



Agenda
Community Development Committee Regular Meeting
August 6, 2026 | 5:00 PM

City Hall, 10220 270th Street NW
Stanwood, WA 98292

Members of the public may attend Stanwood Community Development Committee meetings in-person or via Zoom. The Zoom link is posted on the City's website calendar <https://www.stanwoodwa.org>.

- 1. Call to Order**
- 2. Roll Call**
- 3. Unfinished Business**
 - a. Climate Assessment and Public Survey
- 4. New Business**
- 5. Adjourn**



**CITY OF STANWOOD
COUNCIL COMMUNITY DEVELOPMENT COMMITTEE
AGENDA STAFF REPORT**

DATE: August 6, 2026

SUBJECT: Climate Assessment and Public Survey

CONTACT PERSON: Patricia Love, Community Development Director

ATTACHMENTS:

1. Presentation to Planning Commission
2. GHG Emissions Inventory Memo
3. Public survey summary

PURPOSE

The purpose of this agenda item is to provide the Community Development Committee with an overview of the Climate Change technical analysis and community outreach efforts.

BACKGROUND

Over the last several months, the City has been reviewing the state mandated climate change requirements and initial mapping assessments. To fully understand the potential impacts of climate change on Stanwood, it is important to identify both the physical areas that may be affected and the populations that may experience disproportionate impacts. These include:

- | | |
|--------------------------|---|
| Vulnerable Populations: | <ul style="list-style-type: none">▪ Children aged 4 or younger▪ Adults 65 and older▪ People of Color (BIPOC Populations)▪ Those with disability▪ Non or limited English populations▪ Those living below the poverty line |
| Community Assets: | <ul style="list-style-type: none">▪ Facilities and infrastructure▪ Parks and open space |
| Climate-Induced Hazards: | <ul style="list-style-type: none">▪ Flooding▪ Sea level rise▪ Excessive heat▪ Drought |

- Wildfire smoke

In addition, the Department of Commerce recommends that jurisdictions set an overall emissions reduction target that leads to achieving net-zero emissions by 2050, consistent with state-level efforts.

ANALYSIS

The process for identifying pertinent goals and policies for inclusion in the Climate Element involves combining technical analysis and community engagement. The City's consultants, Maul Foster and Alongi (MFA), have completed a greenhouse gas emissions inventory that identifies the largest emission categories in Stanwood. The largest sources of GHG emissions within Stanwood city limits are natural gas (45% of total emissions), transportation (19%), refrigerants (12%), and electricity (10%).

The City does not have direct control over all emissions produced within City limits but the inventory points to potential areas of greatest policy influence. This inventory also provides a baseline against which the City can conduct future GHG inventories to measure progress.

MFA has also completed an analysis of the results of the public survey that was open June 8 to June 21. The survey received 37 responses. The survey asked for community members' experiences with climate hazards and their priorities for what the City should focus on as it develops the Climate Element. High-level themes from the results include:

- | | |
|-------------------------|--|
| Top community concerns: | <ul style="list-style-type: none">▪ Infrastructure and planning to support current and future population and traffic growth▪ Maintaining and improving flood resilience |
| Opportunities: | <ul style="list-style-type: none">▪ Supporting energy efficiency▪ Increasing tree canopy and protecting/enhancing natural spaces |

The Planning Commission's July meeting was held as a workshop with MFA and planning consultant BHC Consultants (BHC) to discuss policy direction for the Climate Element of the Comprehensive Plan. The discussion focused on identifying the key priorities and policy themes that will guide the development of the element's goals and policies.

The purpose of the Community Development Committee's (CDC) August meeting is to review the Planning Commission's recommendations, discuss the proposed policy direction, and provide feedback on areas of agreement or alternative direction before the draft goals and policies are developed.

Regional Coordination

- Coordinate with Island County on regional efforts to address climate change and reduce greenhouse gas emissions, particularly as they relate to Camano Island and shared interests.

Energy Efficiency and Building Performance

- Evaluate incentives that encourage developers to construct more energy-efficient buildings, including permit streamlining, fee incentives, and adaptive reuse of existing buildings.
- Encourage the installation of heat pumps in both new construction and existing buildings.
- Promote the transition from natural gas to electricity where practical and economically feasible.
- Consider development standards that encourage south-facing roof orientations to maximize future solar energy opportunities.

Transportation and Infrastructure

- Evaluate opportunities to reduce parking requirements or expand tree canopy to minimize urban heat island impacts.
- Consider requiring or incentivizing electric vehicle charging infrastructure in parking lots associated with new development.

Climate Resilience and Hazard Mitigation

- Continue implementation of the City's flood protection system, including completion of planned floodwalls and dike improvements.
- Identify and establish cooling centers or cooling stations in locations that are accessible to vulnerable populations during extreme heat or smoke events.
- Develop and maintain emergency evacuation and access routes that minimize disruptions to emergency response and public safety during hazard events.

Water Conservation

- Evaluate programs that encourage water conservation, such as low-flow showerhead and faucet replacement initiatives.

Public Education and Community Outreach

- Develop a City climate resources webpage that provides information on available incentives, rebates, funding opportunities, and technical assistance.

- Implement public education campaigns that promote energy efficiency, electrification, solar energy, heat pumps, tree preservation, and urban tree planting.
- Expand public education regarding how growth is planned and managed in Washington, including how infrastructure is financed, constructed, and maintained.

Emergency and Resilience Coordination

- Explore the City's role in formalizing emergency and resilience coordination and planning between non-profits, agencies, and other entities operating within the city.

PROPOSED COMMITTEE ACTION

This is a policy discussion to provide feedback and direction for developing preliminary goals and policies for the Climate Element of the Comprehensive Plan.

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City of Stanwood Climate Element

