Natural Resources. Therefore, while growth in development has increased the county's level of exposure to earthquake hazards, the impacts of those exposures are mitigated by the restriction of new development in highly vulnerable locations.

3.3.2 Wildfire Impacts

All inhabited areas within unincorporated Thurston County reside within the wildland urban interface and intermix (WUI), defined by the U.S. Fire Administration as:

> *The zone of transition between unoccupied land and human development. It is the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.*[9]

In recent years, wildfire experts have started using the WUI as one of several criteria that determines a community's exposure to wildfire risk.[9] The presence of wildland or vegetative fuels next to structures creates the potential for embers and flames from wildfire to ignite nearby businesses and homes under extreme wildfire conditions (low relative humidity, strong surface wind, unstable air, and drought). Since the last mitigation plan update, all new development in unincorporated Thurston County has occurred inside of or adjacent to WUI areas. These changes in development, paired with increases in severity and frequency of extreme wildfire conditions throughout the region,[10] have increased the county's vulnerability to wildfire hazards. While the entire unincorporated area of Thurston County resides within the WUI, the greatest increases in vulnerability are seen in the south county communities where wildfires sustained by extreme conditions have become more frequent in the past 5 years.

In 2021, the Washington State Building and Development Code Council developed legislation to implement new wildfire protection codes based on WUI maps and data. The statewide WUI codes are scheduled to be adopted into the county's building and development codes in October 2023. In tandem with the implementation of the new statewide WUI codes to incorporate wildfire mitigation in new development, the county will also seek to promote communities to implement wildfire mitigation measures on existing structures and form wildfire resilient communities through promotion of various wildfire mitigation and preparedness programs (see initiative TC-WH-01).

3.3.3 Severe Weather Impacts

Severe weather in the form of extreme heat, extreme cold, windstorms, thunderstorms, snow, and rainfall impact the entire county planning area. Thus, overall increases in population and development have resulted in a net increase in exposure to severe weather hazards. Communities within unincorporated Thurston County have longstanding experience with the area's winter storms, so while exposure may have increased, the community's vulnerability to winter weather hazards remains relatively the same as before.

However, the more significant vulnerability from severe weather in recent years has been extreme heat, due largely in part to a lack of adequate cooling infrastructure for vulnerable populations who have historically not experienced the frequency and severity of heatwaves the county has seen in the last five years. In recognition of this growing vulnerability, the county planning team collaborated with regional mitigation planners to create a mitigation initiative to develop an extreme heat response plan. This new mitigation action has been codified in the core plan as part of the countywide mitigation strategy (see Chapter 2, initiative CW-SH-2 in the core plan).

[9] United States Fire Administration, *Wildfire and the Wildland Urban Interface (WUI)* https://www.usfa.fema.gov/wui/
[10] See page ## of the Hazard Mitigation Plan for the Thurston Region for wildfire impacts due to climate change.

3.3.4 Flood Impacts

Despite significant growth, the county has seen little increase in vulnerability from floods due to changes in development. Thurston County has a strong framework of policies and laws that help to reduce property damage from floods as well as protect the natural, ecological benefits of floodplains. The county also has robust development regulations and codes in place to restrict new development within special flood hazard zones. Chapter 17.15.925 of the Thurston County Code of Ordinances prohibits fill, single family residences, utility facility, and agricultural buildings in designated floodplain areas. See Chapter 4 – Capabilities Assessment for more information on the county's legal and regulatory capabilities and participation in the National Flood Insurance Program (NFIP).

3.3.5 Landslide Impacts

Unincorporated Thurston County has not experienced significant development growth within known and potential landslide hazard areas due largely in part to the county's strong technical and regulatory capabilities in place to mitigate development impacts in these areas. The county works with local, state, and federal agency partners to maintain landslide hazard maps based on best available science and data (see initiative TC-MH-10). The county uses this landslide hazard data to enforce code within the County Critical Area Ordinance under Chapter 24.15 - Geologic Hazard Areas.

3.3.6 Sea Level Rise Impacts

Sea level rise impacts unincorporated county areas residing along the marine shoreline of the Puget Sound, to include Oyster Bay, Totten Inlet, Eld Inlet, Budd Inlet, Henderson Inlet, and the Nisqually Reach where residential development remains vulnerable to coastal flooding and shoreline erosion. Significant development along these Puget Sound shorelines within unincorporated Thurston County are regulated under the county's Shoreline Master Program (Title 19) and land use and zoning codes (Title 20). All land regulated by unincorporated Thurston County that is adjacent to marine shorelines is primarily zoned for rural residential and resource use, which limits residential development to one unit per five acres and no more than one primary residential structure per lot. In addition to zoning codes that promote open space along the county's marine shorelines, the Shoreline Master Program requires buffer zones between marine shoreline and structures. These actions have helped to mitigate impacts from changes in county's vulnerability to sea level rise due to new development. The county is committed to maintaining these efforts to continue to reduce future development impacts from sea level rise through major updates to the county's existing Shoreline Master Plan and ongoing efforts to promote shore friendly programs for both hazard mitigation and habitat conservation (see initiative TC-FH-27).

3.3.7 Volcano/Lahar Impacts

The area of impact from a potential Mt. Rainier lahar generally overlaps the flood hazard area of the Nisqually River. Thus, most of the new development within this area is already restricted under the county's existing flood development regulations and codes. As a result, the county has experienced minimal impacts from changes in development in this hazard area.

3.3.8 Tsunami Impacts

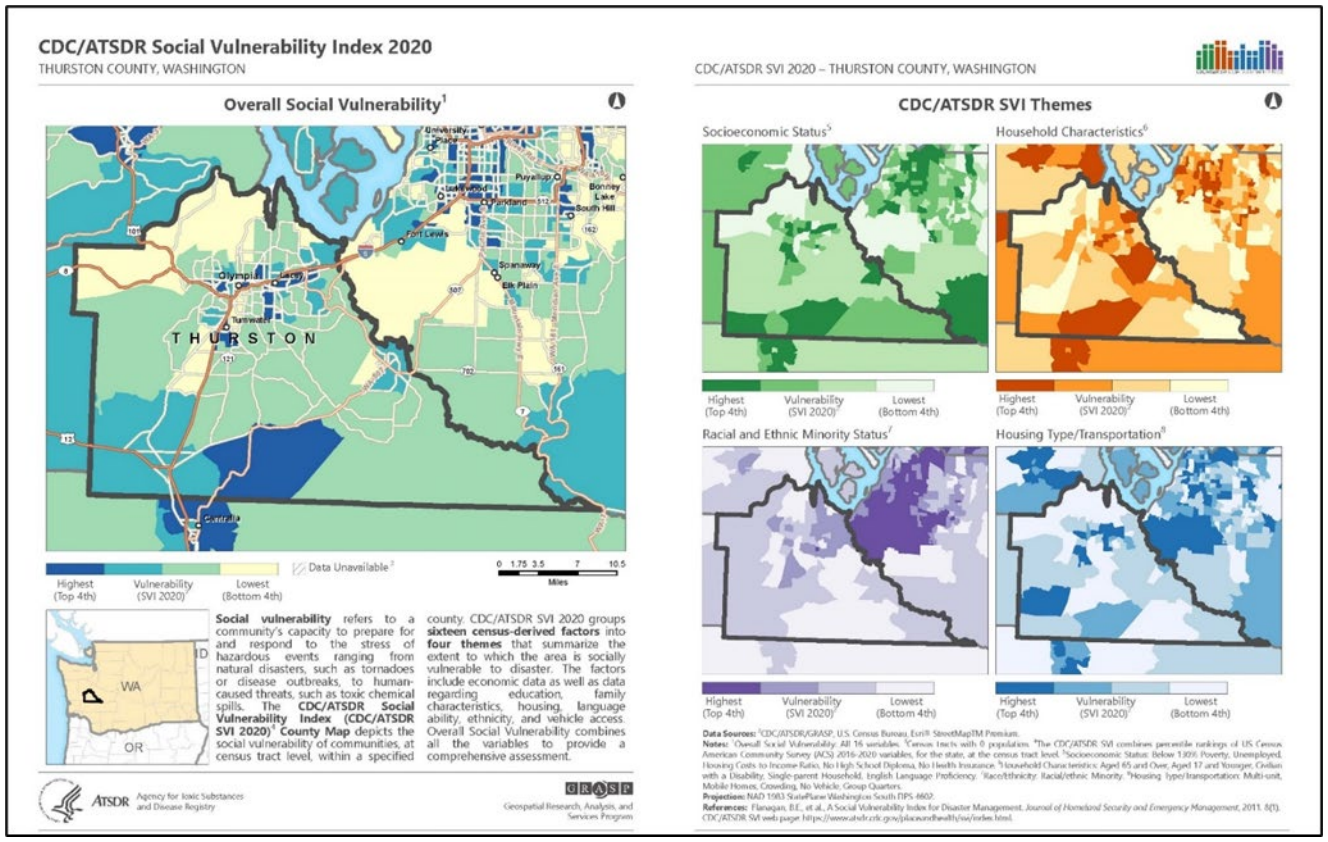
The area of impact from a potential tsunami covers areas of unincorporated Thurston County that already have robust flood and shoreline development regulations (refer to flood and sea level rise in this section). The county has seen little change in its vulnerability to tsunami hazards due to changes in development.

3.3.9 Dam Failure Impacts

Dam Failure is a newly assessed hazard under the current update to the core plan; there was no previous vulnerability assessment available to planners to assess impacts due to changes in development. Just like lahar hazards, the areas of impact from potential dam failure generally coincide with special flood hazard areas and have existing policies and regulations to limit new development.

3.4 Impacts on Socially Vulnerable Populations

Data and statistics prepared by the Center for Disease Control, Agency for Toxic Substances and Disease Registry's Social Vulnerability Index[11] were referenced during the hazard risk assessment. Within the boundaries of unincorporated Thurston County, the most socially vulnerable populations reside primarily in the more rural south and southeast areas of the county near Grand Mound, Rochester, Little Rock, Bucoda and Tenino. Other areas with greater social vulnerability include communities along the Nisqually River near the City of Yelm and the lower Nisqually delta.



3.4.1 Earthquake Impacts on Socially Vulnerable Populations

The impacts from earthquakes on socially vulnerable populations are not unique for unincorporated areas of the county; a significant earthquake would impact socially vulnerable populations universally across the regional planning area as described in the core plan. However, a particularly significant vulnerability for communities within rural unincorporated areas of the county is the dependency on private roads and bridges. Many residential areas within the county rely heavily on privately owned roads and bridges for access to essential services. Should an earthquake occur, it is likely that many communities would become isolated due to damaged bridges and roads. This would in turn cut off vulnerable populations from essential services until transportation routes could be reestablished. To help address this vulnerability, the county intends to continue investment in capabilities to assess, restore, and in some cases harden critical transportation infrastructure to mitigate earthquake impacts on these rural communities (see initiatives TC-EH-03 & TC-MH-06).

[11] Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. Journal of Homeland Security and Emergency Management, 2011. 8(1). CDC/ATSDR SVI web page: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html.

3.4.2 Wildfire Impacts to Socially Vulnerable Populations

Socially vulnerable areas in the southwest area of the county have become more exposed to wildfire hazards in recent years. Since the last mitigation plan update, two significant wildfires have occurred in the southwest area of the county. In 2017, the Scatter Creek Fire burned over 400 acres near Grand Mound, WA, including land in a protected wildlife area, a historic homestead, several private residences, and a business. In 2020, the Bordeaux Fire burned approximately 290 acres near the town of Bordeaux, WA, and the Mima Mounds community, destroying several homes. Wildfires present significant vulnerabilities to socioeconomically vulnerable populations who may not be able to afford to make retrofits to their existing homes to protect them from wildfire. Many of these residences may also lack the financial capabilities, such as adequate insurance coverage, to help recover from the impacts of a wildfire disaster.

In addition to socioeconomic status, south county communities possess other social vulnerabilities such as elderly populations, lack of transportation, those with medical needs and limited mobility, and those with pets and livestock. These additional vulnerabilities may significantly impact the community's ability to evacuate quickly in the event of rapid wildfire spread. Among other wildfire protection and mitigation measures, the county intends to address evacuation needs for socially vulnerable populations as part of the multi-jurisdictional Community Wildfire Protection Planning initiative (see Chapter 2, initiative CW-WH-2 in the core plan).

3.4.3 Flood Impacts to Socially Vulnerable Populations

Unincorporated county areas with the highest social vulnerability generally overlap areas at highest risk for river flooding. In the south-southwest county, the Chehalis River and its major tributaries (Black River, Skookumchuck River, Scatter Creek) have historically threatened these communities with frequent flooding. To the west, socially vulnerable communities within the vicinity of Yelm and the lower Nisqually delta are threatened by flooding from the Nisqually River, as well as flooding from the Alder and LaGrande Dams should an incident cause dam failure.

Two recent flood incidents impacted communities with socioeconomically vulnerable populations. In December 2020, the Nisqually River experienced major flooding when heavy rains caused the LaGrande Dam to increase water discharge to avoid dam failure. The subsequent flooding caused flood damage to approximately 117 residences along the lower Nisqually River. In January 2022, major flooding occurred on the Chehalis River causing flood damage to approximately 102 residences and 4 businesses. In both flood incidents, many of the residences impacted did not possess homeowner's insurance and/or rented their home and relied heavily on individual assistance, donations, and other financial relief to help recover. The county continues to take a whole community approach to addressing flood risks to socially vulnerable populations through its participation in the Community Rating System (CRS) and development and implementation of a community driven flood hazard mitigation plan (see initiative TC-FH-1).

3.4.4 Other Hazard Impacts to Socially Vulnerable Populations

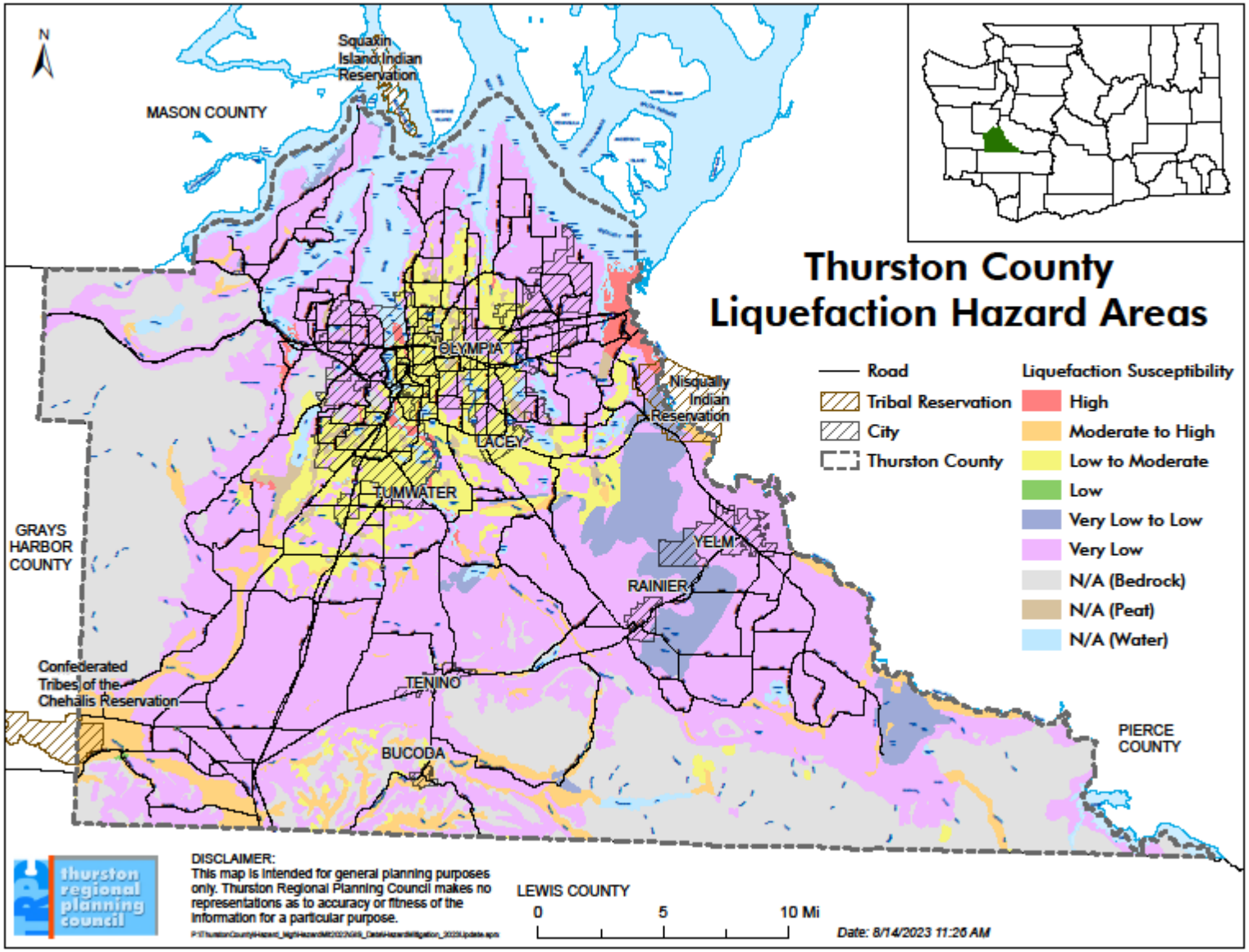
The remaining hazards assessed in the mitigation plan (severe weather, landslide, sea level rise, volcano/lahar, tsunami, and dam failure) either have widespread impacts across all jurisdictions in the planning area or have no impacts to socially vulnerable populations that are significantly different from those described in Chapter 4 of the core plan.