Community Development Committee
Thursday, August 6, 2026



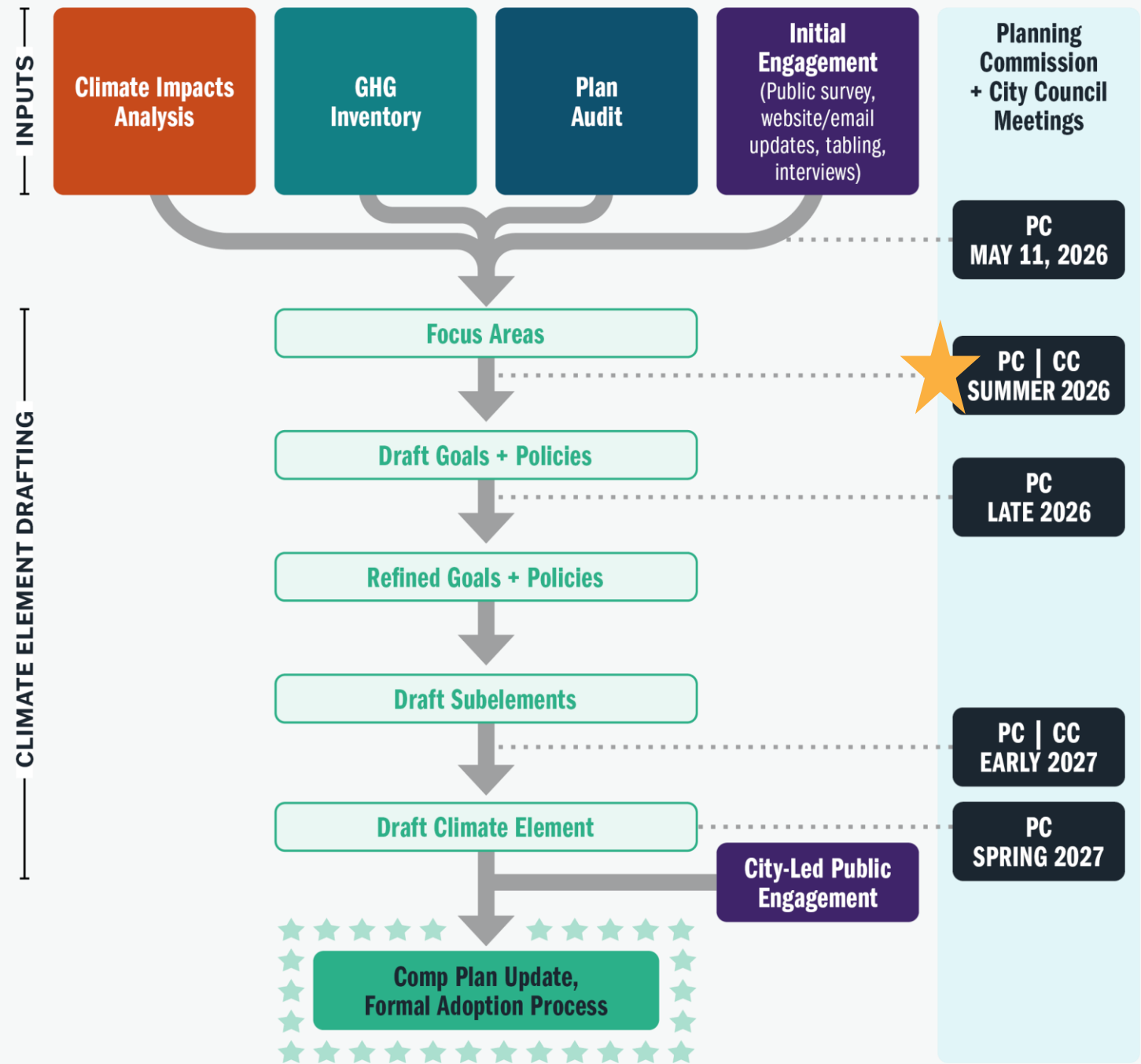
AGENDA

- Overview of Findings (25 min.)
 - Climate Impacts Analysis
 - GHG Inventory Report
 - Public survey results
 - Policy Audit
- Climate Element topic discussion (50 min.)



Stanwood's climate element project is supported with funding from Washington's Climate Commitment Act. The CCA supports Washington's climate action efforts by putting cap-and-invest dollars to work reducing climate pollution, creating jobs, and improving public health. Information about the CCA is available at www.climate.wa.gov

Climate Element Development Process

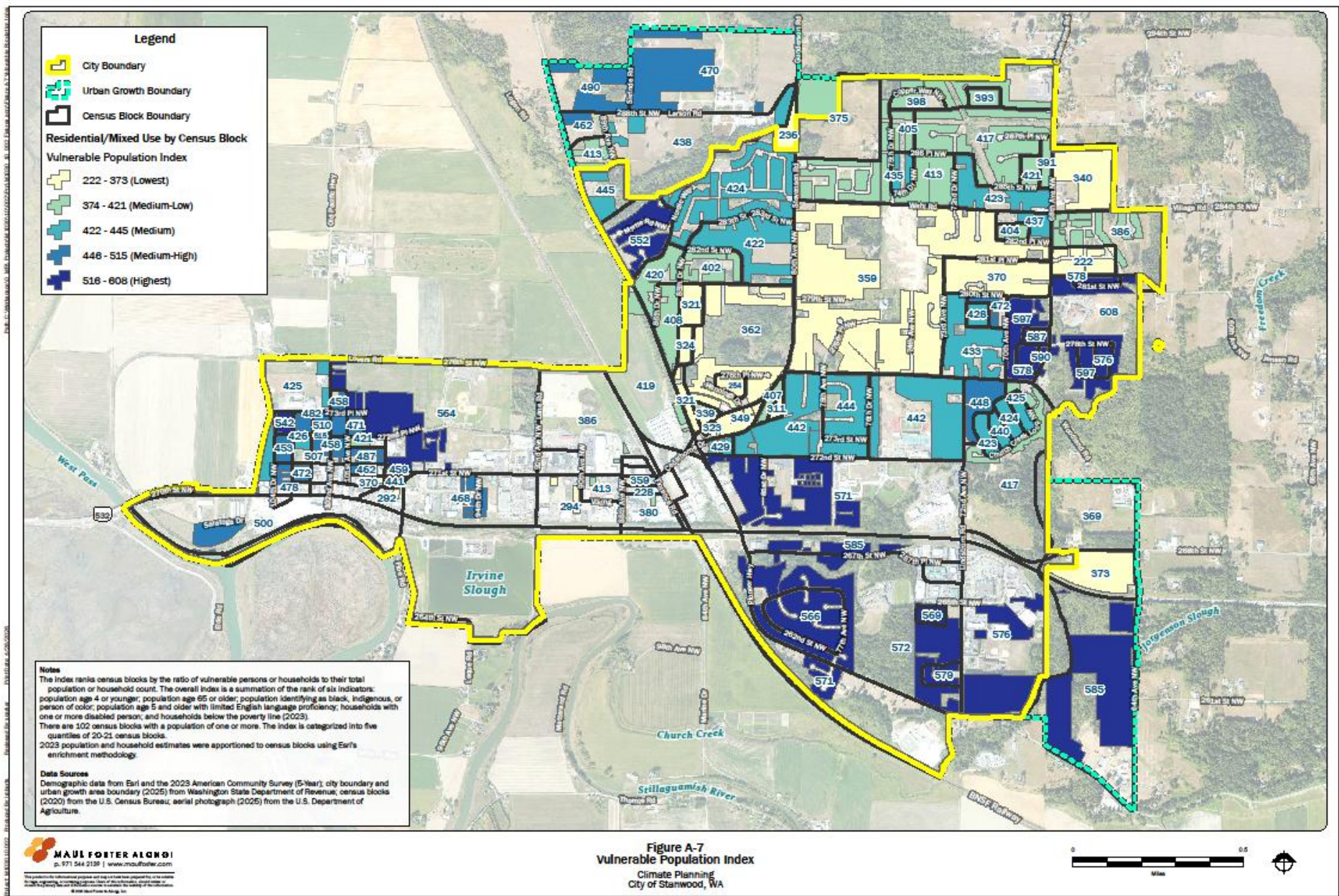


Primary Climate Hazards in Stanwood

- Flooding
- Sea level rise
- Excessive heat
- Wildfire smoke

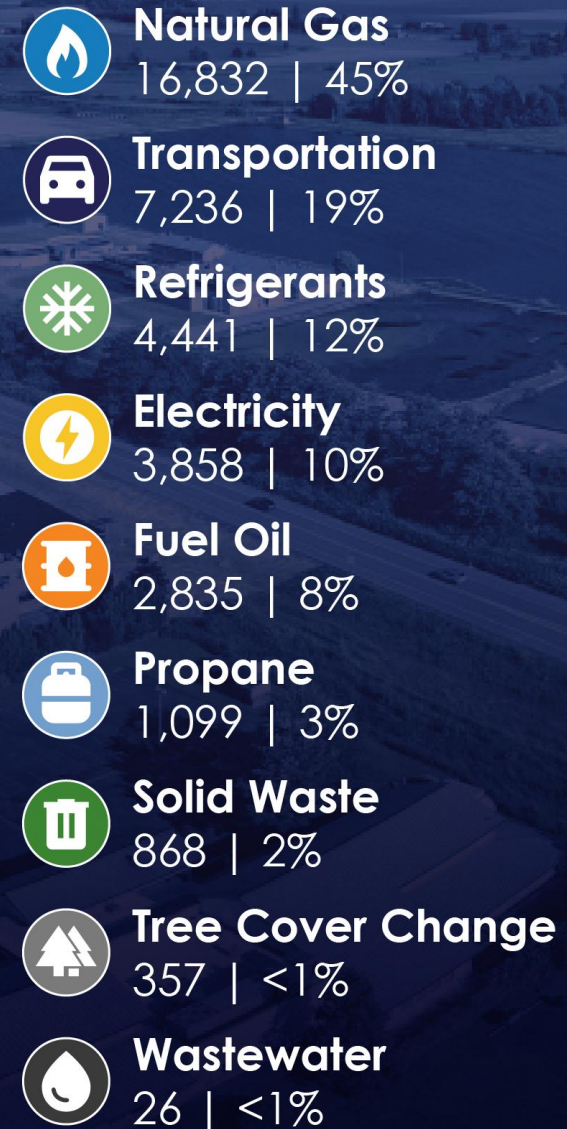
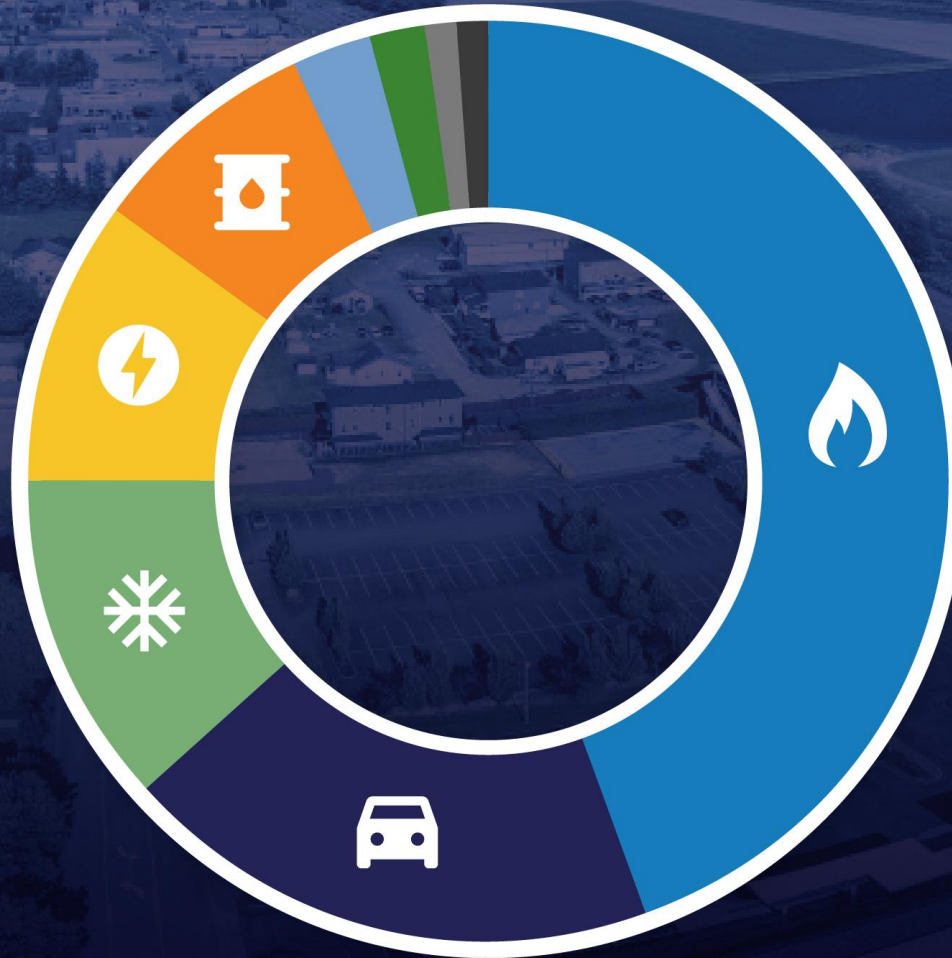


Stanwood Vulnerable Populations

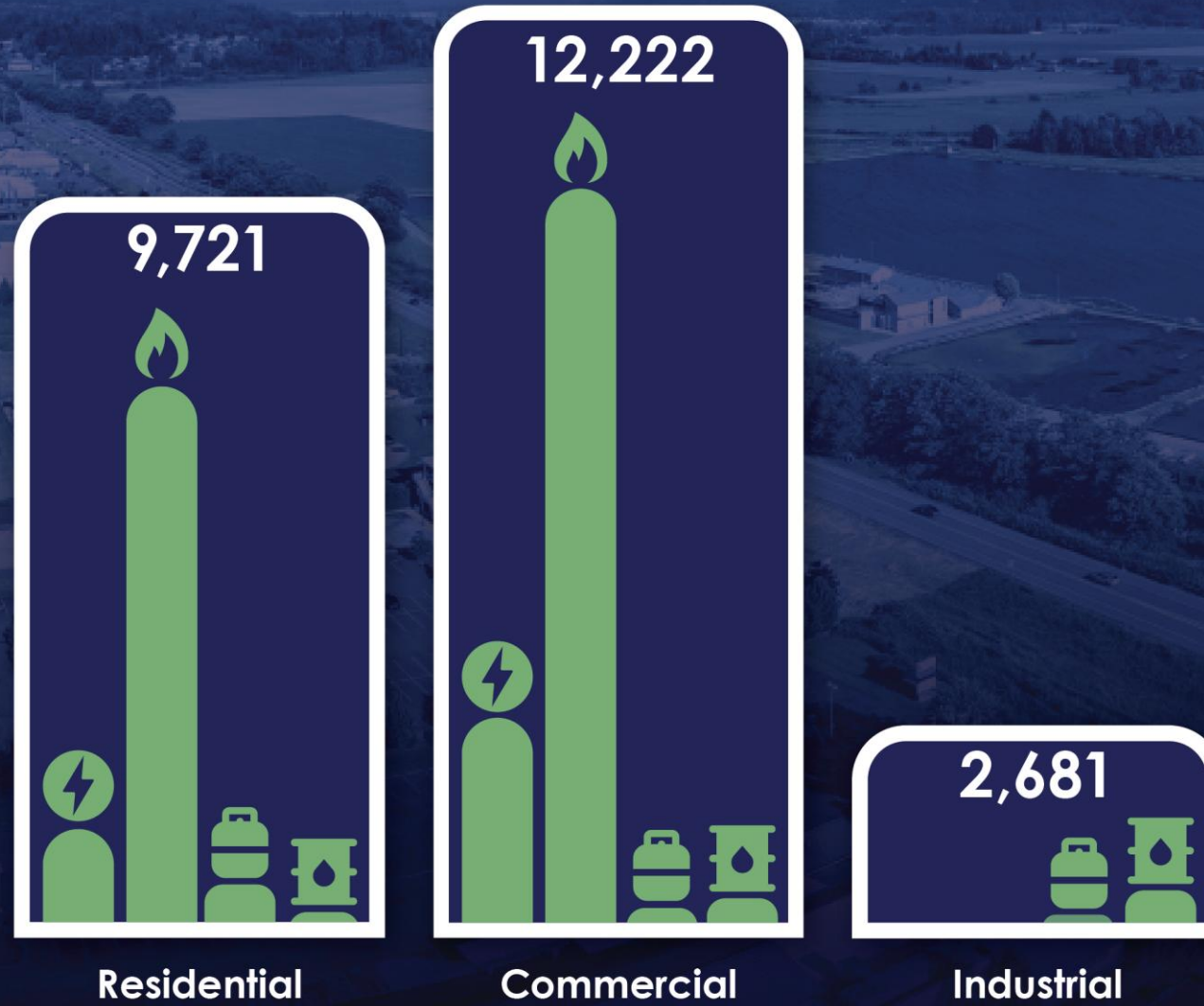


Breakdown of Stanwood's 2023 Community-Wide GHG Emissions by Source (MT CO₂e)

Total:
37,553 MT CO₂e



Stanwood's 2023 Built Environment GHG Emissions by Category and Source (MT CO₂e)