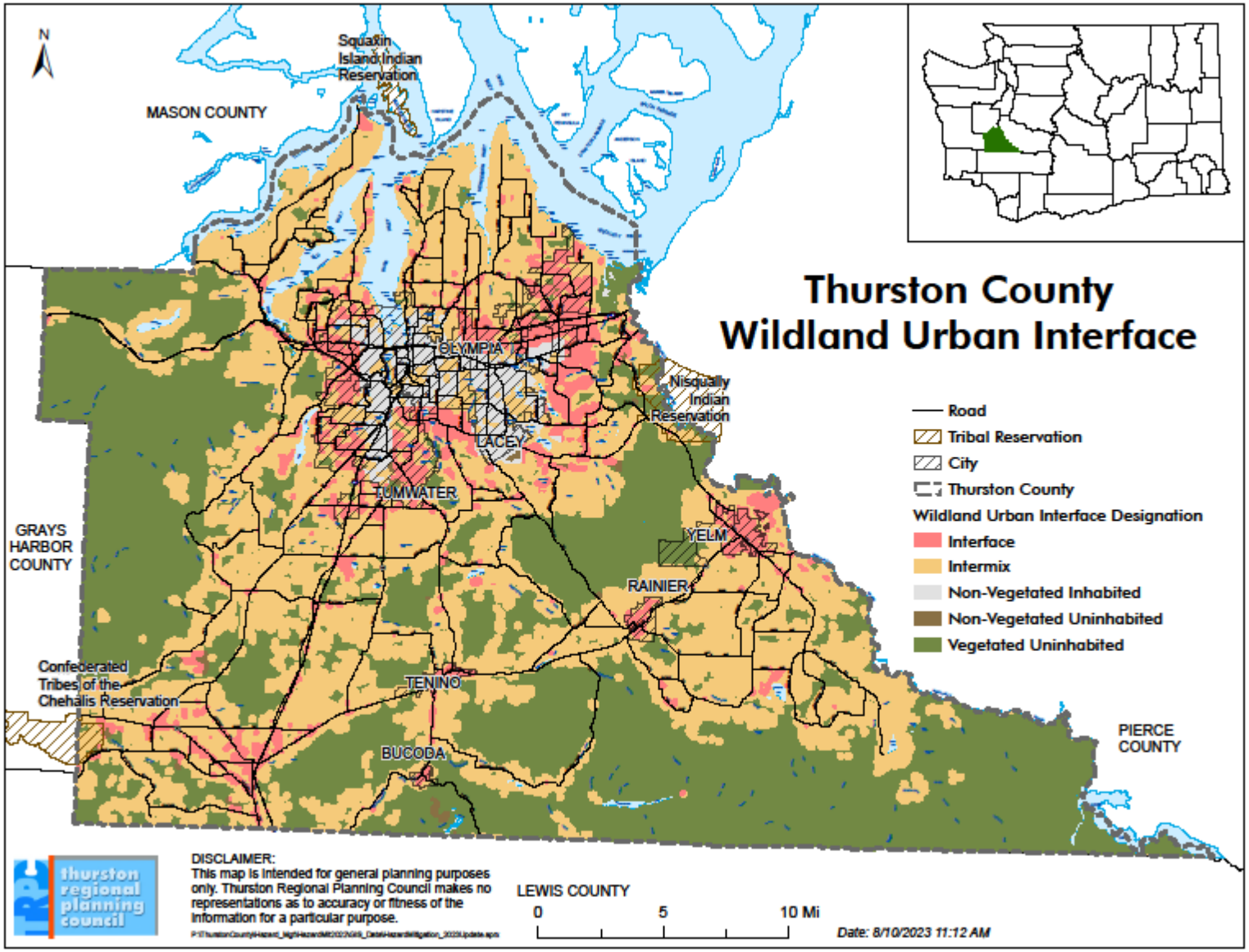
3.5 Effects of Climate Change

Thurston County, like all other jurisdictions within the regional planning area, is experiencing the effects of climate change. Over the past several years, the county has seen more periods of extreme wildfire weather conditions, more significant coastal flooding, more frequent extreme heat and extreme cold weather events, as well as intensifying storms. In 2021, the Board of County Commissioners passed Resolution No. 15983 declaring a state of climate emergency and an ongoing commitment to tackle the climate crisis in partnership with local jurisdictions. Thurston County and the cities of Lacey, Olympia, and Tumwater have worked together since 2018 to develop and implement the Thurston Climate Mitigation Plan (TCMP), which aims to reduce countywide greenhouse gas emissions 45% by 2030 and 85% by 2050, relative to a 2015 baseline. Even while working to slow emissions, communities must confront the unavoidable impacts of an already warming planet. In 2018, the county and cities, in partnership with Thurston Regional Planning Council, developed the Thurston Climate Adaptation Plan (TCAP), which details 91 actions to help the region prepare for and adjust to climate impacts such as worsening storms, floods, droughts, and wildfires.

Integrating climate change into hazard mitigation planning is critical to ensure that the adopted goals and policies address future hazards as well as those of today. Chapter 4 of the core plan describes the climate change impacts in detail for each of the assessed hazards.

3.6 Hazard Maps

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GRAYS HARBOR COUNTY
Confederated Tribes of the Chehalis Reservation
PIERCE COUNTY
LEWIS COUNTY
Road
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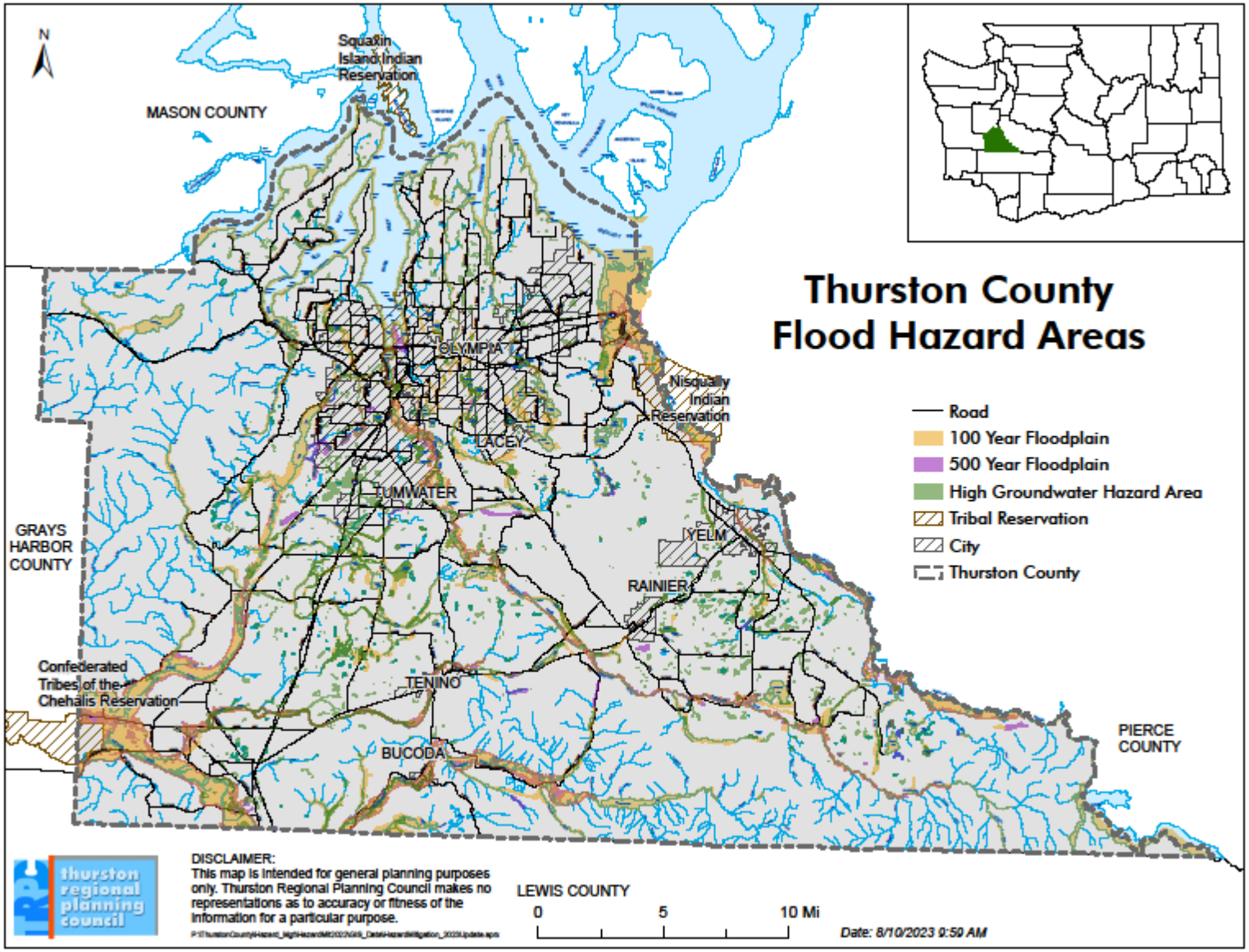
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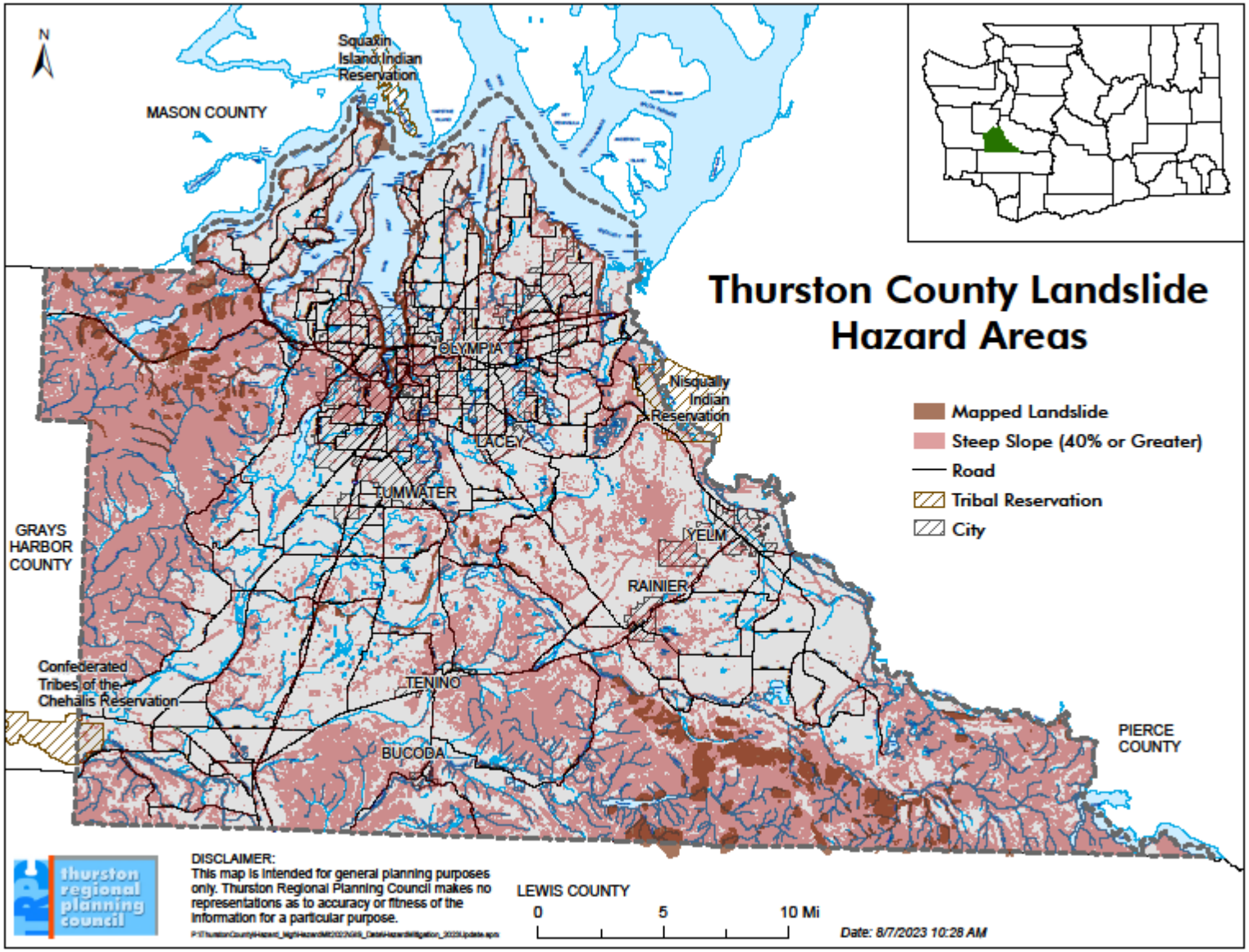
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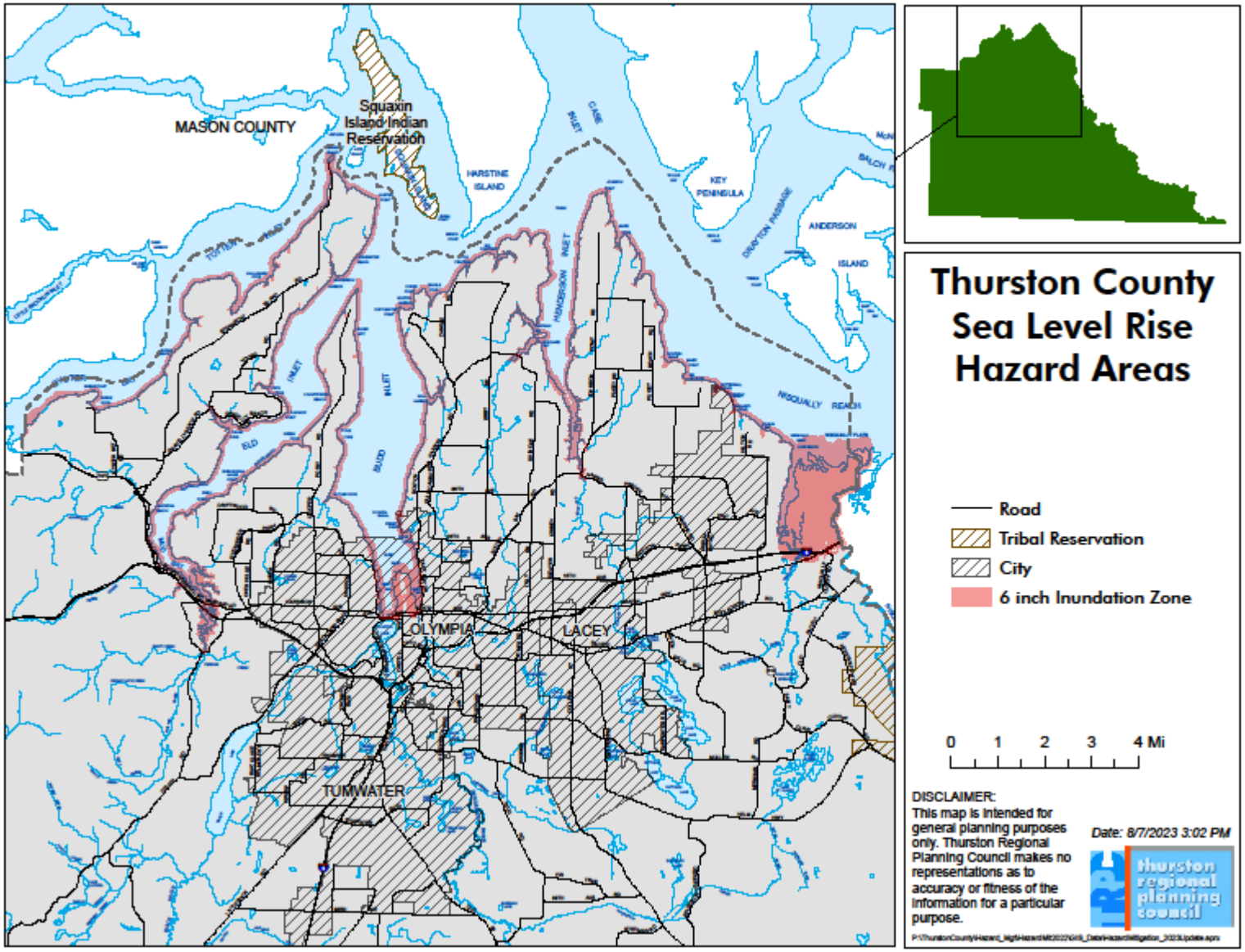
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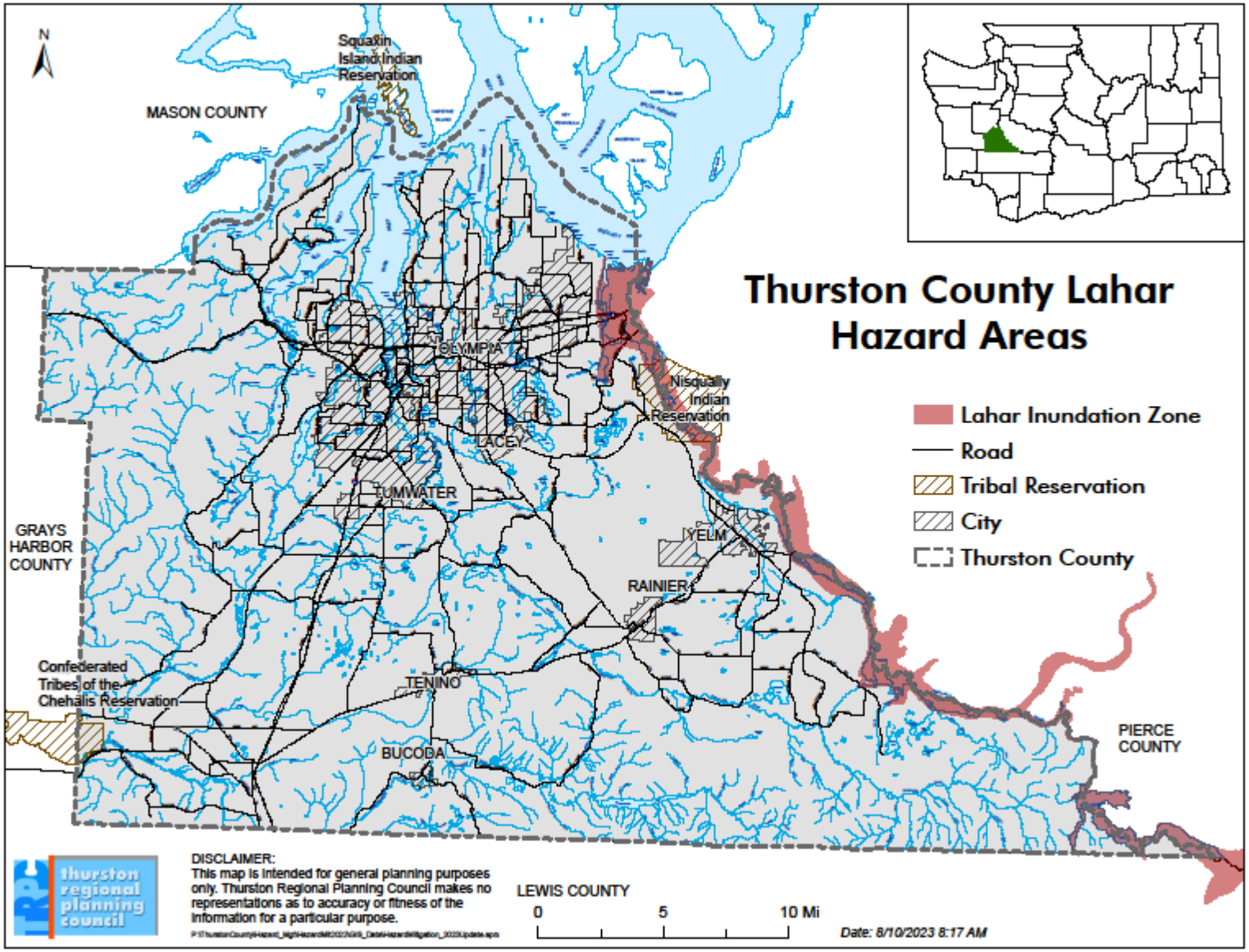
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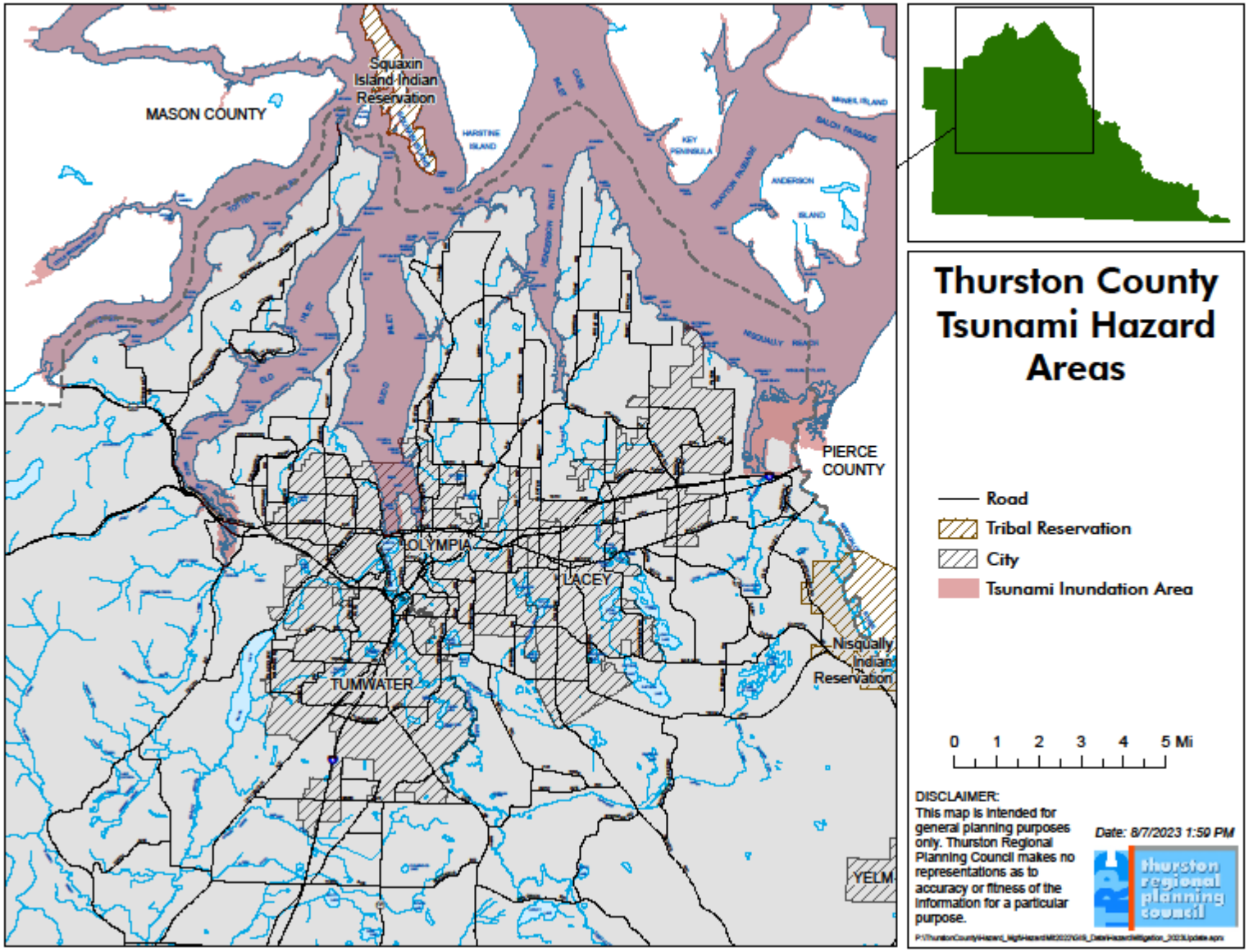
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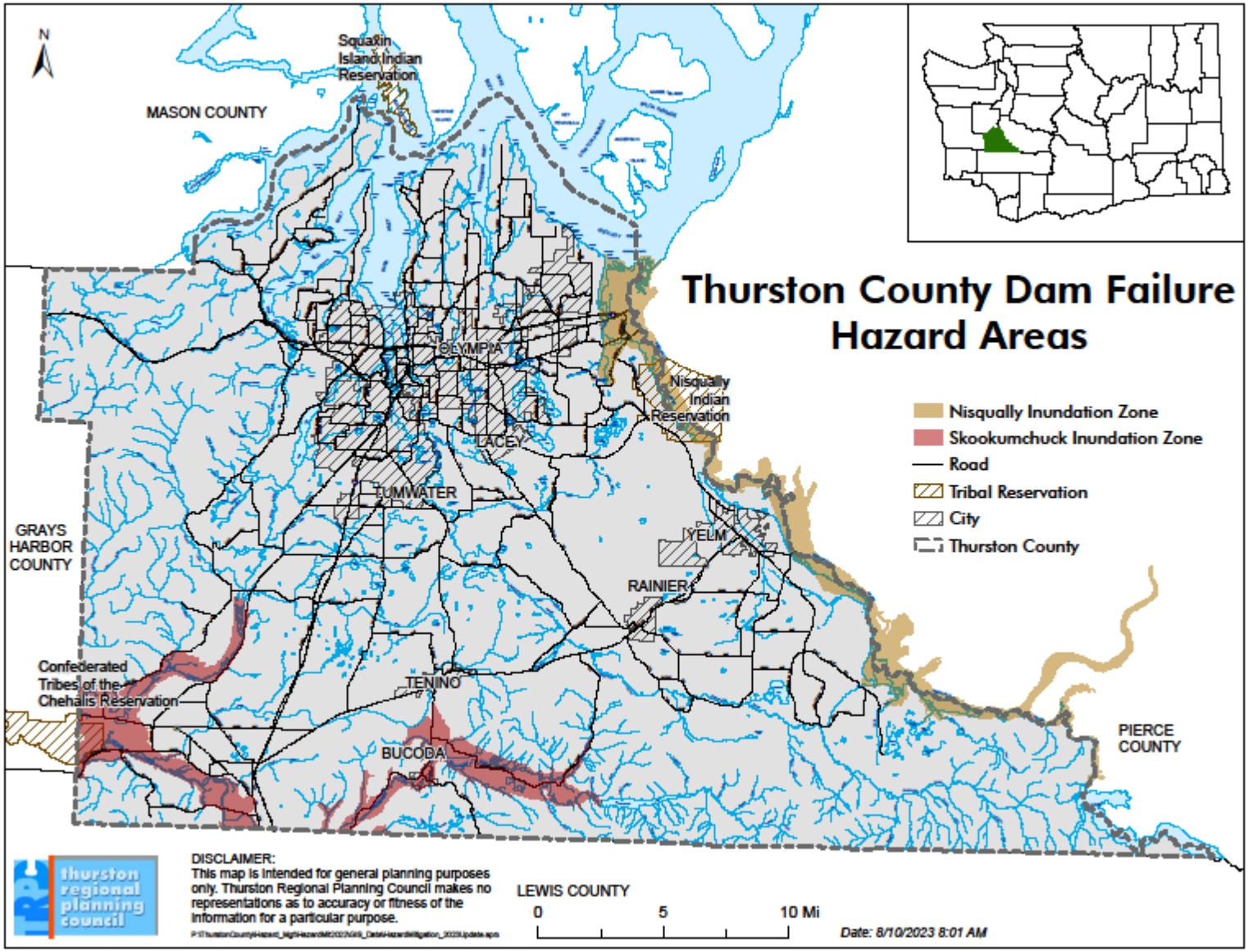
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Chapter 4: Capabilities Assessment