Electricity



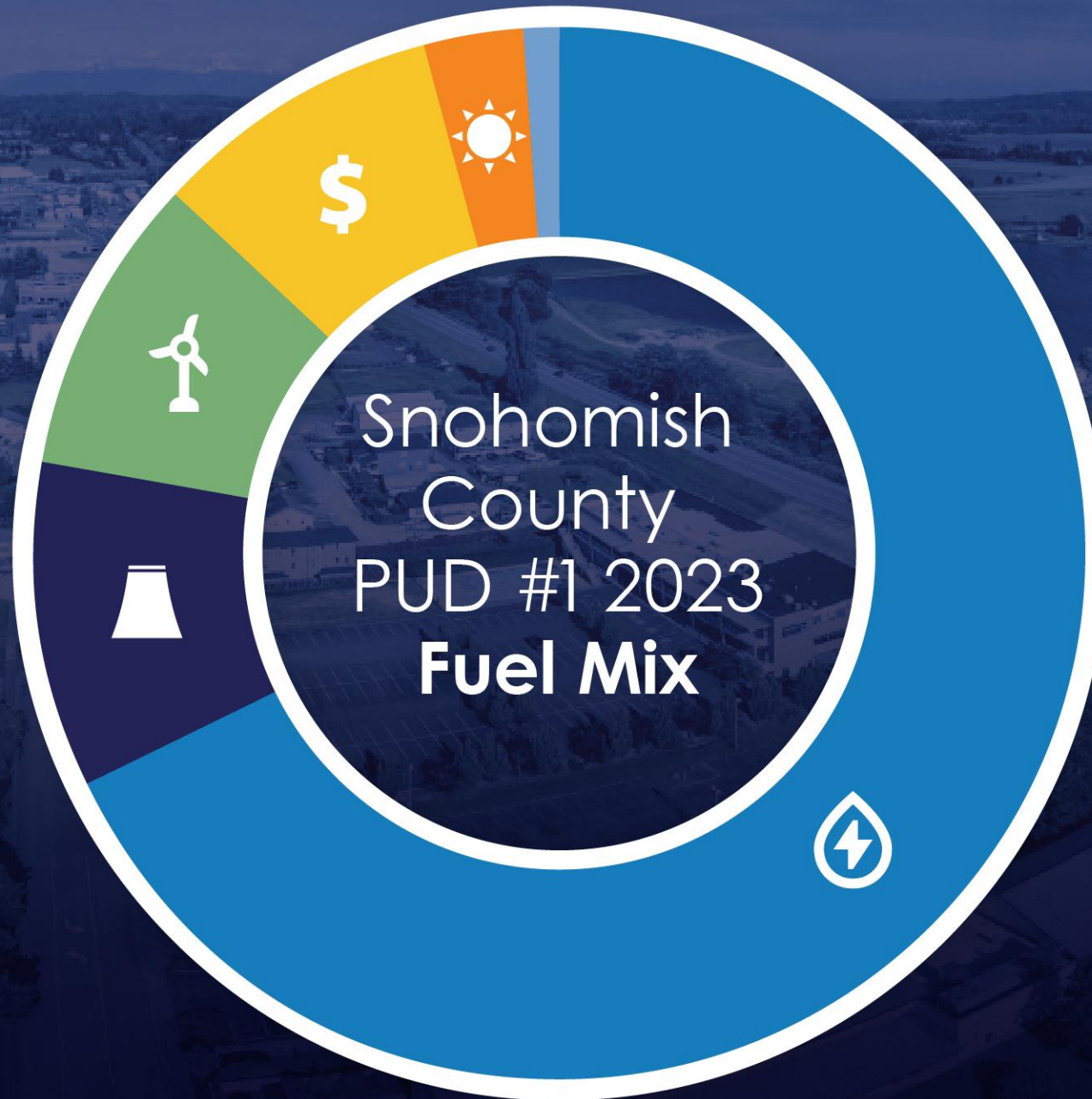
Natural Gas



Propane



Fuel Oil



Hydro
68%



Nuclear
10%



Wind
9%



Market Purchases
9%



Solar
3%



Biomass
1%

Questions or comments?

Public Engagement Summary

- Public survey (June 8-21)
- June 12 farmers market
- Organization interviews



Share Your Thoughts and Stay Involved



Community input is an important part of a Climate Element. The City wants to know Stanwood residents' concerns, ideas, and priorities for how Stanwood can be a more resilient community in the years to come.

Scan the QR code or visit stanwoodwa.org/climate to take the survey open through June 21 and sign up for email updates to stay informed as planning continues.

For questions about the City's Climate Element work, contact Patricia Love: patricia.love@ci.stanwood.wa.us.

Farmers Market

Goals

- Inform Stanwood community that the City is adding a Climate Element to the Comprehensive Plan
- Promote the Climate Element survey
- Learn more about community experiences with flooding, heat, and smoke and how people have tried to adapt

What we heard

- Smoky days are difficult with young children – limited to indoor activities
- Experiencing extreme heat and wildfire smoke at the same time is very challenging for households without A/C or air filtration
- Flooding road closures limit access to key locations



CLIMATE PLANNING IN STANWOOD



A New Chapter in the Comprehensive Plan

The City of Stanwood will update its Comprehensive Plan in 2029. The Comprehensive Plan guides how the city grows and plans for the future, covering topics such as land use, housing, transportation, and utilities.

Washington State law now requires cities to include a new Climate Element in this update.

What will the Climate Element Cover?

The Climate Element will guide how the City prepares for climate-related hazards such as flooding, extreme heat, and wildfire smoke, and how the City reduces greenhouse gas (GHG) emissions over time. It will include two required parts:



CLIMATE RESILIENCE SUBELEMENT

This section identifies ways Stanwood can prepare for climate-related risks and reduce climate impacts to people, infrastructure, and community systems. These goals and policies will be informed by a climate impacts analysis, review of existing plans, and community input.



GHG EMISSIONS REDUCTION SUBELEMENT

This section focuses on ways Stanwood can contribute to reducing GHG emissions over time. The goals and policies in this subelement will be informed by community priorities and existing City plans and supported by a GHG inventory that identifies local emissions sources.

Survey Findings

- 37 responses
- Wildfire smoke and extreme summer heat were the hazards most experienced by respondents
- Impacts of greatest concern
 - Increased costs for residents and businesses
 - Damage to roads, utilities, or other public infrastructure
 - Impacts to more vulnerable community members
- Priorities for future planning
 - Ensuring reliable infrastructure and services
 - Keeping costs affordable
 - Protecting natural areas and open space
 - Supporting local business and jobs

Organizational Interviews:

Key themes

- Orgs see opportunity for formalizing emergency and resilience coordination with the City
- Unhoused and low-income populations are on service providers' minds
- Transportation may be a pinch point in an emergency (flooded roads, limited public transit)

Who we've spoken with:

- Community Resource Center
- Lincoln Hill
- North County Regional Fire Authority
- Stanwood Library
- Housing Authority of Snohomish County (via email)
- Master Builders Association

Questions or comments?

Policy Audit:

Scope + strategy

- Comprehensive review of existing local and regional plans
- Evaluates strengths, identifies critical gaps, connects existing policies to climate planning topics
- Focuses heavily on the City's Comprehensive Plan to seamlessly integrate climate goals into the plan



Documents Reviewed:

- Strategic Plan
- Comprehensive Plan
- Shoreline Master Program
- Stormwater, Water, and Sewer Plans
- Snohomish County Hazard Mitigation Plan
- Countywide Planning Policies
- Res. 2014-12: GHG Reduction Policies
- Stanwood Municipal Code

Policy Audit: Strengths



Smart Land Use + Infill. Focus growth within municipal boundaries.



Ecosystems + Critical Areas. Restoration and enhancement of ecosystems and preservation of open space.



Multi-Modal and Non-Motorized Transportation. Reduce vehicle miles traveled and make non-motorized networks safer and more accessible.



Water Management. Reduce flood risks and restore floodplains.



Cultural Resources. Coordination with tribes to protect historically and culturally significant sites

Policy Audit:

Gaps + Opportunities

Human Health, Well-being, + Equity

Address extreme heat mitigation and wildfire smoke preparedness while prioritizing environmental justice.

Electric Vehicles + Charging Infrastructure

Create charging infrastructure standards to encourage and support the transition to electric vehicles

Renewable Energy + Energy Efficiency

Incentivize local renewable production and support grid stability during extreme weather events.

Emergency Preparedness + Community Outreach

Strengthen existing networks, formalize evacuation routes, and communicate risks, impacts, and resources.