4.1 Introduction

C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))

An assessment of the county's local capabilities was conducted by the planning team as part of the development of the county's annex. The capability assessment is used to inform planners of what existing authorities, policies, programs, and resources are available to support hazard mitigation actions. The assessment is also a useful tool for exploring future opportunities to expand the county's capacity to support ongoing hazard mitigation planning and strategies.

4.2 Thurston Regional Capability Assessment

In addition to the local capabilities listed in this chapter, the county also relies on and utilizes various regional, state, and federal capabilities and resources for hazard mitigation. A detailed description and assessment of regional, state, and federal capabilities can be found in Chapter 3 of the core plan.

4.3 Thurston County Local Capability Assessment

The remainder of this section identifies the county's existing hazard mitigation capabilities. Capabilities are organized by the following types:

Planning & Regulatory

Includes laws, ordinances, and plans that regulate development and other activities

Administrative & Technical

Includes staff, programs, or projects in place that can be leveraged for mitigation planning or action implementation

Financial

Includes resources that agencies may use to fund mitigation actions

Public Outreach

Includes organizations, programs, and activities that can be leveraged for public education and outreach

National Flood Insurance Program

Includes floodplain management activities performed by the county as part of the National Flood Insurance Prorgam and Community Rating System

An assessment of legal and regulatory capabilities is presented in section 4.3.1. An assessment of fiscal capabilities is presented in section 4.3.2. An assessment of administrative and technical capabilities is presented in section 4.3.3. An assessment of education and outreach capabilities is presented in section 4.3.4. Information on National Flood Insurance Program (NFIP) compliance is presented in section 4.3.5. Each assessment includes a table listing capabilities present in that category with a description of each and its role (or potential role) in hazard mitigation.

4.3.1 Legal and Regulatory Capability

Existing Local Plans	Description	Mitigation Capability
Comprehensive Plan	Sets goals and objectives that guide plan development and decision-making in Thurston County. Establishes current and future land use designations. Updated regularly.	Land use designations/zoning can be leveraged to mitigate a variety of risks. Hazard mitigation strategies can be included as goals and objectives, and the mitigation planning process should be guided by Comprehensive Plan goals and objectives.
Capital Improvement Plan (CIP)	Six-year plan of community investment projects for unincorporated areas of Thurston County as part of the Capital Facilities Plan. Reviewed and updated annually with the county's annual budget.	Capital projects that support mitigation actions can be included as projects to fund under the CIP.
Capital Facilities Plan	Plan in which capital projects necessary to support the county's forecast population growth, and the financing methods by which they will be accomplished are described. Updated annually as an amendment to Chapter 6: Capital Facilities in the Comprehensive Plan.	Mitigation initiatives can be included as projects to fund. The risk assessment can be used to identify hazard exposure areas, and hazard mitigation can be incorporated into the design of existing projects in these areas.
Comprehensive Emergency Management Plans (CEMP)	Guides the county's actions before, during, and after a disaster. It defines who does what, when, where and how, to mitigate, prepare for, respond to, and recover from the effects of natural, technological, and human-caused hazards.	The CEMP is informed by the risks identified in the hazard mitigation risk assessment and outlines mitigation actions before and after disasters. The county's CEMP also guides mitigation action opportunities as a function of disaster recovery.
Flood Hazard Mitigation Plan	Flood management plan that assesses county flood hazard risk in-depth and establishes flood hazard mitigation goals, objectives, and mitigation actions that support the county's NFIP and CRS compliance.	Provides whole community input into county's flood management program. Risk assessments from the hazard mitigation plan inform flood risk for the flood hazard mitigation plan and vice versa.

Existing Local Plans (cont.)	Description	Mitigation Capability
Continuity of Operations Plan (COOP)	Contingency plan that establishes emergency policies, processes, and procedures to sustain essential government functions and services in the event of a catastrophic disaster.	Supports hazard mitigation by ensuring that during a disaster, all emergency operations can be identified and conducted. Gaps identified in COOP planning can potentially generate new mitigation actions.
Habitat Conservation Plan	Broad-scale, science-based conservation plan for six prairie and riparian species for Thurston County which identifies actions to avoid, minimize, and mitigate impacts from urban growth and development to endangered species and other wildlife.	Hazard-prone areas can be preserved through land conservation and development restrictions established in the HCP. Habitat may overlap with hazard-prone areas and support hazard mitigation as a co-benefit of habitat restoration.
Stormwater Management Program Plan	Describes the various activities, procedures, and practices the county uses to help reduce the adverse impacts from runoff coming from storm sewer systems owned or operated by the county. Revised annually.	Many actions within the stormwater management plan also support mitigation of severe storm and flood hazards. The current hazard mitigation plan has actions incorporated from the stormwater management plan.
Land Use Planning & Ordinances	**Description**	**Mitigation Capability**
Conservation Futures Program	Program that allows a land trust or qualifying organization to buy property or development rights from Thurston County landowners with funds provided by Thurston County government.	Property or development rights could be purchased in high hazard areas (floodplains, landslide areas, etc.) to promote land conservation in those areas.
Open Space Tax Program	Owners of certain types of high-quality habitat or open space properties may apply to Thurston County government for a reduction of their county property taxes.	Program could also incentivize property owners to limit development on and restore/rebuild natural habitat in areas identified as high hazard.
Transfer / Purchase of Development Rights	Owners of certain types of agricultural lands can transfer or sell development rights to Thurston County government without selling the entire property.	Allows the county to purchase development rights from agricultural lands that reside in high hazard areas and limit future development in those areas.

Land Use Planning & Ordinances (cont.)	Description	Mitigation Capability
Waterway Protection Program	Owners of properties with lakes, ponds, rivers, streams, wetlands, or other waters can find programs to help enhance, protect, or restore those waterways.	Program can incentivize property owners to incorporate natural flood mitigation projects into waterway restoration. (e.g., restoring riparian habitat on shoreline buffers and in flood areas).
Voluntary Stewardship Program	A citizen-led planning effort for owners of agricultural land who are seeking relief from land-use and development regulations.	Allows for a whole community approach to riparian and ecosystem stewardship that could also support several hazard mitigation goals.
Building Codes	Thurston County Code of Ordinances includes building codes under Title 14 – Buildings and Construction.	Building codes already include restrictions for limiting development in flood hazard areas (Chapter 14.38), newly developed codes pending adoption will support incorporation of wildfire mitigation into new developments within WUI areas.
Flood Insurance Rate Maps	Regulatory maps of 100-year flood hazard areas in which properties within must have flood insurance policy coverage under the NFIP.	County uses FIRMs to regulate/limit development flood areas and continually works with FEMA to update FIRMs. Various recent Risk MAP studies have updated FIRMs for Chehalis, Nisqually, Deschutes River basins as well as Thurston County lakes. Data from FIRMs and FEMA Risk MAP studies is also used to better inform flood risk in the hazard mitigation risk assessment.
Floodplain Ordinance	The county combined its floodplain ordinance with its critical areas ordinance and regulates frequently flooded areas as critical areas under Title 24 – Critical Areas of Thurston County code. Title 14 – Building and Construction also contains regulations for designated flood hazard areas.	The county has strong flood mitigation capability under current floodplain codes and ordinances. The adoption of the floodplain into the county's critical areas allows for both mitigation and conservation objectives to be achieved in the county's flood hazard areas.

Land Use Planning & Ordinances (cont.)	Description	Mitigation Capability
Critical Areas Ordinance	Thurston County Critical Areas Ordinance includes designation of and policies for land use and development in critical areas under Title 24 – Critical Areas of Thurston County code.	Already designates geologic, volcanic, seismic hazard areas and frequently flooded areas as critical areas, which limits development under the ordinance. The county has the capacity and authority to designate and/or expand hazard areas as critical areas in support of hazard mitigation.
Shoreline Master Program	Development and land use program derived from Title 24 – Critical Areas of Thurston County code that designates streamline and shoreline buffers as critical areas.	The Shoreline Master Program is both a regulatory and public education tool to limit development and incorporate flood protection and mitigation on properties with shorelines at risk of flooding.
Zoning Ordinance	Zoning ordinances are codified under Title 20 – Zoning within the County Code of Ordinances. They provide regulations and standards which will lessen congestion on the streets, encourage high standards of development, prevent the overcrowding of land, provide adequate light and air, and facilitate adequate provisions for transportation, utilities, schools, parks, recreation needs, drainage, open space, and other necessary public needs.	Considerations for natural hazard mitigation can be incorporated into existing zones under this ordinance where the purpose and primary use within that zone considers mitigation and/or conservation of open space, critical areas, significant agricultural lands. Areas with high exposure to natural hazards can also be considered during rezoning.

Legal and Regulatory Capability Summary

Overall, the county has a strong framework of policies, laws, and programs that help mitigate impacts and reduce vulnerabilities. Of the hazards addressed through legal and regulatory capability, the county's laws and policies for mitigating flood hazards is strongest, followed by the county's comprehensive landslide hazard program. Of the codes and ordinances in place within the county, the Critical Areas Ordinance (Title 24), Building and Development Codes (Title 14), and Zoning (Title 20) serve as the strongest regulatory tools for the county to implement development regulation actions that enhance mitigation of natural hazards. The county has already displayed this through the combining of its floodplain ordinance into the county's critical areas ordinance.

The county also possesses a strong framework to regulate development for habitat conservation and open space preservation to protect natural lands and maintain the county's rural characteristics. This is an area where opportunities exist for county planners to consider further incorporating hazard mitigation into existing plans, programs, and ordinances when a co-benefit exists to promote both hazard mitigation and land conservation.

4.3.2 Fiscal Capability

Local Funding Resources	Description	Mitigation Capability
Community Development Block Grant (CDBG)	Provides annual grants on a formula basis to entitled cities and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons.	This funding resource has not been used in the past for hazard mitigation activities, but may be used provided the activities benefit low- and moderate-income households and meet one or more of the CDBG eligible activities. CDBG funding rotates between the City of Lacey, City of Tumwater and south county jurisdictions. While the BoCC provides final approval of projects, it is the city councils and mayors of those jurisdictions that select the projects to fund. The county has limited influence on project selection. CDBG could be used as local match for city and town projects if the mitigation activity meets CDBG eligibility.
Impact Fees	Thurston County charges fees for the work associated with reviewing plans & drawings, and inspecting properties, construction sites and building work to make sure development meets regulations. Fees are also collected for projects that increase the need for community services like fire services, parks, schools, transportation, and environmental protection. Impact fees for parks and recreational facilities are charged to all residential development within unincorporated Thurston County[12]	Potential funding source for hazard mitigation if the project meets the criteria for eligible improvements under Code of Ordinances Title 25: 1.Shall be used for public improvements that will reasonably benefit the new development; and 2.Shall not be imposed to make up for deficiencies in public facilities; and 3.Shall not be used for maintenance or operation.

[12] https://www.thurstoncountywa.gov/departments/community-planning-and-economic-development/permitting/permits-fees-forms/permit-fees

Local Funding Resources (cont.)	Description	Mitigation Capability
Utility Fees	Utility fees collected by the county that fund enterprise funds such as stormwater and solid waste services (e.g., Grand Mound and Boston Harbor facilities).	This is not a potential funding source as the uses are restricted to covering the cost of delivering essential utility services. Utility fees have not been used by the county to fund mitigation improvements to these facilities.
County General Funds	Fund used to record the revenue and expenditure activity of all general government services. All non-designated revenues are deposited into this fund. It is the only fund that can be used to support other funds as well as pay for general government services. Also known as Current Expense Fund.	With Board of County Commissioner approval, general fund may be a potential funding source for hazard mitigation activities. However, mitigation projects would likely compete with other funding priorities for general funds.
Budget Stabilization Funds	The purpose of the Budget Stabilization Fund is to reserve surplus revenue to be utilized in the event of unexpected deficits.	Budget stabilization funds could potentially fund mitigation actions under emergency circumstances with action from the BoCC. The current resolution lists a goal of the budget stabilization funds is to "mitigate current and future risks" to including use as "a general fund reserve for unexpected events and disasters". (ref. Thurston County Resolution #16010).

Fiscal Capability Summary

One primary gap identified by planners was the absence of a dedicated financial disaster emergency fund. Typically, disaster costs are absorbed by department/office budgets who then must address unexpected cost overages. In some cases, the county may qualify for FEMA and/or state financial support post-incident (such as FEMA's public assistance grants) to fill these financial gaps. Some opportunities to further improve the county's financial capability and further incorporate hazard mitigation include re-establishing development of a local emergency cost sharing funding plan/procedure among Thurston regional stakeholders to supplement state and federal aid, and continuing to keep the Board of County Commissioners and other elected officials apprised of hazards and vulnerabilities to maintain awareness for potential mitigation projects that may consider funding with general funds.

4.3.3 Administrative and Technical Capability

Administrative	In Place? (Y/N)	Description / Mitigation Capability
Chief Building Official	Y	The county's Development Services Manager within Community Planning and Economic Development oversees a robust permitting division with 28 staff ranging from plans examiners, building inspectors, code compliance coordinators, and technicians and specialists.
Civil Engineer	Y	The Office of the County Engineer is a division of Public Works and oversees seven branches: Transportation Engineering and Operations, Environmental, Construction Engineering, Development Review, Design Engineering, Real Estate Services, and Survey. The division staffs over 30 civil engineers/engineer technicians capable of performing a variety of mitigation services and projects.
Community Planner/Development Director	Y	The Director of Community Planning and Economic Development oversees over 70 staff members across five divisions: Development Services, Capital Planning, Fiscal Management, Operations, and Washington State University Extension.
Emergency Manager	Y	The Emergency Management Manager supervises six Emergency Management Coordinators within Emergency Management, a division of the Emergency Services Department. Staff capabilities include public education and outreach, external affairs, hazard mitigation planning, emergency preparedness and response planning, logistics, and federal grants management.
Floodplain Administrator	Y	The county's floodplain administrator is housed within the county's Permitting Office as one of several senior plans examiners and works with county hydrologists and water planners to provide robust flood mitigation services (See section 3.2.5 - Thurston County National Flood Insurance Program Compliance).
GIS Coordinator/Manager	Y	The county's Information Technology Supervisor oversees the Thurston County GeoData team comprised of eight GIS analysts and one GIS intern. The GIS team provides GIS services to all county offices and departments.
Planning Commission	Y	The Thurston County Planning Commission is a nine-member volunteer citizen group that advises Thurston County government on land use, development, and zoning regulations and meets twice a month. Planning Commissioners serve six-year terms, and are appointed by Thurston's Board of County Commissioners
Climate Mitigation Program Manager	Y	The Climate Mitigation Senior Program Manager in the Board of County Commissioner's Office works across county departments and with regional partners to implement greenhouse gas reduction strategies and align departmental initiatives with the goals of climate mitigation and climate adaptation.

Technical	In Place? (Y/N)	Description / Mitigation Capability
Grant Writing	Y	The Thurston County Auditor's office has a Grants Manager as well as other staff with technical grant writing and management skills. Each of the county departments also have staff with expertise in grant writing and grant management across various federal and state programs.
Hazard Data and Information	Y	Thurston County Emergency Management and GeoData maintain hazard data and information on flood, earthquake, and landslide hazards. Some of the hazard data and information is included in the county's GIS database, other information is housed directly in Emergency Management.
GIS Analysis	Y	Thurston County GeoData has over 600 data layers in its spatial data engine, 46 of which are specific to Emergency Operations, Environmental Hazards, and Flooding feature datasets. GeoData also has two GIS analysts assigned to assist Emergency Management as needed on various plans, projects, and activities to include emergency response and mitigation planning.
Mutual Aid Agreements	Y	Thurston County maintains a variety of mutual aid agreements and interlocal agreements with cities, tribes, and special purpose districts throughout the County. Many of the county's plans are developed as multi-jurisdictional efforts, to include hazard mitigation planning.

Administrative and Technical Capability

Thurston County's greatest strength in administrative capability is the amount of human capital across the various county offices and departments with over 1,400 employees across 11 offices and 13 departments. A robust staff of engineers, planners, emergency management coordinators, grants and fiscal managers and GIS analysts give the county a large capacity to incorporate and implement hazard mitigation across a variety of plans, projects, and programs throughout the county. Despite a robust staff, gaps have been noted due to a large amount of turnover since the last mitigation plan update resulting in an overall decrease in knowledge specific to the Thurston Hazard Mitigation plan and mitigation planning in general. The county has been working to redevelop professional relationships and networks between Emergency Management staff and other county offices and departments to help further incorporate mitigation practices into the county's existing plans, policies, and programs.

Another strength is the county's GIS analysis and hazard data capabilities. The county's Geodata Center manages over 600 data layers within the county's database and has made them accessible to county staff across all departments to perform a variety of functions and services. GeoData staff have training and access to advanced licenses and extension licenses, such as Spatial Analyst, to complete complex analysis for hazard mitigation planners. GeoData staff also have working relationships across all county departments that can be leveraged to enhance future hazard mitigation planning. GeoData is often central to several county projects and can make connections between departments that others may not be aware of. Opportunities have been identified to further enhance hazard data and collection and GIS analysis specific to hazard mitigation (e.g., HAZUS training) in order to further leverage the county's capabilities. Actions have also been identified to strengthen the county's ability to collaborate with GIS staff and utilize tools for purposes that include mapping and analyzing impacts of hazards during emergencies, deploying resources

efficiently, planning for future hazard mitigation initiatives, and planning for future emergency events (see initiative TC-MH-10).

4.3.4 Education and Outreach Capability

County Programs and Activities	Description	Mitigation Capability
Thurston County Preparedness Expo	Annual one-day expo showcasing emergency preparedness and response organizations across the county to include emergency management, CERT, law, and fire services.	The expo includes education for the public on Thurston County hazards and their impacts derived from the mitigation plan. The expo is also a tool that can help showcase mitigation actions residents can take to reduce their vulnerabilities.
Firewise	Program that promotes defensible space, ignition-resistant construction, and vegetation management to reduce flammable fuels around buildings. It also promotes fire resistive construction.	Thurston County promotes Firewise as a means for communities to implement wildfire mitigation actions to reduce their vulnerabilities to wildfire hazards.
StormReady	Program administered by the National Weather Service to help communities better prepare for extreme weather events.	Thurston County is a participant in the StormReady program and provides regular severe weather preparedness information to the public through various channels.
Stream Team	Group funded by stormwater utilities to provide free quality environmental education programs and activities and hands-on action projects. They produce quarterly newsletters, social media campaigns, events and monthly emails.	Environmental education programs and activities with a co-benefit of hazard vulnerability reduction could be incorporated into Stream Teams regular programming.
Thurston County Flood Bulletin	Annual bulletin provided to help educate residents living in flood zones throughout the county.	Provides residents with information on flood hazards and actionable advice on how to mitigate impacts and reduce vulnerabilities on their properties.
Friday Five Newsletter	Countywide newsletter sent out to subscribed residents weekly, showcasing five articles across various topics.	Topics, articles, and projects related to hazard mitigation could be showcased in this weekly newsletter.
Thurston Talk	A community social network delivering positive stories about what it's like to live, work and play in Thurston County Washington	Local news platform that helps share information on various county events, programs, and initiatives, to include hazard mitigation.

County Programs and Activities	**Description**	**Mitigation Capability**
Social Media (Facebook, Instagram, Twitter)	The Thurston County Commissioners Office, Thurston County Emergency Management, and other county departments maintain active social media websites on Facebook, Instagram, and Twitter.	Social media has and can continue to be a powerful tool to disseminate public messaging for hazard awareness as well to garner public support for hazard mitigation actions and projects.
Thurston County Website	Thurston County Emergency Management maintains a page within the county's website to showcase plans and programs and provide public education and information on emergency preparedness.	The most current hazard mitigation plan is made easily accessible to the public on the county's website to promote awareness. The website also contains information on the various natural hazards and emergency preparedness topics.
Thurston County Communicators Group	Network of public information officers and education and outreach coordinators from various county offices and departments who meet on a regular basis to discuss communications.	Mitigation topics and themes can be shared among the group to develop unified messaging on hazard awareness and mitigation.

Education and Outreach Capability Summary

Communicators across the various county offices and departments have well established education and outreach programs. Thurston County maintains a regular presence on social media and routinely engages local news outlets and the public. During the hazard mitigation update process, the county has also historically leveraged its various communications tools to get the public involved and provide education on county hazards and its mitigation strategy. One gap that the county has is a historic lack of collaboration among outreach coordinators and public information officers across all county offices and departments. In recent years, the county has also seen significant turnover in public information officers and education coordinators. The formation of a County Communicators Group has been one of several actions the county has taken to address these gaps.

4.3.5 Thurston County National Flood Insurance Program Compliance

C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))

Introduction

Thurston County government has actively participated in the National Flood Insurance Program (NFIP) since September 1974 and its Community Rating System (CRS) program since 2000. Thurston County has a Class 2 rating in the CRS program. A Class 2 rating saves policyholders 40% or an average of approximately $500 per policy in unincorporated Thurston County. Thurston County government has made a concerted effort to exceed minimum floodplain management requirements, provide increased public awareness regarding the local flood hazard, and provide protection from flooding. Approximately 7% of Thurston County is in a mapped NFIP 100-year floodplain, of which about 90% is in unincorporated Thurston County

NFIP policies in force, total coverage, and paid claims

Policies in Force	Total Coverage	Total Written Premium + FPF
419	$115,076,000	$274,342

Estimated countywide repetitive and severely repetitive flood loss structures

Structure Type	Repetitive Flood Loss	Severely Repetitive Flood Loss
Residential, single family	31	2
Residential, 2-4 multi-family	2	2
Other-nonresidential	1	0
TOTAL	**34**	**4**

Staff Resources

Name, Title	Department	NFIP Role
Tim Rubert, Plans Examiner	Community Planning & Economic Development	Community Floodplain Administrator (FPA), Certified Floodplain Manager
Mark Biever, Water and Hazards Data Services Program Lead	Community Planning & Economic Development	Community Rating System (CSR) Coordinator. Also coordinates development and updates to the Thurston County Flood Hazard Mitigation Plan.
Kevin Hansen, County Hydrogeologist	Community Planning & Economic Development	County water planner and surveyor
Sarah Smith, GIS Analyst II	GeoData Services	Digital floodplain mapping and other GIS services
Sonya Kroese	Emergency Management	Flood bulletin manager
Cherie Carey	Emergency Management	Education and outreach coordinator
Emily Schoendorf	Emergency Management	Mitigation coordinator

County Flood Management Services

Thurston County provides a variety of services to the public for NFIP administration. The FPA is seated within the county's permitting and land use office as a plan examiner. All permitting for structures within flood hazard zones, regardless of the nature of the permit application, go through the FPA for review to advise developers on flood hazards and codes. The FPA routinely provides recommendations and permit review for property owners whose structures may be potentially threatened by flooding. The county maintains digital maps of all regulated flood areas to include most recent 100- and 500-year Flood Insurance Rate Maps (FIRMs) as well as maps of high-groundwater and monumental floods of record. County property owners and potential developers can access this data through a publicly available GIS Web-map maintained by GeoData Services.