Weatherization of Existing Housing Stock

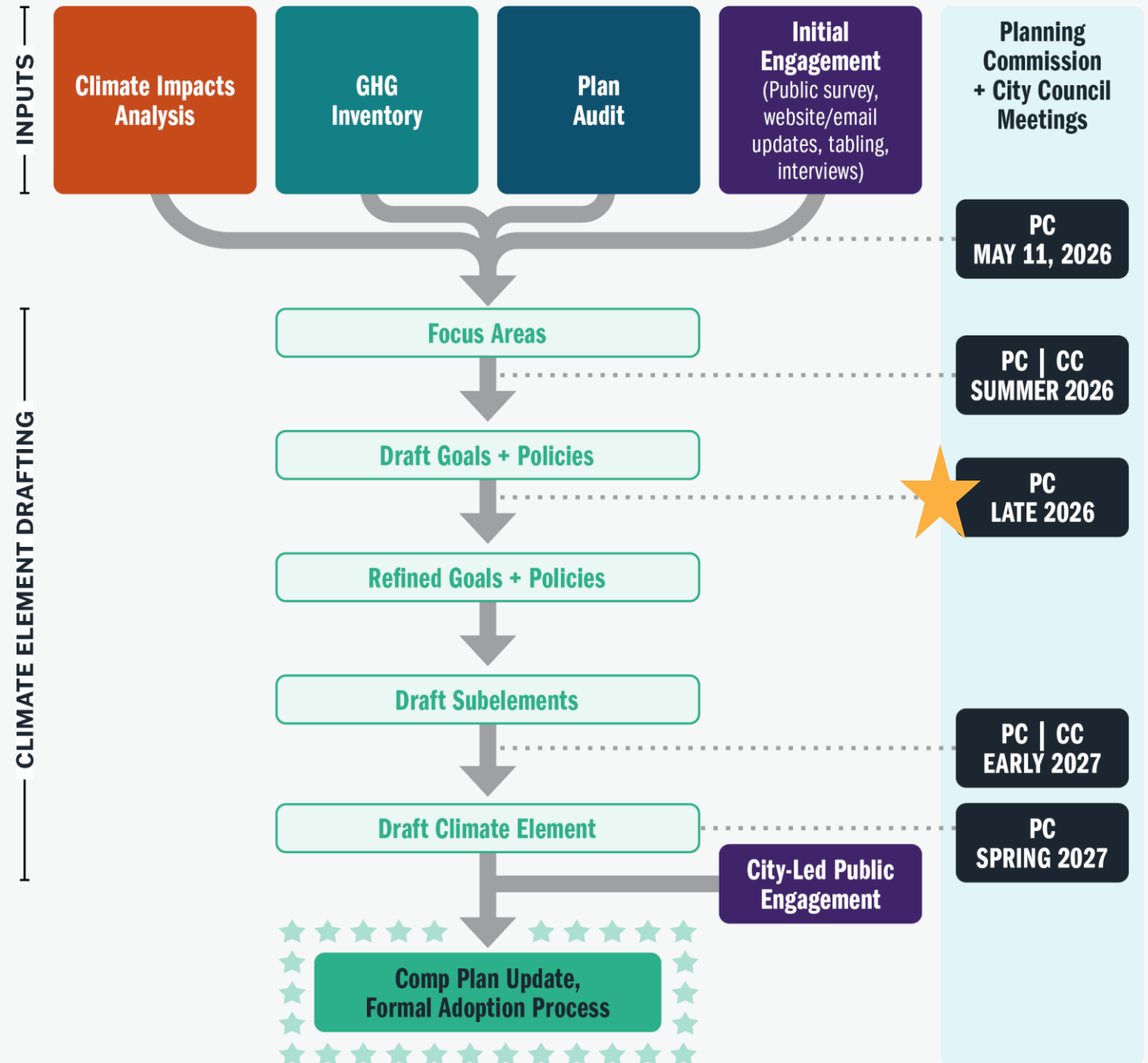
Improve older homes and existing affordable housing to lower burdens on vulnerable households.

Waste Reduction

Reduce the City's waste streams to help curb emissions and get residents and businesses involved

Questions or comments?

Climate Element Drafting



Potential focus areas

Area	Example Policy
Regional Coordination	Coordinate with Island County / Camano Island on regional efforts to address climate change.
Energy Efficiency and Building Performance	Encourage the installation of heat pumps in both new construction and existing buildings.
Transportation and Infrastructure	Evaluate opportunities to reduce parking requirements or expand tree canopy to minimize urban heat island impacts.
Climate Resilience and Hazard Mitigation	Plan new and relocate existing essential public services away from the 500-year floodplain.
Water Conservation	Evaluate programs that encourage water conservation, such as low-flow showerhead and faucet replacement initiatives.
Public Education and Community Outreach	Develop a City climate resources webpage that provides information on available incentives, rebates, funding opportunities, and technical assistance.
Emergency and Resilience Coordination	Explore the City's role in formalizing emergency and resilience coordination and planning between non-profits, agencies, and other entities operating within the city.

Questions for discussion

- Do the proposed focus areas reflect the most important issues facing Stanwood related to climate change?
- Where are there gaps?
- Which are most important?

Thank you!

City of Stanwood 2023 Greenhouse Gas Emissions Inventory

CLIENT REVIEW DRAFT

Prepared for:

City of Stanwood

June 29, 2026

Project No. M1030.10.004

Prepared by:

Maul Foster & Alongi, Inc.

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City of Stanwood 2023 Greenhouse Gas Emissions Inventory

*The material and data in this report were prepared
under the supervision and direction of the undersigned.*

Maul Foster & Alongi, Inc.

*Kat Klass
Project Environmental Scientist*

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Appendixes

Appendix A

Greenhouse Gas Emissions Inventory Methods

Abbreviations

City	City of Stanwood
CH ₄	methane
CNG	Cascade Natural Gas
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
ICLEI	International Council for Local Environmental Initiatives
MFA	Maul Foster & Alongi, Inc.
MT	metric ton
N ₂ O	nitrous oxide
SnoPUD	Snohomish County Public Utility District No. 1
VMT	vehicle miles traveled

1 Background

The City of Stanwood (the City) is advancing climate planning to inform the development of a new Climate Element as part of the 2029 Comprehensive Plan periodic update cycle. State law now requires Washington cities and counties to include a Climate Element in their comprehensive plans that addresses climate resilience and greenhouse gas (GHG) emissions. For eleven counties (including Snohomish County) and the cities within, the next update must include a GHG emissions reduction subelement.

To support this effort, the City engaged Maul Foster & Alongi, Inc. (MFA) to prepare a community-wide GHG emissions inventory (the inventory). The inventory identifies emission sources, estimates the magnitude of current emissions, and summarizes 2023 emissions. This information provides a baseline for understanding where emissions are coming from and helps inform opportunities for reducing emissions over time.

1.1 Methods

To guide the development of Stanwood's inventory methods, MFA applied three principles:

- Replicability and transparency, to support updates over time and allow comparison with the baseline provided by this inventory.
- Consistency with the Snohomish County 2022 Greenhouse Gas Emissions Analysis, to enable comparison across jurisdictions and datasets.
- Accuracy, by including relevant emission sources and using locally specific data where available.

1.1.1 GHG Emissions Inventory Protocols

This inventory follows the International Council for Local Environmental Initiatives' U.S. Community Protocol for Accounting and Reporting of GHG Emissions, a standardized method for quantifying community-scale GHG emissions.¹

The protocol addresses six internationally recognized GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Emissions are reported as carbon dioxide equivalents (CO₂e), which standardizes GHGs into a common unit based on their relative warming impact, or global warming potential. This accounts for differences in how strongly each GHG contributes to climate change over a 100-year period compared to carbon dioxide.

¹ ICLEI. 2010. U.S. Local Government Operations Protocol, Version 1.1. International Council for Local Environmental Initiatives – Local Governments for Sustainability USA: Denver, CO. May.

Stanwood's emissions were estimated for calendar year 2023, the most recent year with available data at the time of this inventory. All data is from 2023 unless noted in Appendix A. MFA completed calculations and analysis in Microsoft Excel and provided City staff with the supporting workbook.