During and post-flood events, the county has robust resources to conduct post-flood damage assessments as well as conduct surveys and collect data to compare against the county's documented floods of record. The county also has in place a voluntary compliance program for repetitive and severely repetitive loss properties to perform structural home elevations and provide and maintain elevation certificates. In many cases, the county aggressively seeks grant funding and other funding opportunities to provide cost-share assistance to property owners with relocation and/or elevation of structures within the flood hazard zone. The county has historically utilized Flood Mitigation Assistance and Community Development Block Grants to fund these flood mitigation actions. These ongoing flood hazard reduction actions are also captured as mitigation actions within this current plan update (see Chapter 4, initiatives TC-FH-01 and TC-FH-26).

Thurston County Community Rating System Mitigation Activities

The following activities are carried out as part of Thurston County's participation in the NFIP Community Rating System program to further reduce the effects of flooding in the unincorporated portions of Thurston County. Thurston County is also in the process of updating its Flood Hazard Mitigation Plan which serves as a guiding document for the county's NFIP / CRS participation and floodplain management.

Community Rating System Activity	Description
Elevation Certificates	Thurston County maintains elevation certificates for new and substantially improved buildings. Copies of elevation certificates are made available upon request and may be viewed on the county website.
Map Information	Thurston County furnishes flood zone information from the community's latest Flood Insurance Rate Map (FIRM), annually publicizes the service, and maintains records.
Outreach Projects	A brochure is mailed annually to all properties in the Special Flood Hazard Area. Flood hazard information is also provided through an annual flood information bulletin. Thurston County has flood insurance and general flood information on its county website.
Hazard Disclosure	Thurston County recognizes the disclosure requirements of the State of Washington disclosure law and handles floodplain management documentation accordingly.
Flood Protection Information	Documents relating to floodplain management and locally pertinent flood issues are distributed routinely to citizens in a county flood information bulletin.
Flood Protection Assistance	Thurston County provides technical advice and assistance to interested property owners and annually publicizes the service.
Additional Flood Data	Thurston County maintains a high-level restrictive floodway and floodplain standard and uses the flood of record elevations when applying its regulations.
Open Space Preservation	Thurston County is preserving approximately 8,422 acres in the special flood hazard area as open space and generally does not permit any new development in the special flood hazard area. All special flood hazard areas are also regulated as critical areas under the County's Critical Areas ordinance. (Title 24 of Thurston County Code).
Higher Regulatory Standards	Thurston County enforces regulations that require freeboard for new construction and substantial improvement, protection of critical facilities, natural and beneficial functions, other higher regulatory standards, land development criteria, and state mandated regulatory standards.
Floodplain Delineation and Update	Thurston County continues to work with FEMA to remodel and remap NFIPs. Marine Coastal, Lower Chehalis River and Nisqually River projects have been completed and new FIRMs adopted since the last plan update. A RiskMap study of Thurston County's lakes has also been completed and will soon be adopted pending the public comment period.
Flood Data Maintenance	Thurston County has established and maintains a system of elevation reference marks and maintains copies of all previous FIRM maps and Flood Insurance Study Reports.

Community Rating System Activity	Description
Stormwater Management	The county has the Drainage Design and Erosion Control Manual for Thurston County adopted by the BoCC. The county enforces regulations for stormwater management, freeboard in non-special flood hazard area zones, soil and erosion control and water quality.
Repetitive Loss	The County Floodplain Administer and Community Rating System Coordinator review repetitive loss reports received annually from FEMA and maintain regular correspondence and follow-up with owners of repetitive loss structures.
Acquisition and Relocation	The county maintains a voluntary compliance program that includes options for acquisition and relocation. The county also has additional acquisition and relocation programs for conservation and habitat preservation that can potentially provide flood mitigation as a co-benefit (e.g., restoration of wetlands and streamline buffers).
Flood Protection	Thurston County receives credit for buildings that have been elevated or otherwise modified to protect them from flood damage.
Drainage System Maintenance	Thurston County's drainage system is inspected regularly throughout the year and maintenance is performed as needed by the Thurston County Public Works Department. Records are maintained for both inspections and required maintenance. Thurston County's Comprehensive Plan Chapter 6 - Capital Facilities Plan is a financial planning and budgeting tool that includes capital drainage improvement projects. The county also enforces a regulation prohibiting dumping in the drainage system.
Flood Warning Program	Thurston County provides alert and warning services for timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. The county also pays USGS to maintain river gauges on the Chehalis, Deschutes and Nisqually Rivers as part of the National Weather Service's Advanced Hydrological Prediction Services (NWS-AHPS).
Dam Safety	All Washington communities currently receive Community Rating System credit for the Washington State Department of Ecology Dam Safety Program.

Chapter 5: Mitigation Strategy

5.1 Goals and Policies

C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))
E2-a. Does the plan describe how it was revised due to changes in community priorities?

Goals within hazard mitigation planning are broad, long-term policy and visionary statements to help guide the planning team as they develop specific mitigation actions and projects to reduce the effects of hazards. The county's changes in goals, objectives and priorities for the hazard mitigation plan were developed in conjunction with other stakeholder agencies within the Thurston Region and are described in-depth in Chapter 2 of the core plan. For reference, the adopted goals and policies are summarized below:

1. Protect life

   a. Design, build, operate, and maintain disaster resistant communication systems that provide emergency notifications and instructions.
   b. Prioritize mitigation actions that directly benefit underserved communities and special needs populations.
   c. Address emergency evacuation needs, prioritizing areas of the community where mitigation strategies are ineffective or cost prohibitive.
   d. Train and equip emergency service providers to effectively respond to hazard events.

2. Protect infrastructure

   a. Maintain and upgrade roads, bridges, and other transportation infrastructure and services to withstand the effects of hazards without prolonged operational disruptions.
   b. Maintain and upgrade utility systems and services to withstand the effects of hazards without prolonged operational disruptions.
   c. Maintain or replace public buildings such as offices, schools, and other facilities to withstand the effects of hazards.
   d. Strengthen or relocate critical facilities or create protective spaces or infrastructure around them so they are not significantly affected by the effects of hazards.

3. Protect property

   a. Minimize the number of properties that are situated in hazard prone locations.
   b. Protect and preserve vital records, data, information technology systems, and facility contents.
   c. Safeguard objects or places that have cultural or historic significance.

4. Protect the environment

   a. Focus mitigation efforts on the region's greatest risks and vulnerabilities.
   b. Integrate adopted mitigation strategies into other planning documents such as response plans, comprehensive plans, strategic plans, Critical Areas Ordinances, Capital Facility Plans, zoning code, and development regulations.
   c. Continue evaluating the effectiveness of Critical Areas Ordinances and development regulations and revise as necessary to ensure development does not occur in areas prone to hazards or changing environmental conditions that threaten public safety.
   d. Support efforts to increase local jurisdictions' abilities to appropriately respond to hazardous material releases.

5. Sustain the economy

a. Develop and maintain efforts to prepare recovery plans.
b. Focus on mitigation strategies that protect medical treatment centers, employment centers, commercial districts, and schools.
c. Coordinate with regional, state, and federal agencies to identify and prioritize continuity of operations on lifeline transportation corridors and systems.
d. Strengthen public-private partnerships to reinforce or establish redundancy for critical supply systems.
e. Develop and maintain continuity of operations plans for essential public safety services.

6. Build community support

a. Coordinate and provide leadership in the hazard mitigation planning process among local, tribal, state, and federal government entities.
b. Engage residents, businesses, employers, medical centers, utility companies, subject matter experts, community, and faith-based organizations as partners to help identify opportunities to strengthen the region's hazard resilience.
c. Update the region's Hazards Mitigation Plan every five years, or sooner if necessary to respond to emerging threats.

7. Expand understanding of hazards

a. Monitor and evaluate precipitation, groundwater, and stream flow levels, and survey flood high water marks.
b. Partner with state and federal agencies, colleges, universities, and non-governmental organizations to participate in modeling programs to map risk areas.
c. Participate in regional or statewide disaster scenario exercises to assess mitigation, preparedness, response, and recovery capacities, and apply lessons learned to mitigation activities.
d. Incorporate best available science and data about climate change into hazard mitigation planning.
e. Develop a better understanding of the location and mitigation needs of underserved communities and special needs populations.
f. Document, share, and act on lessons learned following disaster events.

8. Implement effective mitigation strategies

a. Focus mitigation efforts on the region's greatest risks and vulnerabilities.
b. Integrate adopted mitigation strategies into other planning documents such as response plans, comprehensive plans, strategic plans, Critical Areas Ordinances, Capital Facility Plans, zoning code, and development regulations.
c. Apply for federal mitigation assistance grants and leverage other funding sources to finance mitigation projects.

9. Increase public awareness

a. Develop and sustain communication campaigns with residents, customers, businesses, and other stakeholders about the known risks of hazard events and the actions that community members or organizations can take to prevent or minimize losses.
b. Conduct broad outreach activities to engage all sectors of the community in the hazards mitigation planning process.

5.2 Mitigation Initiatives – Adopted

C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?

Central to the hazard mitigation plan are the proposed projects, programs, and activities the plan participants will implement to provide long-term and sustained benefits that will reduce losses from the impacts of the hazards that are identified in this plan's risk assessment. Each action or initiative was evaluated and scored by benefit-cost review criteria. Each initiative will require significant investments in planning, design, and construction or coordination, and may take years to complete or be sustained as an ongoing activity. The desired outcomes of this plan's mitigation strategy are that communities:

- Build the necessary capacity to improve their knowledge of hazards and their risks.
- Identify and implement actions that will effectively reduce their jurisdiction's vulnerabilities to the hazard identified in the risk assessment; and
- Implement strategies that will fulfill the plan's goals and policies.

The plan contains two sets of mitigation initiatives. Each participating jurisdiction adopts the core plan's Regional Mitigation Initiatives and the initiatives in their annex to form their community's comprehensive mitigation strategy.

1. Regional Mitigation Initiatives: These are countywide actions that were identified by members of the Hazards Mitigation Workgroup and stakeholders and approved by the Emergency Management Council. Many of these actions have carried over from previous plans. The initiatives, if implemented, will benefit multiple jurisdictions and improve interagency hazard mitigation planning capabilities. The regional initiatives will be overseen by the Emergency Management Council, the Hazard Mitigation Planning Workgroup, and other leads. Thurston County Emergency Management staff will play a role in convening and coordinating stakeholders, and for some actions, managing the actions' implementation.
2. Jurisdictional Initiatives: Each plan partner identifies actions that address specific vulnerabilities in their community. The plan partners are responsible for implementing their actions. Unincorporated Thurston County's initiatives are presented in this annex.

Thurston County's actions consist of initiatives that carried over from the previous plan and new initiatives that were identified during the plan update process. All the county's adopted initiatives were reviewed and updated by the development team.

Priority	ID-Number	Category	Initiative title / description
1	TC-WH-01	Development Regulations	Structural ignition prevention in the wildland urban interface (WUI)
2	TC-LH-01	Data Collection & Mapping	County landslide hazard maps and regulations
3	TC-FH-01	Plan Coordination & Implementation	National Flood Insurance Program (NFIP) Community Rating System (CRS)
4	TC-MH-09	Data Collection & Mapping	Data collection of incident losses/costs for repetitive loss studies
5	TC-FH-27	Plan Coordination & Implementation	Thurston County Shoreline Master Program streambank-riverbank protection
6	TC-FH-22	Data Collection & Mapping	Transportation infrastructure flood elevation mapping and prioritization
7	TC-FH-14	Plan Coordination & Implementation	Drainage basin plans in high-risk flood areas
8	TC-MH-10	Data Collection & Mapping	Mapping protocols for geospatial data of natural hazards
9	TC-FH-26	Hazard Damage Reduction	Relocation or elevation of structures within flood hazard zones
10	TC-FH-08	Data Collection & Mapping	Map and update river and stream channel migration zones
11	TC-MH-06	Data Collection & Mapping	Resilience study of private roads and bridges
12	TC-MH-01	Critical Facilities Replacement / Retrofit	Redundant network infrastructure for essential county services
13	TC-LH-02	Data Collection & Mapping	Landslide vulnerability index for county roads and critical facilities
14	TC-EH-03	Hazard Preparedness	Seismic evaluation and inspection of bridges training
15	TC-EH-04	Public Information & Education	Non-structural earthquake hazards training and public education
16	TC-FH-04	Plan Coordination & Implementation	Coordinated flood hazard reduction with Chehalis River Basin Flood Authority

Priority: 1 of 16 **Status: New**

TC-WH-1: Structural ignition prevention within the wildland urban interface (WUI).

Hazard Addressed: Wildland Fire

Category: Development Regulations

Background and Need: The wildland urban interface (WUI) are those areas where human development (i.e., structures) meets or intermingles with wildlands, which are defined as any area with more than 50% burnable vegetated cover. During wildfires, most structure damage and losses generally occur when embers and/or groundfire travels from wildland to structure within the WUI, leading to structure ignition. Research and case studies of past wildfire disasters have shown that structures and their surrounding landscape can be designed in ways to reduce home ignition potential (such as using non-combustible materials), thus greatly increasing their chance of survivability during a wildfire. In 2022, the Washington State Building Council passed the first WUI Code. The new WUI Code will go into effect in the county in October of 2023. The code is based on the International WUI Code and is amended by the state to require all jurisdictions to implement the requirements of RCW 19.27.560 within the framework of the model code published by the International Code Council (ICC). As adopted by the state, the minimum requirements are those found in RCW 19.27.560 and findings of fact are per the statewide WUI map maintained by Washington Department of Natural Resources. This initiative aims to support training, education, and outreach to local government, private, and commercial organizations on these newly adopted WUI codes and how communities can better enhance their resiliency to wildfire hazards. This initiative will also aim to continue public education on the WUI and its relation to determining wildfire risks as well as support federal, state, and local programs that encourage individuals and communities to take action to reduce wildfire risks. The education and outreach can also be incorporated into the core plan's Community Wildfire Protection Plan initiative (CW-WH-2).

Relates to Plan Goal(s) and Objectives: 3A, 4A, 8A, 8B, 9A

Lead: Thurston County Community Planning and Economic Development and Thurston County Emergency Management

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Annual budget, federal and state hazard mitigation grants, state and federal wildfire protection and mitigation grants

Source and Date: Hazards Mitigation Plan, Thurston County Annex, 2023

Initiative and Implementation Status: New initiative

Priority: 2 of 16 **Status: Modified**

TC-LH-1: County landslide hazard maps and regulations.

Hazard Addressed: Landslide

Category: Data Collection and Mapping

Background and Need: This initiative aims to update the county's landslide hazard maps based on best available landslide hazard assessment data, and limit activities in potential and historic landslide areas through regulation and public outreach. Thurston County is required by the state Growth Management Act (GMA) to protect critical areas. Geologic hazards such as landslides are a major concern along the county's marine shorelines and steep river and stream ravines. The areas with the most significant potential for landslide hazards are Black and Bald Hills, where forestry is the major land use. In 1992 Thurston County adopted development regulations for landslide hazards areas in its Critical Area Ordinance (CAO). An update of the county CAO was completed in 2012. GIS maps of landslide hazard were prepared for the county CAO, and comprehensive plan. Ongoing updates are made for these maps as new and updated hazard data becomes available.

Relates to Plan Goal(s) and Objectives: 4A, 7A

Lead: Thurston County Community Planning and Economic Development and Thurston County Geodata

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Annual budget

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region, Thurston County Annex, 2009

Initiative and Implementation Status: Thurston County still maintains landslide hazard maps through the GeoData center, with maps made publicly available for citizens and developers to reference. These landslide areas are incorporated into the county's Critical Area Ordinance to regulate development through the county's permitting process. Presently, Thurston County works closely with both WA State Department of Natural Resources and FEMA Region 10 to utilize LiDAR data to update the county's landslide risk inventory. The county is currently in the process of analyzing 2023 LiDAR data to make updates to its landslide hazard risks (reference initiative TC-LH-2). This initiative has been modified to emphasize the ongoing need to develop and maintain current landslide hazard maps as a development regulation and public education and outreach tool.

Priority: 3 of 16 **Status: Modified**

TC-FH-1: National Flood Insurance Program (NFIP) Community Rating System (CRS).

Hazard Addressed: Flood

Category: Plan Coordination and Implementaion

Background and Need: Since 2000, Thurston County has voluntarily participated in the CRS. The CRS program uses a 10 (low) to 1 (high) rating system. When Thurston County joined the CRS program in 2000, it was initially rated a Class 5 community resulting in a 25% flood insurance discount for policy holders. In October 2016, the county received a Class 2 rating. This equates to a 40% discount on flood insurance premiums for properties within the 100-year special flood hazard area (SFHA) and a 10 percent discount in non-SFHAs within unincorporated Thurston County.

To maintain a CRS class 2 rating or greater, the county must continue to implement and maintain 19 flood management activities across four categories: public information; mapping and regulations; flood damage reduction; and warning and response. Of the 19 activities, many directly support flood mitigation, to include but not limited to: flood protection; flood data maintenance; acquisition and relocation programs; map information services; floodplain management planning; flood projection projects; flood hazard mapping.