1.1.2 Inventory Boundary and Emissions Sources

The City has chosen to define the boundary for the GHG emission inventory using Stanwood city limits. This approach reflects emissions occurring within the community's jurisdictional boundary and aligns with standard practices in community GHG emission inventories. However, some trans-boundary sources such as emissions associated with waste disposal (i.e., waste generated in Stanwood and disposed outside of city limits) were included as part of the inventory.

The inventory includes the sources shown in Table 1-1. Sources were selected and categorized to align with the Snohomish County 2022 Greenhouse Gas Emissions Analysis prepared for the Washington State Department of Commerce.

Methods and data considerations for each emissions source are provided in Appendix A.

Table 1-1: Emissions Sources for Stanwood's 2023 GHG Emissions Inventory

Category	Emission Sources
Built Environment	Electricity Natural gas Propane Fuel oil
Refrigerants	Refrigerants
Land Use	Tree cover change Carbon sequestration ¹
Transportation	On-road vehicles Transit
Wastewater	Treatment processes
Solid Waste	Landfilled waste

Note

¹The U.S. Community Protocol does not allow the reporting of net numbers (e.g., subtracting carbon sequestration emissions removals from a total emissions estimate). Emissions avoided via carbon sequestration (in this case, trees' removal of GHGs from the atmosphere) will be reported as a separate, informational line item from total emissions.

2 GHG Emissions Inventory Findings

2.1 Summary of Findings

In 2023, the Stanwood community produced an estimated 37,553 metric tons (MT) CO₂e, or approximately 4.50 MT CO₂e per capita. The largest sources of emissions were natural gas (45 percent of total emissions), transportation (19 percent of total emissions), refrigerants (12 percent

of total emissions), and electricity (10 percent of total emissions). Figure 2-1 and Table 2-1 below summarize 2023 community-wide emissions by category and source.

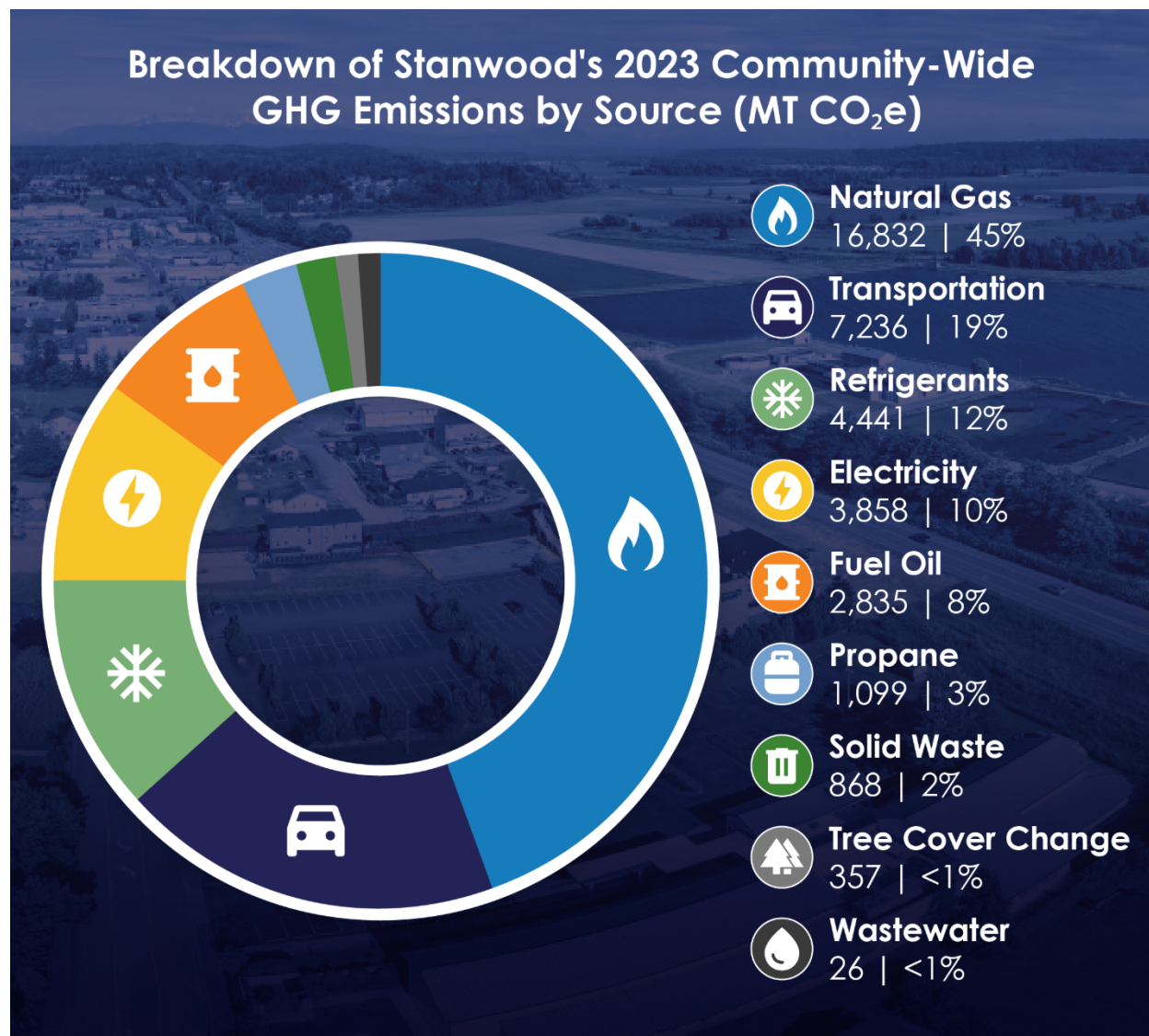


Figure 2-1: Breakdown of Stanwood's 2023 GHG Emissions by Source

Table 2-1: Total and Per-capita GHG Emissions, by Category

Category	Total Emissions (MT CO ₂ e)	Per-capita Emissions (MT CO ₂ e)	Percent of Total Emissions
Built Environment	24,625	2.95	66
Electricity	3,858	0.46	10
Residential	1,332	0.16	4
Commercial	2,526	0.30	7
Industrial	0	0	0
Natural Gas	16,832	2.02	45
Residential	7,698	0.92	20

Category	Total Emissions (MT CO ₂ e)	Per-capita Emissions (MT CO ₂ e)	Percent of Total Emissions
Commercial	9,134	1.09	24
Industrial	0	0	0
Propane	1,099	0.13	3
Residential	555	0.066	1
Commercial	208	0.025	<1
Industrial	336	0.040	<1
Fuel Oil	2,835	0.34	8
Residential	137	0.016	<1
Commercial	354	0.042	<1
Industrial	2,345	0.28	6
Refrigerants	4,441	0.53	12
Land Use (Tree Cover Change)	357	0.043	<1
Transportation	7,236	0.87	19
On-Road Vehicles	7,096	0.85	19
Transit	140	0.017	<1
Wastewater	26.2	0.00314	<1
Solid Waste	868	0.10	2
Total Emissions	37,553	4.50	100
Carbon Sequestration	-411	-0.05	-

Note

Values in "Percent of Total Emissions" column may not sum to 100 due to rounding.

2.2 Findings by Category

2.2.1 Built Environment

The built environment accounted for 66 percent of Stanwood's 2023 emissions, totaling 24,625 MT CO₂e. This category includes emissions from electricity, natural gas, propane, and fuel oil used to heat, cool, and power buildings and stationary equipment for residential, commercial, and industrial uses.

As shown in Figure 2-1, natural gas and transportation made up the largest shares of Stanwood's emissions, at 45 and 19 percent respectively, while propane and fuel oil consumption contributed 3 percent and 8 percent, respectively.

Residential energy use (electricity, natural gas, propane, and fuel oil) accounted for 26 percent of total emissions. Commercial and industrial energy use (electricity, natural gas, propane, and fuel oil) accounted for 33 percent and 7 percent of total emissions, respectively. Figure 2-2 shows the relative magnitude of built environment GHG emissions by category and source.