A full detailed list of activities eligible for CRS credit can be found in the Community Rating System Coordinator's Manual on FEMA's website under Floodplain Management. This initiative seeks to promote the ongoing implementation of specific activities that enhance flood hazard mitigation and give credit to the County under the CRS program, to include but not limited to: updating the county's flood hazard mitigation/floodplain management plans; reevaluate land use and zoning based upon most current floodplain maps; ongoing actions to remap the floodplains for all rivers, streams, and high groundwater areas and update Flood Insurance Rate Maps (FIRMs); continual partnership and participation in FEMA's Risk MAP program.

Relates to Plan Goal(s) and Objectives: 1B, 3A, 4C, 7A, 7B, 7D, 8A, 8B, 8C

Lead: Thurston County Community Planning and Economic Development and Thurston County Emergency Management

Estimated Cost: Moderate, $100,000 - $500,000

Time Period: 2023-2028

Funding Source: Annual budget, mitigation and flood hazard planning grants.

Source and Date: Thurston County Flood Hazard Management Plan, 2012

Initiative and Implementation Status: Thurston County has continued to participate in the CRS since 2000. In October 2016, the County received a Class 2 rating. Additionally, the Thurston County Commissioners adopted the 2017 updates to the Thurston County Flood Hazard Mitigation Plan which provides a comprehensive framework for implementation of various flood mitigation inanities that directly align with required activities under the CRS program. Thurston County has also completed several mitigation actions from the previous 2017 Hazards Mitigation Plan to include remapping the floodplains for rivers, streams, and high groundwater areas to update Flood Insurance Rate Maps (TC-FH-7), and reevaluating land use and zoning based upon new floodplain maps (TC-FH-10). This initiative has been modified to include the ongoing activities of these initiatives within its scope of work.

Priority: 4 of 16 **Status: Modified**

TC-MH-9 (previously TC-FH-21): Data collection of incident losses/costs for repetitive loss studies.

Hazard Addressed: Multi Hazard – Flood, Sea Level Rise, Severe Weather

Category: Data Collection and Mapping

Background and Need: This initiative aims to create procedures for data collection and documentation of incident costs as well as conduct study of repetitive cost losses. This would include residential structures, and also properties such as livestock, out-buildings and rescue costs not already identified by FEMA. FEMA's list of repetitive loss structures is very limited, and only covers repetitive loss due to flooding. This study would create a list of repetitive public costs which have been caused by structural damage from floods and other hazards including severe weather and sea level rise over a longer period or incurred from other types of public services, such as rescue costs. Additionally, the development of county procedures for data collection, documentation and archive of structure damage and other disaster costs during and after an incident would enhance the capacity to conduct such a study as well as future, similar studies.

Relates to Plan Goal(s) and Objectives: 7A, 7B

Lead: Thurston County Emergency Management, Thurston County Geodata, and Thurston County Community Planning and Economic Development

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Mitigation grants; preparedness grants; cybersecurity and resilience grants

Source and Date: Thurston County Information Technology Disaster Recovery (DR) Plan, 2016

Initiative and Implementation Status: During incident response and recovery, the County will often gather damage assessment data from both private residence reporting losses as well as documented public infrastructure losses and response costs as part of FEMA's public assistance and individual assistance programs. If gathered and documented correctly, this damage assessment data would have the potential to help further inform studies into repetitive losses. Therefore, this initiative is being modified to incorporate all natural hazards as well as to incorporate development of procedures for damage assessment data collection for potential use in future repetitive studies.

Priority: 5 of 16 **Status: New**

TC-FH-27: Thurston County Shoreline Master Program streambank-riverbank protection.

Hazard Addressed: Multi Hazard – Flood, Sea Level Rise

Category: Plan Coordination and Implementaion

Background and Need: Thurston County updated the 1990 Shoreline Master Plan in 2021 with adoption of the new plan updates expected in 2023 after public hearing. The proposed 2021 Shoreline Master Plan provides updates to account for the large increase in population and stress on our shorelines. The plan also promotes shore friendly practices to preserve and enhance vegetated areas along all shorelines through developmental regulation and public education. These vegetated areas, called buffers, help protect local waters and shoreline homeowners' properties. Implementation of the Shoreline Master Plan also supports actions from various mitigation initiatives from the 2017 Natural Hazards Mitigation Plan which have been incorporated into this initiative to include working with others to determine the width and conditions of river and stream shoreline buffers (TC-FH-12); encouraging research and utilization of bioengineering and other techniques in streambank protection (TC-FH-18); and working with landowners to establish reforested corridors along river and stream shorelines (TC-FH-17).

Relates to Plan Goal(s) and Objectives: 3A, 3D, 4A, 4B, 4C, 8B

Lead: Thurston County Community Planning and Economic Development and Thurston County Public Works

Estimated Cost: Medium, $100,000-$500,000

Time Period: 2023-2028

Funding Source: State and federal mitigation grants, state, and federal flood hazard grants. Annual budget.

Source and Date: Thurston County Shoreline Master Plan, 2021

Initiative and Implementation Status: New

Priority: 6 of 16 **Status: Modified**

TC-FH-22: Transportation infrastructure flood elevation mapping and prioritization.

Hazard Addressed: Flood

Category: Data Collection and Mapping

Background and Need: Thurston County has actively pursued grants and programs to elevate residential structures. This initiative will develop a prioritized list of at-risk segments of roads and bridges. This data would support the county in actively pursuing public infrastructure elevation. Criteria will be developed to rank potential road segments and bridges for elevation opportunities and culverts that may fail during flooding, for replacement. This will assist the county in being more proactive to flood management.

Relates to Plan Goal(s) and Objectives: 2A, 5C

Lead: Thurston County Public Works, Thurston County Community Planning and Economic Development, and Thurston Geodata

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Flood hazard planning grants, mitigation grants, annual budget.

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region, Thurston County Annex Sept. 2009

Initiative and Implementation Status: Thurston County Public Works and Community Planning and Economic Develop continue to work to identify areas which are at most risk. Thurston GeoData currently maintains up-to-date mapping of roads and bridges as well as current FEMA 100-year floodplain maps of rivers and streams for use in this detailed analysis. This initiative has also been modified to state its scope of work more clearly as data collection and mapping in support of potential future public infrastructure elevation projects.

Priority: 7 of 16 **Status: Modified**

TC-FH-14: Drainage basin plans in high-risk flood areas.

Hazard Addressed: Flood

Category: Plan Coordination and Implementaion

Background and Need: Drainage basin plans have been prepared for nine watersheds within Thurston County. These plans have been the basis for recommended solutions for flooding, habitat, and water quality projects. These needs have been incorporated into a list of capital facility projects. The plans can also identify other aspects of land use or zoning that may require further integration or analysis. This initiative also aims to support the implementation of recommended solutions for flood prevention, flood mitigation projects through a combination of stormwater utility rates funding and available state and federal grant opportunities

Relates to Plan Goal(s) and Objectives: 4C, 8A, 8B

Lead: Thurston County Community Planning and Economic Development and Thurston County Stormwater Utility

Estimated Cost: Medium, $100,000 - $500,000, costs will vary widely depending on costs of each basin plans recommended flooding, habitat, and water quality projects

Time Period: 2023-2028

Funding Source: Storm and surface water utility rates; flood hazard grants; mitigation grants; water quality & environmental grants

Source and Date: Thurston County Flood Hazard Management Plan, 1999; Capital Facilities Plan, 2018-2023; Hazard Mitigation Plan, Thurston County Annex, 2017

Initiative and Implementation Status: Thurston County currently has nine completed and adopted basin plans to include Chambers-Ward-Hewitt, Green Cove Creek, Indian-Moxie, McAllister-Eaton, Percival Creek, Salmon Creek, Woodland -Woodard, WRIA 11 Nisqually Plan, and WRIA 13. The activities of this initiative have been modified to focus development of additional drainage basin plans in areas vulnerable to flood risk. This initiative has also been modified to support implementation of existing adopted plans (previously initiative TC-FH-20).

Priority: 8 of 16 **Status: Modified**

TC-MH-10 (previously TC-FH-9): Mapping protocols for geospatial data of natural hazards.

Hazard Addressed: Multi Hazard – Dam Failure, Earthquake, Flood, Landslide, Sea Level Rise, Severe Weather, Tsunami, Volcanic Lahar, Wildfire

Category: Data Collection and Mapping

Background and Need: This initiative aims to develop mapping protocols to measure and collect geospatial data of natural hazards before and during disasters, and to archive all natural hazard datasets so they can be reused later. As Thurston County continues to enhance its capacity to utilize geospatial information systems, so too does the need to develop protocols to effectively collect, analyze, and manage pre- and post-incident damage. Various GIS technology exists to collect and map hazard data during incidents. Additionally, technology to model and predict natural hazard maps continues to increase capabilities to assess risk and vulnerabilities before an incident even occurs. The county currently leverages numerous forms of these GIS capabilities for comprehensive planning and land use development regulation with more than adequate GIS infrastructure to maintain and archive digital maps and natural hazards datasets. This initiative will focus on both continuous efforts to maintain best available hazard modeling datasets for flood and other hazards, such as maps produced from FEMA floodplain studies, as well as on developing protocols during any natural disasters for data collection and mapping of real incident hazard data. Developing protocols to collect, analyze and archive hazard data pre- and post-incident will enhance the county's capacity for future mitigation planning, such as identifying repetitive loss structures and impacted critical infrastructure that could be targeted for retrofit or replacement, as well as enhance the county's capability to educate and inform the public about these hazards.

Relates to Plan Goal(s) and Objectives: 7A

Lead: Thurston County GeoData, Thurston County Emergency Management, and Thurston County Community Planning and Economic Development

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Preparedness grants, annual budget

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: In the 2009 and 2017 Natural Hazards Mitigation plans, this initiative specifically focused on archiving all flood maps and datasets specifically for later use as a function of the National Flood Insurance and Community Rating System Programs. Since adoption of the 2017 Natural Hazards Mitigation plan, those mapping protocols have been completed, with Thurston County GeoData actively maintaining digital copies of all FEMA flood maps within the county's GIS. The initiative has been modified to continue expansion of the county's GIS capability to incorporate data collection and mapping for all types of natural hazards where mapping data is available before, during, and/or after incidents.

Priority: 9 of 16 **Status: New**

TC-FH-26: Relocation or elevation of structures within flood hazard zones.

Hazard Addressed: Flood

Category: Hazard Damage Reduction

Background and Need: Thurston County has continually maintained and updated lists of residential properties that reside with the Special Flood Hazard Area (otherwise known as the 1 percent annual or 100-year floodplain) as part of its continual commitment as a participant of the FEMA Community Rating System program and flood hazard mitigation planning. This initiative is a continuation of the hazard damage reduction goal of completed initiatives TC-FH-15 and TC-FH-16 which aimed to develop a prioritized list of residential structures ideal for elevation or relocation. Elevation or relocation of residential structures before the next large scale flooding event is more cost effective than recovery costs post-flood incident. As grants and other funding opportunities are made available, the county will continue to assist with and promote elevation and/or voluntary relocation of residential structures within flood hazard areas.

Relates to Plan Goal(s) and Objectives: 3A

Lead: Thurston County Community Planning and Economic Development and Thurston County Emergency Management

Estimated Cost: High, over $500,000

Time Period: 2023-2028

Funding Source: Mitigation grants; Block grants

Source and Date: Hazard Mitigation Plan, Thurston County Annex, 2017; Flood Hazard Mitigation Plan for Thurston County, 2017

Initiative and Implementation Status: New

Priority: 10 of 16 **Status: Modified**

TC-FH-8: Map and update river and stream channel migration zones.

Hazard Addressed: Flood

Category: Data Collection and Mapping

Background and Need: Mapping of valuable or important natural features is just as an important role for a GIS system as mapping hazardous areas. Areas with excellent riparian habitat have very low impact upon the river during flood events. The importance of identifying these existing high-quality habitats will establish baseline conditions from which future restoration projects can build upon. The historic meander belt has been mapped for the Deschutes River. GIS mapping of similar channel migration zones will be needed for the Black, Chehalis, Skookumchuck, and Nisqually Rivers, with an update for the Deschutes River using the same methodology. Additionally, as additional and/or updated data sets (such as LiDAR) become available, there is an ongoing need to update existing channel migration zones utilizing best available science and data to plan accordingly for changes within these zones.

Relates to Plan Goal(s) and Objectives: 3A, 4B, 4C, 7B, 8A

Lead: Thurston County Community Planning and Economic Development, Thurston County Stormwater Utility, and Thurston County Geodata

Estimated Cost: High, over $500,000

Time Period: 2023-2028

Funding Source: State and/or Federal grants, unknown

Source and Date: Thurston County Flood Hazard Management Plan, Dec. 2012

Initiative and Implementation Status: Since the origin of this initiative, Thurston County has mapped channel migration zones for various rivers and categorized basins using available data. However, new LiDAR data has since become available. With assistance from WA State Department of Ecology, the county will work to update existing channel migration zone and riparian habitat maps. The initiative has been modified to indicate the need to develop new mapping as well as update existing mapping as more current data become available.

Priority: 11 of 16 **Status: Modified**

TC-MH**-6: Resilience study of private roads and bridges.**

Hazard Addressed: Multi Hazard – Dam Failure, Earthquake, Flood, Landslide, Sea Level Rise, Severe Weather, Tsunami, Volcanic Lahar, Wildfire

Category: Data Collection and Mapping

Background and Need: This initiative aims to conduct a study of private roads and bridges to determine their capacity to provide access to emergency vehicles, access to impacted community members for evacuation, and vulnerability to impacts from natural disasters. During disasters, emergency responders are required to gain access to the scene of the emergency by traversing private roads and bridges. Too often, these roads and bridges have not been constructed or maintained in accordance with state or county standards, nor designed by a licensed engineer. As a result, they pose a risk to response personnel and equipment. Additionally, state law does not allow fire equipment to travel across bridges that do not have their capacity posted. Members of otherwise isolated communities may rely on these private roads and bridges if public transportation infrastructure becomes impacted during a disaster. Private roads and bridges may also be impacted in case of large-scale evacuation either to or from Thurston County areas due to tsunami and volcanic lahar hazards. This initiative will inventory, assess, and develop post incident inspection plans for private roads and bridges used by responders during disasters. Additionally, it will identify funding sources to replace or retrofit roads and bridges that do not meet established criteria, are determined to be at high risk from natural hazard(s), and/or to post bridge capacity information.

Relates to Plan Goal(s) and Objectives: 7A

Lead: Thurston County Geodata, Thurston County Emergency Management, and Thurston County Community Planning and Economic Development

Estimated Cost: Medium, $100,000-$500,000, dependent on recommended retrofits to infrastructure based on study

Time Period: 2023-2028

Funding Source: Preparedness grants, mitigation grants

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: Thurston County has been unable to start this project due to resource constraints and other priorities. However, the county has collaborated with state and regional partners as part of catastrophic incident planning to analyze potential impacts to critical transportation in the event of a catastrophic incident such as an earthquake. As part of that planning, the county has identified areas and communities that may become isolated from essential services should bridges become damaged. This information can be used to develop a prioritized list of private roads and bridges based on the relative need for those roads and bridges during incident response. This initiative has been modified to further expand upon the scope of work to incorporate considerations for community access during an incident as well as considerations of impacts from non-seismic hazards, such as flooding and landslides.

Priority: 12 of 16 **Status: Modified**

TC-MH-1: Redundant network infrastructure for essential county services.

Hazard Addressed: Multi Hazard

Category: Critical Facilities Replacement / Retrofit

Background and Need: This initiative would build redundant infrastructure at the Tilley Road campus to function as an alternate data site should a disaster render the main Thurston County data center inoperable and/or unavailable. This initiative will also incorporate installation of necessary hardware to recover county data from an off-site, air-gapped backup data center. Thurston County departments and offices have identified mission critical applications as part of their assessment of essential business functions. Most of these applications reside on virtual servers (virtual machines or VM) housed at the primary site located at the main courthouse campus data center. Thurston County Information Technology (IT) has set up an alternate site for disaster recovery located at the Tilley Road campus and has established off-site, air gapped backups of the county's data as part of new cybersecurity measures. Currently, limited hardware is in place to retrieve air-gapped backup data should the county need to restore data for essential county government services. If an incident or disaster strikes and the network and VM infrastructure at the main courthouse is impacted, primary servers will be down, interrupting critical/essential county functions. With approval and funding of this initiative, Thurston County IT would be able to purchase the necessary hardware and supplies to build adequate infrastructure and storage at the Tilley campus to establish redundancy and replication between the off-site, air-gapped backup data and primary/alternate site(s). This would allow IT to be able to restore systems at the alternate site to allow county departments and offices to resume critical and essential business functions in the event of a disaster and/or loss of data at the main courthouse campus data center.

Relates to Plan Goal(s) and Objectives: 1A, 2B, 2C, 5D

Lead: Thurston County Information Technology, Thurston County Emergency Management, and Thurston County Geodata

Estimated Cost: Medium, $100,000 to $500,000

Time Period: 2023-2028

Funding Source: Mitigation grants; preparedness grants; cybersecurity and resilience grants

Source and Date: Thurston County Information Technology Disaster Recovery (DR) Plan, 2016

Initiative and Implementation Status: Thurston County IT has implemented new cybersecurity requirements to have the county's backup data stored at an off-site, air-gapped location. The initiative has been modified to also include the purchase and installation of necessary hardware and infrastructure to enable to retrieval of county data from an off-site, air-gapped backup data center. The redundant datacenter would be designed to act as a backup center for critical emergency response and coordination functions as well as an alternate site to download backup data from an off-site location to facilitate long term recovery and continuity of government.

Priority: 13 of 16 **Status: Modified**

TC-LH-2: Landslide vulnerability index for county roads and critical facilities.

Hazard Addressed: Landslide

Category: Data Collection and Mapping

Background and Need: This initiative aims to update the existing landslide vulnerability index for county roads and other county owned critical infrastructure based on new LiDAR datasets. This effort involves creating and maintaining a roadway hazard data layer relating to unstable slopes; utilizing the county's list of problem roads and previous damage locations to inspect, evaluate, and rank each potential slope; utilizing a hazard classification system that includes potential impacts on health and safety, as well as commercial disruption; and utilizing the list to prioritize repairs and identify first response plans for high-risk sites. Additionally, the county will be able to use the hazard data layer to analyze at risk critical infrastructure and apply a similar hazard classification system. This risk index would help prioritize and future potential replacement/retrofit actions on critical infrastructure and other county facilities.

Relates to Plan Goal(s) and Objectives: 7A, 7B, 7C

Lead: Thurston County Public Works and Thurston County Community Planning and Economic Development

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Mitigation grants, annual budget.

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region, 2003

Initiative and Implementation Status: Since the original adoption of this initiative in the 2003 Natural Hazards Mitigation Plan for the Thurston Region, Thurston County has worked closely with State and Federal partners to include WA State Department of Natural Resources and FEMA Region 10 to routinely update landslide hazard data based on LiDAR datasets. Presently, the county is working with WA DNR to process new 2023 LiDAR datasets to reevaluate and update landslide hazards. Once completed, the county will be able to update roadway hazard data layers relating to unstable slopes and previous landslide areas. The available roadway hazard data layer will be able to enhance capacity for future landslide and earthquake mitigation and response planning by identifying potential impacts to health and safety, commercial disruption, and high risk/high priority sites. In addition to being applicable to mapping roadway hazards, a similar methodology could be applied to other county owned critical infrastructure that is potentially exposed to landslide hazards. As such, this initiative has been modified to both express the need for ongoing landslide vulnerability mapping as well as include the potential for incorporating additional county critical infrastructure within a landslide vulnerability index.

Priority: 14 of 16 **Status: Modified**

TC-EH-3: Seismic evaluation and inspection of bridges training.

Hazard Addressed: Earthquake

Category: Hazard Preparedness

Background and Need: Bridges play a critical role in the transportation network within Thurston County. Rapid evaluation of bridge integrity is important to facilitate community recovery after an earthquake. Currently Thurston County Public Works maintains a sufficiency rating based on structural and geometric adequacy and other factors, but this does not effectively include seismic evaluations. Public Works would like to provide the seismic evaluation training to engineering staff to facilitate bridge inspections after earthquakes. In addition, training staff on seismic evaluation of bridges would enhance the capacity of county personnel to conduct pre-seismic inspections and assessments of roads and bridges as part of potential future studies on the seismic risk and vulnerability of transportation infrastructure. These actions would help provide information to drive further mitigation actions to strengthen the resiliency of the County's transportation infrastructure.

Relates to Plan Goal(s) and Objectives: 1D, 2A

Lead: Thurston County Public Works

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Mitigation and preparedness grants, and annual budgets

Source and Date: Hazards Mitigation Plan for Thurston County, 2017

Initiative and Implementation Status: County design and construction engineers receive training on conducting seismic evaluations on public infrastructure. However, there have been gaps identified in training specific to seismic evaluation of bridges. County engineer staff attended training on seismic evaluation of bridges in 2017 when this initiative was first adopted. However, further training is needed to sustain this capability due to staff turnover. This initiative has also been modified to include not just evaluation of bridges post-incident, but pre-incident evaluation of bridges to build capacity for future earthquake mitigation planning.

Priority: 15 of 16 **Status: Existing**

TC-EH-4: Non-structural earthquake hazards training and public education.

Hazard Addressed: Earthquake

Category: Public Information

Background and Need: Damage from earthquakes can occur in nonstructural components such as:

- Architectural components (partitions, ceilings, storefronts, glazing, cladding, veneers, chimneys, fences, and architectural ornamentation)
- Mechanical, electrical, and plumbing components (pumps, chillers, fans, air handling units, motor control centers, distribution panels, transformers, and distributions systems such as piping ductwork and conduit)
- Furniture, fixtures & equipment, and contents (shelving, bookcases, industrial storage racks, retail merchandise, books, medical records, computers and desktop equipment, wall and ceiling mounted TVs and monitors, file cabinets, kitchen, machine shop or other specialty equipment, industrial chemicals or hazardous materials, museum artifacts, and collectibles).
- Damage to non-structural components of a building can cause injury or effect the operational use of buildings after an earthquake even if structural component hazards have been mitigated.

This initiative will educate building owners, facility managers, maintenance personnel, store or office managers, corporate or agency department heads, and homeowners on sources of earthquake damage in nonstructural components and provide information on effective methods for reducing risk associated with nonstructural building damage.

Relates to Plan Goal(s) and Objectives: 6A, 6B, 9A

Lead: Thurston County Emergency Management

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Preparedness grants, mitigation grants, annual budget

Source and Date: Hazards Mitigation Plan, Thurston County Annex, 2017

Initiative and Implementation Status: This initiative was introduced in the 2017 Natural Hazards Mitigation Plan for the Thurston Region. Presently, there is still an unmet need for additional education and training on assessment and reduction of non-structure earthquake hazards, so the initiative has been carried into the current plan. The increased education on and awareness of these hazards will help promote further implementation of simple and cost-effective steps to mitigate earthquake hazards.

Priority: 16 of 16 **Status: Existing**

TC-FH-4: Coordinated flood hazard reduction with Chehalis River Basin Flood Authority.

Hazard Addressed: Flood

Category: Plan Coordination and Implementaion

Background and Need: Thurston County has been involved with federal, state, local and tribal jurisdictions to seek ways of reducing flood hazards along the Skookumchuck and Chehalis Rivers. Thurston County stakeholders seek comprehensive solutions. Measures that benefit stakeholders outside the Thurston Region must not produce adverse environmental conditions to the detriment of stakeholders down river from project areas.

Relates to Plan Goal(s) and Objectives: 4D

Lead: Thurston County Community Planning and Economic Development and Thurston County Emergency Management

Estimated Cost: Low, less than $100,000

Time Period: 2023-2028

Funding Source: Annual budget and external funding opportunities

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: Thurston County continues to be involved with flood studies, the Flood Advisory Board, and public information activities of adjacent counties regarding the potential for floods within the Chehalis basin.

5.2.1 Mitigation Actions Prioritization Process and Cost Benefit Review

The planning team conducted a cost-benefit evaluating the relative benefit of each initiative across eight benefit-cost review and prioritization criteria. The planning team used the same process and methodology that was completed at the regional level for the core plan initiatives. In instances where mitigation actions received similar scores, the planning team assigned a higher priority to the initiatives possessing the highest benefit to life safety.

The figure on the following page shows the results of the cost-benefit review. The order of implementation may vary from the identified priority due to changing hazard conditions or the criteria of available county funds and grants. The county will pursue funding for projects that stand the greatest chance of competing for limited state and federal funding opportunities.

Prioritization & Cost-Benefit Review Worksheet

Mitigation Initiative	Hazard Risk Rating	Project Affordability	Goals and Policies	Life Safety	Social Vulnerability	Changes in Development	Climate Change	Geographic Impact	Total Score
TC-WH-01: Structural ignition prevention codes in the wildland urban interface (WUI).	HIGH	HIGH	HIGH	MED	HIGH	MED	HIGH	HIGH	36
TC-LH-1: County landslide hazard maps and regulations.	MED	HIGH	MED	HIGH	HIGH	HIGH	HIGH	HIGH	36
TC-FH-1: National Flood Insurance Program (NFIP) Community Rating System (CRS).	MED	LOW	HIGH	HIGH	HIGH	HIGH	MED	HIGH	32
TC-MH-9: Data collection of incident losses/costs for repetitive loss studies.	HIGH	MED	MED	MED	HIGH	HIGH	MED	HIGH	32
TC-FH-27: Thurston County Shoreline Master Program streambank-riverbank protection.	MED	MED	HIGH	MED	HIGH	HIGH	MED	HIGH	32
TC-FH-22: Transportation infrastructure flood elevation mapping and prioritization.	MED	HIGH	MED	MED	HIGH	LOW	HIGH	HIGH	30
TC-FH-14: Drainage basin plans in high-risk flood areas.	MED	MED	MED	MED	HIGH	MED	HIGH	HIGH	30
TC-MH-10: Mapping protocols for geospatial data of natural hazards.	HIGH	MED	LOW	HIGH	MED	HIGH	MED	HIGH	30
TC-FH-26: Relocation or elevation of structures within flood hazard zones.	MED	LOW	LOW	HIGH	HIGH	HIGH	MED	HIGH	28
TC-FH-8: Map and update river and stream channel migration zones.	MED	LOW	HIGH	MED	HIGH	HIGH	MED	MED	28
TC-MH-6: Resilience study of private roads and bridges.	HIGH	MED	LOW	MED	HIGH	LOW	MED	HIGH	26
TC-MH-1: Redundant network infrastructure for essential County services.	HIGH	HIGH	HIGH	HIGH	HIGH	NONE	NONE	LOW	26
TC-LH-2: Landslide vulnerability index for county roads and critical facilities.	MED	MED	MED	MED	MED	LOW	HIGH	HIGH	26
TC-EH-3: Seismic evaluation and inspection of bridges training.	HIGH	HIGH	MED	HIGH	MED	LOW	NONE	MED	25
TC-EH-4: Non-structural earthquake hazards training and public education.	HIGH	HIGH	MED	MED	MED	LOW	NONE	HIGH	25
TC-FH-4: Coordinated flood hazard reduction with Chehalis River Basin Flood Authority.	MED	HIGH	LOW	MED	HIGH	MED	MED	LOW	24
								Benefit Points (High = 5, Med = 3, Low = 1)	

5.3 Mitigation Initiatives – Completed or Removed

Initiatives that were completed or removed by Thurston County are not part of the county's adopted mitigation strategy. The county completed seven and removed nine initiatives. They are included in this section to document progress made and changes in the county's mitigation strategy since the plan was last updated.

Status	ID-Number	Category	Initiative title / description
Completed	TC-FH-10	Development Regulations	Reevaluate land use and zoning based upon new floodplain maps
Removed	TC-FH-25	Hazard Preparedness	Develop evacuation plans for communities and residences situated downstream from the Nisqually and Skookumchuck river dams
Completed	TC-FH-16	Hazard Damage Reduction	Draft a prioritized list of which residences the County would help relocate out or elevate above the 100-year floodplain.
Completed	TC-FH-15	Hazard Damage Reduction	Draft a prioritized list of which floodway residences the County would relocate out or acquire (buyout) if state and federal monies are available.
Completed	TC-FH-7	Data Collection and Mapping	Remap the floodplains for all rivers, streams, and high groundwater areas and update the Flood Insurance Rate Maps (FIRMs)
Removed	TC-FH-20	Plan Coordination & Implementation	Implement recommendations of the adopted stormwater drainage basin plans.
Removed	TC-FH-17	Public Outreach & Information	Work with landowners and others to establish reforested corridors along river and stream shorelines
Removed	TC-FH-18	Public Outreach & Information	Encourage research into bioengineering and other techniques which provide streambank protection and improve fisheries using large woody debris. Support local demonstration projects which could provide such research.
Completed	TC-FH-11	Development Regulations	Revise shoreline regulations to encourage "shoreline protective structures" to be "bioengineered"
Removed	TC-MH-2	Hazard Preparedness	Coordinate existing plans for post disaster inspections of critical facilities and other publicly owned buildings
Removed	TC-MH-5	Data Collection & Mapping	Conduct a study to assess County private sector ability to meet public demand for critical resources
Completed	TC-FH-12	Development Regulations	Work with others to determine the width and conditions of buffers along river and stream shorelines.
Removed	TC-MH-7	Hazard Preparedness	Develop plans to address the medical needs of people who rely on electrically powered medical equipment and/or do not have dependable transportation
Removed	TC-MH-3	Hazard Preparedness	Improve the capability to identify moderate to long term road impedances and put them into the CAD (Computer Aided Dispatch).
Completed	TC-FH-13	Development Regulations	Draft a Comprehensive Plan policy which encourages the creation and use of wetland mitigation bank.
Completed	TC-FH-2	Plan Coordination & Implementation	Secure funding for flood related projects within the 20-year Stormwater Capital Facilities Plan

Status: Completed

TC-FH-10: Reevaluate land uses, and zoning based upon new floodplain maps.

Hazard Addressed: Flood

Category: Plan Coordination and Implementaion

Background and Need: After preparing the new floodplain maps, the next step will be to incorporate this new data into the development permit review process. It is likely that the areas covered under these maps will increase, and that the new coverages (data sets) will extend into already built-up areas or developing areas. Therefore, the adoption process for each new floodplain map will need to include a detailed analysis of impacts and options not unlike a sub-area plan. These reviews would be phased to coincide with the river system being mapped.

Relates to Plan Goal(s) and Objectives: 8A, 8B

Lead: Thurston County Resource Stewardship

Estimated Cost: $5,500

Time Period: 2016-2021

Funding Source: Annual budget

Source and Date: Thurston County Flood Hazard Management Plan (Revised 12/2012)

Initiative and Implementation Status: Thurston County proactively updates floodplain land use and zoning through several developmental regulations including the Shoreline Master Program and Critical Areas Ordinance. The county utilizes best available science and data and collaborates closely with FEMA to conduct regular flood studies and Flood Insurance Rate Map (FIRM) updates. The activities of this initiative are inherent in the county's commitment to participation in the NFIP, maintaining at least a Class 2 CRS rating, and maintaining a flood hazard mitigation plan as described in initiative TC-FH-1, and have been combined into initiative TC-FH-1 to reduce redundancy.

Status: Removed

TC-FH-25: Develop evacuation plans for communities and residence situated downstream from the Nisqually and Skookumchuck river dams.

Hazard Addressed: Flood

Category: Hazard Preparedness

Background and Need: In the event of a large release from the Nisqually or Skookumchuck River dams, downstream residents and communities must be moved out of harm's way as effectively and quickly as possible. This initiative will establish procedures for warning, evacuating, and sheltering those within the dam inundation areas. It will also identify procedures for securing the perimeter and the interior of the affected area and for allowing evacuees to return to their homes. The procedures will be designed to accomplish these functions with minimum confusion and maximum speed.

Relates to Plan Goal(s) and Objectives: 1B, 7B, 8B

Lead: Thurston County Emergency Services, Resource Stewardship

Estimated Cost: $50,000

Time Period: 2016-2018

Funding Source: Grants and local match

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region, Thurston County Annex Sept. 2009

Initiative and Implementation Status: Evacuation routes have been developed based on dam failure hazard profile maps, and evacuation procedures exist as part of the county's Comprehensive Emergency Management Plan – ESF 13 (Public Safety and Security) Annex. However, specific evacuation procedures exclusive to communities downstream of river dams in the county have not been developed. The activities of this initiative are already adopted by the county as a countywide hazard mitigation initiative in the core plan to address dam failure hazard vulnerabilities and will be removed from this annex to reduce redundancy.

Status: Completed

TC-FH-15: Draft a prioritized list of which residences the county would help relocate or elevate above the 100-year floodplain, if state or federal monies are available.

Hazard Addressed: Flood

Category: Hazard Preparedness

Background and Need: There were approximately 120 residences along the Nisqually River which were damaged to the degree that their structural integrity was evaluated after the floods of 1995/1996. Of these, approximately 50-60 homes continue to be habitable structures which could greatly benefit from having their first-floor level elevated. In 1998 the Thurston County Housing Authority obtained a State Community Development Block Grant to elevate 4 residences in unincorporated Thurston County. Although costs for elevation generally average about $40,000 per structure, this is much less per structure than a buy-out program. Thus, a greater number of structures could be flood proofed and an established neighborhood maintained, in comparison with an equally funded buy- out program. In the future, criteria will need to be developed to rank potential residence elevation opportunities before and not after the next full-scale flooding event. An elevation program is most appropriate for residences within the floodplain away from high velocity flows, or in areas of high groundwater.

Relates to Plan Goal(s) and Objectives: 3A

Lead: Thurston County Resource Stewardship, Thurston County Central Services – Thurston GeoData Center

Estimated Cost: $20,000

Time Period: 2010-2015

Funding Source: Unknown

Source and Date: Thurston County Flood Hazard Management Plan Dec. 2012

Initiative and Implementation Status: Since the last Hazard Mitigation Plan, Thurston County has drafted and maintains a list of residences within the Special Flood Hazard Zone that the county would relocate out or elevate above the 100-year floodplain. The county continues to maintain this list and routinely update flood hazard maps and zones as part of its commitment to participating in FEMA's Community Rating System program. (Refer to initiative TC-FH-1). A new initiative has also been developed to serves as the ongoing efforts to promote relocation or elevation of those residential structures within the Special Flood Hazard Zone (Refer to initiative TC-FH-26).