Emissions from electricity were calculated using utility-specific emission factors obtained from Stanwood's electricity service provider, Snohomish County Public Utility District No. 1 (SnoPUD), as reflected in Table 2-1. SnoPUD's fuel mix for electricity generation is less emissions-intensive than the regional average.

To illustrate the impact of SnoPUD's fuel mix, emissions were also estimated using EPA Emissions & Generation Resource Integrated Database (eGRID) emission factors representing the regional (i.e., Western Power Pool) electric power mix. Using the eGRID emission factors, Stanwood's electricity emissions were approximately 27,680 MT CO₂e, compared to only 3,858 MT CO₂e using the utility-specific emission factors, highlighting the lower emissions intensity of SnoPUD-provided electricity.

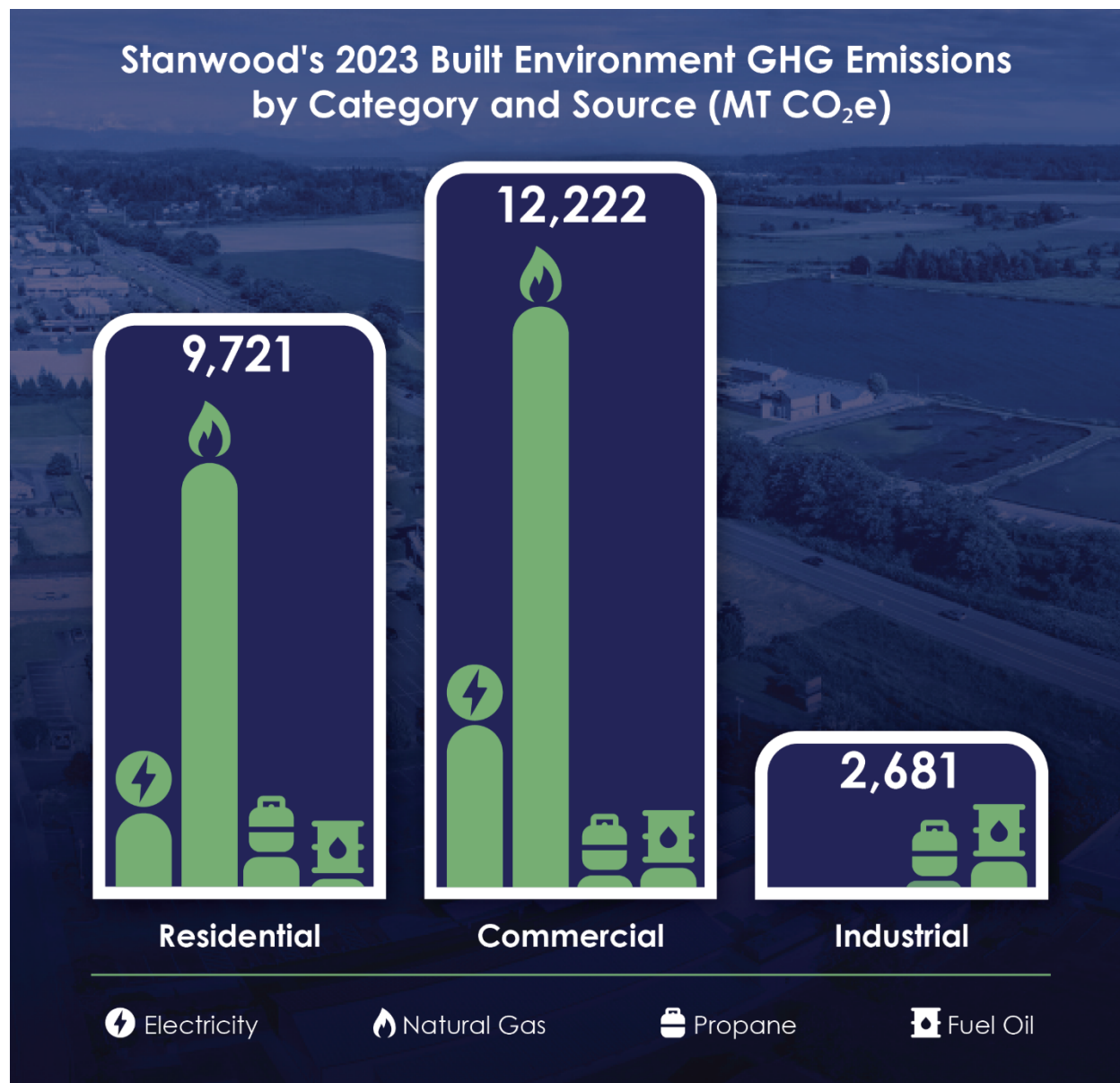


Figure 2-2: Built Environment GHG Emissions by Category and Source

2.2.2 Refrigerants

The refrigerants category accounted for 12 percent of Stanwood's 2023 emissions, totaling an estimated 4,441 MT CO₂e. Refrigerant category emissions (i.e., hydrofluorocarbons, perfluorocarbons, and CO₂) come from the use and leakage of ozone-depleting substances. Due to

limited local data, Stanwood's refrigerant emissions were estimated using national data scaled to Stanwood's population.

2.2.3 Land Use

The land use category includes two subcategories: tree cover change and carbon sequestration.

Tree cover change accounted for less than 1 percent of Stanwood's 2023 emissions, contributing 357 MT CO₂e. This emissions category captures factors such as conversion of forest land for other uses, decrease in urban tree canopy, deforestation and harvesting, and damage from insects, fire, or disease. Because Stanwood has limited tree canopy, particularly outside of public parks, there is relatively little tree cover to be gained or lost, so overall changes are expected to be small.

Trees and forests in Stanwood sequestered approximately 411 MT CO₂e in 2023. Carbon sequestration refers to the removal of carbon dioxide from the atmosphere and is reported separately from emissions to avoid creating a net total of gains and losses (see Table 2-1).

Tree cover change and carbon sequestration estimates are based on remote sensing data and account for tree characteristics such as types, age, and health.

2.2.4 Transportation

The transportation category made up 19 percent of Stanwood's 2023 emissions, totaling an estimated 7,236 MT CO₂e (see Figure 2-1 and Table 2-1). This includes emissions from:

- Vehicles traveling on city-owned roads;
- Vehicles traveling on SR 532 within city limits with destinations in northeast Stanwood, southeast Stanwood, or downtown Stanwood; and
- Island Transit and Community Transit services provided on roads in Stanwood.

Because transportation emissions are calculated based on the number of miles traveled, vehicle fuel type, and vehicle efficiency, greater vehicle miles traveled (VMT) generally results in greater emissions. According to the Washington State Department of Transportation's Highway Performance Monitoring System, on-road vehicles traveled approximately 11,355,000 miles on city-owned roadways in Stanwood in 2023. MFA estimated that vehicles traveling on SR 532 within city limits with a destination of northeast Stanwood, southeast Stanwood, or downtown Stanwood accounted for approximately 4,800,000 VMT. Combined, these emission sources contributed an estimated 7,096 MT CO₂e. Island Transit and Community Transit service in Stanwood accounted for approximately 106,581 VMT and 140 MT CO₂e.

2.2.5 Wastewater

The wastewater category made up less than 1 percent of Stanwood's 2023 emissions, contributing an estimated 26.2 MT CO₂e (see Figure 2-1 and Table 2-1). This category includes emissions from the treatment of wastewater produced within the Stanwood wastewater treatment plant service area, which serves approximately 8,351 people.

Wastewater treatment plant emissions were attributed to process N₂O emissions from wastewater treatment with nitrification and denitrification, and process N₂O emissions from effluent discharge.

The wastewater treatment plant in Stanwood also produces emissions from energy used to power wastewater treatment processes. Energy consumption emissions at the wastewater treatment plant are accounted for in the commercial energy category to avoid double-counting between categories.

2.2.6 Solid Waste

The solid waste category made up 2 percent of Stanwood's 2023 emissions, contributing an estimated 868 MT CO₂e (see Figure 2-1 and Table 2-1). This category includes methane emissions from the decomposition of organic material in landfilled waste, emissions from the collection and transportation of solid waste to landfill, and process emissions associated with landfill operations.