Status: Completed

TC-FH-7: Remap the floodplains for all rivers, streams, and high groundwater areas and update the Flood Insurance Rate Maps (FIRMs).

Hazard Addressed: Flood

Category: Hazard Preparedness

Background and Need: The floods of 1990 and 1996 have indicated the inadequacy of the 1982 FEMA 100-year floodplain maps. Although Thurston County amended its Flood Plain Ordinance to require consideration of aerial photos showing the extent of the "flood of record", it and the Critical Area Ordinance rely upon an officially adopted map. Once the aerial topography project is complete, Thurston County should begin to develop new flood maps based upon new USGS protocol contained within "Updating Flood Inundation Maps Effectively", as amended or updated. Remapping should be in the following order: Nisqually, Deschutes, Skookumchuck, Chehalis, and Black River.

Relates to Plan Goal(s) and Objectives: 7A, 7B

Lead: FEMA Region 10, WA Dept. of Ecology, Thurston County Central Services – Thurston GeoData Center

Estimated Cost: Unknown

Time Period: 2017-2021

Funding Source: Unknown

Source and Date: Natural Hazard Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: Thurston County has committed to continually work with FEMA Region 10 and Washington Department of Ecology as a participant of FEMA's Risk MAP program to maintain current floodplains in Thurston County based on best available science and data. To date, floodplain maps have been updated and adopted for the Deschutes River (2016), the Lower Chehalis watershed to include Chehalis, Black and Skookumchuck Rivers and Scatter Creek (2018), and Nisqually River (2020). FEMA Region 10 and the county have also concluded a Thurston County Lakes flood map update in 2022 with adoption expected in Spring/Summer of 2024 after the review and commentary period. Presently, there are no FEMA plans for mapping high groundwater or smaller creeks and streams within the county. However, Thurston County continues to improve capacity for capturing and documenting high water elevation during flood events to develop flood maps in high groundwater areas, creeks and streams that otherwise fall outside of the FIRM 100-year floodplain. The activities of this initiative closely tie to Thurston County's continual participation in FEMA's Community Rating System as part of the National Flood Insurance Program. As such, the ongoing activities associated with this initiative are being consolidated with initiative TC-FH-1.

Status: Removed

TC-FH-20: Implement recommendations of the adopted stormwater drainage basin plans.

Hazard Addressed: Flood

Category: Plan Coordination and Implementaion

Background and Need: Thurston County has adopted nine stormwater drainage basin plans. These cover areas in and around the north county urban growth area boundary. Each plan contains recommendations for flood mitigation related activities. These may include adopting new development regulations, developing new capital facility projects, and developing new policies for the comprehensive land use plan. For example, the Green Cove Creek Drainage Basin Plan (2000) contained a recommendation for maintaining a certain percent of forest canopy. Implementing this would involve changes to zoning densities, and other development regulations. It may also include the acquisition of conservation easements and reforestation of parcels to help attain the target for forest cover.

Relates to Plan Goal(s) and Objectives: 8B

Lead: Thurston County Storm and Surface Water Utility

Estimated Cost: Cost is part of annual workplan

Time Period: 2017-2021

Funding Source: Unknown

Source and Date: Natural Hazard Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: The activities of this initiative are being combined with initiative TC-FH-14 to consolidate mitigation actions as both relate to the goal of enhancing stormwater drainage as a means of flood hazard mitigation.

Status: Removed

TC-FH-17: Work with landowners and others to establish reforested corridors along river and stream shorelines.

Hazard Addressed: Flood

Category: Public Information

Background and Need: Reestablishing a forested edge along river and stream shorelines countywide is a significant long-term project that will involve more just than Thurston County. It requires working with thousands of property owners and involves the planting of countless trees and plants. Easement or use restrictions may be employed, since reliance on completely voluntary incentives, such as the Open Space Tax Program, have shown that other techniques will need to be employed if the state's Salmon Strategy is to be a success.

Relates to Plan Goal(s) and Objectives: 4A, 4B, 6B

Lead: Thurston County Resource Stewardship, Thurston County Public Works, Thurston Conservation District, and U. S. Natural Resources Conservation Service.

Estimated Cost: Unknown

Time Period: 2017-2024

Funding Source: Unknown

Source and Date: Thurston County Flood Hazard Management Plan (Revised 12/2012); Resolution #11947

Initiative and Implementation Status: Since this initiative, Thurston County has incorporated several shore friendly actions within updates to the county's Shoreline Master Plan, which is expected to be adopted in 2023. The Shoreline Master Plan supports landowner and developer implementation of streambank protection and restoration activities (such as the reforestation along river and stream shorelines) through a combination of development regulation and public education. As such, this initiative is being combined with a new initiative (TC-FH-27) that supports the implementation and public education of the Shoreline Master Plan and other shore friendly programs.

Status: Removed

TC-FH-18: Encourage research into bioengineering and other techniques which provide streambank protection and improve fisheries using large woody debris. Support local demonstration projects which could provide such research.

Hazard Addressed: Flood

Category: Public Information

Background and Need: Local knowledge is often gained through local examples. The state has funded several bioengineering pilot projects on the Deschutes River. Not only did these projects solve existing problems, but they added to the local cumulative knowledge and were successful projects. If the state Salmon Strategy is to succeed, it will be necessary to continue to learn how to protect shorelines while providing as much fish habitat as possible.

Relates to Plan Goal(s) and Objectives: 4A, 4B

Lead: Thurston County Resource Stewardship, Thurston County Public Works, Thurston Conservation District, and Natural Resources Conservation Service.

Estimated Cost: Unknown

Time Period: 2017-2024

Funding Source: Unknown

Source and Date: Thurston County Flood Hazard Management Plan (Revised 12/2012)

Initiative and Implementation Status: Since this initiative, Thurston County has incorporated river/stream bank resource regulation into the Shoreline Master Program, which is expected to be adopted in 2023. Thurston County Public Works has also implemented road design and permitting processes that promote streambank protection and fish passage along rivers and streams throughout the county. Because of the initiative's close relation and mutual support of the Shoreline Master Program, it is being combined into the new initiative TC-FH-27 that supports implementation of the Shoreline Master Program and other shore friendly programs, to include bioengineering and other streambank protection techniques.

Status: Completed

TC-FH-11: Revise shoreline regulations to encourage "shoreline protective structures" to be "bioengineered"

Hazard Addressed: Flood

Category: Development Regulations

Background and Need: The past decade has brought a fundamental transformation in how stream bank erosion projects are approached. The technique, called “bioengineering”, combines the fields of engineering, landscaping, hydrogeology and fisheries biology. It uses bits and pieces of these disciplines to mimic natural river conditions. This text change is necessary because several stream bank restoration projects constructed by federal agencies were approved under the guise of restoration projects but were constructed as riprap or rock only jobs.

Relates to Plan Goal(s) and Objectives: 4A, 4B, 8B

Lead: Thurston County Resource Stewardship.

Estimated Cost: $5,000

Time Period: 2010-2011

Funding Source: Annual budget for Shoreline Management Plan update

Source and Date: Thurston County Flood Hazard Management Plan (1999); Resolution #11947

Initiative and Implementation Status: In 2021, Thurston County incorporated several updates into the Shoreline Master Program which include regulations that encourage bioengineered shoreline protection among other development regulations. The Shoreline Master Program updates will be adopted in 2023.

Status: Removed

TC-MH-2: Coordinate existing plans for post disaster inspections of critical facilities and other publicly owned buildings

Hazard Addressed: Multi Hazard

Category: Hazard Preparedness

Background and Need: This task will require coordination between four Thurston County departments. The building inspectors from Resource Stewardship and Central Services would be inspecting the structures, whereas the inspectors from Public Works would focus on bridges and the other pieces of the county's transportation infrastructure. Emergency Services will coordinate these plans and personnel before a disaster so that all critical facilities are inspected in a timely fashion and facilities are not overlooked in the process. Over time, the county would like to broaden this initiative to include all jurisdictions. Therefore, it may be appropriate to shift this to a "County Wide" initiative during the next update cycle.

Relates to Plan Goal(s) and Objectives: 6A, 6B, 7B

Lead: Thurston County Resource Stewardship, Thurston County Public Works, Thurston County Central Services, and Thurston County Emergency Services.

Estimated Cost: $7,500

Time Period: 2017-2020

Funding Source: Unknown

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region (2009)

Initiative and Implementation Status: Since the last plan update, Thurston County completed updates to its Comprehensive Emergency Management Plan (CEMP) along with the Emergency Support Function Annexes for Transportation, and Public Works and Engineering. The CEMP along with the support function annexes outline the framework for coordination of post disaster inspection and damage assessment of critical facilities and other publicly owned buildings. The county has also partnered with the cities of Lacey, Olympia, Yelm, and Tumwater to develop a Thurston Region Disaster Recovery Framework. While continual planning coordination and procedures should be developed to enhance the county's capacity to conduct post disaster inspection and assessments, these actions are more appropriate for preparedness, response, and recovery plans rather than the county's mitigation plan.

Status: Removed

TC-MH-5: Conduct a study to assess county private sector ability to meet public demand for critical resources.

Hazard Addressed: Multi Hazard

Category: Data Collection and Mapping

Background and Need: An incident or event could cause disruptions in supply chains resulting in the reduction of supplies of critical resources for Thurston County residents. A study would identify the location of critical supplies in stock with in-county private/commercial wholesalers and retailers. This study could assist in identifying potential key partners in planning to create temporary supply chains to be activated in an emergency.

Relates to Plan Goal(s) and Objectives: 5D, 6B

Lead: Thurston County Emergency Management

Estimated Cost: $30,000

Time Period: 2017-2022

Funding Source: Grants and local funding

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region (2017)

Initiative and Implementation Status: Thurston County has conducted collaborative planning with state and other regional partners as part of a Statewide Catastrophic Incident Planning Team (SCIPT). Planning efforts within this team have included the identification of distribution centers and primary food sources. While work will continue to assess the private sector's capability to maintain supply chain integrity and resiliency, these functions serve more as a means of emergency response and recovery planning. Therefore, the initiative is being removed from the mitigation plan, but these actions will continue within other preparedness planning activities in the county.

Status: Completed

TC-FH-12: Work with others to determine the width and conditions of buffers along river and stream shorelines.

Hazard Addressed: Flood

Category: Development Regulations

Background and Need: This recognizes the listing of certain salmon stocks under the Federal Endangered Species Act in Puget Sound and the potential for similar actions on all rivers within Thurston County and the importance of the Puget Sound Partnership objectives for improving the Sound. It also acknowledges the importance of forests along these shorelines for quality fish habitat. As documented in the Budd Inlet-Deschutes River Watershed Action Plan (1995), issues of bank erosion, water quality and salmon habitat are all directly related to the presence or absence of a forested canopy along the river. These new or revised regulations would likely become a part of the Thurston County Critical Areas Ordinance.

Relates to Plan Goal(s) and Objectives: 4C, 7A, 8B

Lead: Thurston County Resource Stewardship

Estimated Cost: $25,000

Time Period: 2017-2019

Funding Source: Community Trade and Economic Development and grants

Source and Date: Thurston County Flood Hazard Management Plan (1999); Resolution #11947

Initiative and Implementation Status: Since adoption of the 2017 Natural Hazards Mitigation Plan, Thurston County has completed a comprehensive review of existing conditions of buffers along river and stream shoreline. This data has been incorporated into the 2021 update to the Shoreline Master Program to enhance development regulations within those critical areas. Ongoing review of stream and river shoreline buffers will continue as part of the soon to be adopted Shoreline Master Program (ref. TC-FH-27).

Status: Removed

TC-MH-7: Develop plans to address the medical needs of people who rely on electrically powered medical equipment and/or do not have dependable transportation.

Hazard Addressed: Multi Hazard

Category: Hazard Preparedness

Background and Need: Historical disasters have highlighted the importance of planning for people with medical needs during times of disaster. People dependent on electric medical equipment are especially vulnerable during power outages and transportation disruptions. This initiative will create strategies, plans, practices, and education for assisting this unique population, their families, guardians, and care givers. It will specifically address those who need dialysis, but do not have dependable transportation during times of disaster. It will consider specific requirements, legislative guidelines, best practices, and lessons learned. It will include procedures for coordinating with utilities when windstorms or winter storms down trees across roadways.

Relates to Plan Goal(s) and Objectives: 2A, 5B, 8A

Lead: Thurston County Emergency Services, Thurston County Public Health and Social Services, LMTAAA (Lewis, Mason, Thurston Area Agency on Aging).

Estimated Cost: Unknown

Time Period: 2016-2019

Funding Source: Grants and local match

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region (2017)

Initiative and Implementation Status: Since adoption of this initiative in the 2017 Natural Hazard Mitigation Plan, Thurston County has done extensive planning coordination between emergency medical service, public health, and hospital stakeholders to include planning for individuals with medical needs which have been captured in the County's ESF 8 Public Health and Emergency Services annex to the Comprehensive Emergency Management Plan (CEMP). The COVID-19 pandemic further highlighted and accelerated the need for comprehensive public health and medical services planning with many new procedures developed and lessons learned. Continued preparedness planning to address the needs of people with medical needs during a disaster in ongoing. However, those efforts are better documented in the county's emergency response plans and are being removed from the mitigation plan to reduce redundancy.

Status: Removed

TC-MH-3: Improve the capability to identify moderate to long term road impedances and put them into the CAD (Computer Aided Dispatch).

Hazard Addressed: Multi Hazard

Category: Hazard Preparedness

Background and Need: Reducing the response times of emergency medical services, fire, and law enforcement personnel saves lives and protects property. Unscheduled delays caused by floodwaters over roadways and earthquake damage to roads and bridges put lives and property in jeopardy. Impedances are used by the county's Computer Aided Dispatch (CAD) system when it performs routing calculations prior to selecting which response units to dispatch. This initiative will identify and program roadway closure scenarios that are likely to impede response times to enhance more effective routing capabilities.

Relates to Plan Goal(s) and Objectives: 2A

Lead: Thurston 911 Communications, Thurston County Public Works, and Thurston County Emergency Management.

Estimated Cost: Unknown

Time Period: 2017-2022

Funding Source: Grants and local match

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: Thurston County Public Works has developed and maintains a travel impacts and concerns GIS dashboard made available to the public and response partners to include TCOMM 911. Emergency services can link the travel impacts and concerns data to additional systems to monitor road impedances during incident response. Additional procedures and protocols still need to be developed to more efficiently share this real-time data with TCOMM 911's CAD system. Thurston County Emergency Management will continue ongoing work with Public Works, Geodata and TCOMM 911 to enhance GIS data sharing capabilities. However, this work is better captured in the county's preparedness and response plans and is being removed from the mitigation plan to reduce duplication of effort.

Status: Completed

TC-FH-13: Draft a Comprehensive Plan policy which encourages the creation and use of wetland mitigation bank.

Hazard Addressed: Multi Hazard

Category: Hazard Preparedness

Background and Need: This proposal would shift the county's approach away from small, independent wetland and stream mitigation projects with each road and bridge improvement project. There would be cost and environmental advantages to grouping these incremental projects into an improved site(s) within one or several watersheds. This would allow for the development of a "wetland mitigation bank" for county-owned projects. While currently an option within the Thurston County Critical Area Ordinance, a policy basis would be needed before grants for such a project could be obtained.

Relates to Plan Goal(s) and Objectives: 8B

Lead: Thurston County Resource Stewardship and Public Works.

Estimated Cost: $5,000

Time Period: 2017-2022

Funding Source: Annual budget for Resource Stewardship

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: Since adoption of this initiative in the 2017 Natural Hazards Mitigation Plan, Thurston County has incorporated mitigation banking within the county code through its Critical Areas Ordinance as well as 2021 updates to the County's Shoreline Master Program which encourages the creation and use of wetland mitigation banks among other shore friendly stream and riverbank protection techniques. While work to encourage wetland mitigation banks is ongoing, those ongoing actions within this initiative are captured in the continual implementation and support of the county's Shoreline Master Program (TC-FH-27).

Status: Completed

TC-FH-2: Secure funding for flood related projects within the 20-year Stormwater Capital Facilities Plan.

Hazard Addressed: Multi Hazard

Category: Hazard Preparedness

Background and Need: The current stormwater utility rate will provide funding for all the high and medium priority projects in the Capital Facilities Plan (CFP). These projects were first identified in the various drainage basin plans. In 1998, the scope of works and cost estimates for all stormwater projects were reviewed and updated. These were adopted in 2000.

Relates to Plan Goal(s) and Objectives: 4C, 7D

Lead: Thurston County Storm and Surface Water Utility.

Estimated Cost: $650,000 annually

Time Period: 2017-2022

Funding Source: Thurston County – Storm and Surface Water Utility

Source and Date: Natural Hazards Mitigation Plan for the Thurston Region – Thurston County Annex, 2009

Initiative and Implementation Status: The Thurston County Board of Commissioners adopted updates to the Capital Facilities Plan to implement this initiative in 2000 and was re-authorized during 2004. The currently adopted Stormwater Capital Facilities Plan outlines projects from 2018-2023 with funding allocated for the completion of 29 projects over the planning period and over $12,000,000 in project funding, primarily funded through storm and surface water utility rates.