According to the Snohomish County Comprehensive Solid and Hazardous Waste Management Plan, most of the waste generated in Stanwood is transported by rail to the Roosevelt Regional Landfill in Klickitat County. The Roosevelt Regional Landfill has a system that recovers landfill gas for energy generation, which decreases the magnitude of Stanwood's solid waste emissions.

3 Conclusion

Stanwood's 2023 inventory identifies several areas where focused efforts can effectively reduce emissions. The built environment and transportation categories stand out as key areas for improvement due to their magnitude. Emissions reduction initiatives that improve building energy efficiency, expand renewable energy use, reduce energy consumption, and decrease VMT can significantly reduce emissions over time. While the City cannot directly control all community-wide emissions sources, local policies and programs can influence many of the activities that contribute to the emissions reflected in this inventory.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Appendix A

Greenhouse Gas Emissions Inventory Methods



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Technical Memorandum

To: Patricia Love, City of Stanwood Date: June 30, 2026
From: Sarah Parker, Maul Foster & Alongi, Inc. Project No.: M1030.10.004
Re: 2026 Climate Element Survey Results

Introduction

As part of developing the new Climate Element for the City of Stanwood's (City's) 2029 Comprehensive Plan update, the City collected feedback from people who live, work, and own businesses in Stanwood. The survey asked community members about their experiences with climate-related hazards such as flooding, extreme heat, and wildfire smoke; their concerns for the future; and their ideas and priorities for building climate resilience and reducing greenhouse gas (GHG) emissions in Stanwood. The results will help shape the goals and policies included in the Climate Element.

The survey was conducted between June 8 and June 21, 2026, and was available online. The full list of survey questions is available as Attachment A. The community was informed of this survey through online channels and through staff outreach at Stanwood's Farmers Market on June 12. The survey received 37 responses from people around the community. Attachment B includes the charts and tables showing survey responses.

Summary

Themes Across All Survey Areas

Among all respondents, **thoughtful growth and resilience to flooding, extreme summer heat, and wildfire smoke** were the top concerns across multiple questions.

- The respondents that commented on growth also mentioned the need for supportive infrastructure—such as roads, stormwater control systems, and a major grocery store—as top concerns.
- With the recent 2025 winter floods in the area, ensuring that there is resilient infrastructure for flooding—such as levees, dikes, roads, and evacuation routes—was an important concern.
- Extreme heat and wildfire smoke were also top concerns; responders mentioned the need to combat poor air quality and shelter from heat and smoke as well as care for the most vulnerable in Stanwood.

Priorities for Reducing Energy Use and GHGs

Respondent priorities for reducing energy use and GHGs included the following:

- Supporting energy efficiency improvements in homes and businesses
- Increasing tree canopy and shaded areas to help keep the community cooler
- Improving walking, biking, and transit options to reduce driving

Perceptions of the City's Work

Respondents gave higher ratings to the City for the following:

- Flooding and stormwater management
- Providing walking and biking options
- Protecting water quality

Respondents rated the City's efforts lower in the following areas:

- Planning for future growth
- Maintaining infrastructure
- Protecting natural areas, tree canopy, and open space

In Their Own Words—Emergent Themes

Across all open-ended survey questions in which respondents gave their thoughts related to the City's work in preparing for disasters and reducing energy use and GHGs, three themes emerged:

- **Rapid Growth**—Commenters most frequent concerns included rapid growth and the lack of infrastructure to support it as well as preserving Stanwood's "small town feeling."
- **Transportation Safety and Traffic**—Commenters would like the City to help improve safety on State Route 532, reduce traffic, and provide more options for pedestrians and cyclists.
- **Preparation for Events Related to Climate Change**—Some expressed concerns over the City's preparedness for events related to climate change and the resilience of related infrastructure.

Who Responded to the Survey

Most respondents indicated that they live or work within Stanwood city limits (Table 1). Other responses (selected by participants who did not identify as living, working, or owning property within city limits) noted a range of connections to Stanwood. These respondents described living just outside city boundaries, in nearby unincorporated areas, or on Camano Island. As one of these respondents noted, they "utilize Stanwood for retail, dining, and community services." Another shared that "the decisions of the City affect the quality of life on [their] property," and another described living on Camano Island but "[supporting] nonprofits in Stanwood."

Respondents represented a range of age groups, with the largest shares falling within the 45–54 age range and 65 and older (Table 2). The respondent population was predominantly White (Table 3).

Table 1. Connection to Stanwood

Category	# Respondents	Percentage
I live within Stanwood city limits	18	58
I work within Stanwood city limits	7	22
I go to school within Stanwood city limits	0	0
I own property or a business within Stanwood city limits	5	16
Other (please specify)	7	22
Note Percentages may total more than 100 percent because respondents were allowed to select more than one option.		

Table 2. Age of Respondents

Age Range	Percentage
Under 18	0
18-24	3
25-34	16
35-44	16
45-54	22
55-64	16
65+	22
Prefer not to say	3

Table 3. Ethnicity of Respondents

Ethnicity	Percentage
American Indian or Alaska Native	0
Asian or Asian American	3
Black or African American	0
Hispanic or Latino/a/x	3
Native Hawaiian or Pacific Islander	0
White	77
Prefer not to say	22
Another race or ethnicity	3

Hazards Experienced by Respondents

Respondents were asked how much flooding (in roads, yards, and buildings), extreme summer heat, and wildfire smoke or poor air quality have affected them or their household in the past five years (Table 4). The majority of respondents (75 percent) listed wildfire smoke and poor air quality as the hazards that have affected respondents or their households most. Extreme summer heat was also an impactful hazard, with 72 percent listing it as either moderately or very impactful. Flooding was of great impact to fewer residents but was still a regular issue with 58 percent of respondents listing it as moderately or very impactful.

Table 4. Hazards Experienced

Category	Selected not at all		Selected somewhat or a lot	
	# Respondents	Percentage	# Respondents	Percentage
Wildfire smoke or poor air quality	9	25	27	75
Extreme summer heat	10	27	26	72
Flooding	16	43	21	58

The 23 respondents who answered “Somewhat” or “A lot” for any of the listed hazards provided more detail through an open-ended question, expressing a variety of actions and concerns, listed below:

- **Poor air quality** exacerbating health issues and preventing time outside (10 respondents)
- **Regular flooding** issues (8 respondents)
- **Extreme heat** (6 respondents)

Five of the commenters mentioned the need for air conditioning and air filters to combat excessive heat and poor air quality caused by smoke from wildfires. Commenters also mentioned damage to roads and flood-control infrastructure, wildlife habitat, homes, and businesses due to flooding and/or water damage.

Concerns Related to Hazards

Respondents were asked about the impacts that most concerned them when considering the hazards they currently experience. The two sources of greatest concern for those indicating they are moderately or very concerned are: 1) the potential economic impacts associated with increased repair, energy, or insurance costs, and 2) the potential health impacts for vulnerable community members. Of least concern was reduced access to or quality of parks and other outdoor amenities followed by damage to homes, businesses, or personal property (Table 5).

Table 5. Community Concerns Related to Hazards

Category	Selected not concerned		Selected moderately or very concerned	
	#	Percentage	#	Percentage
Damage to homes, businesses, or personal property	13	36	14	38
Damage to roads, utilities, or other public infrastructure	8	22	19	52
Health impacts	10	27	16	44
Increased costs for residents or businesses	6	16	21	58
Disruptions to daily life	11	30	14	38
Reduced access to or quality of parks, recreation areas, or outdoor activities	16	44	11	30
Impacts to more vulnerable community members	6	17	19	52

Note

Gray shading indicates topics of highest or lowest concern.

City Planning and Policies

Respondents were asked to choose what they think the City's top three priorities for reducing energy use and GHG emissions should be. The most frequently selected priorities were supporting energy efficiency improvements in homes and businesses (57 percent), increasing tree canopy and shaded areas to help keep the community cooler (51 percent), and improving walking, biking, and transit options to reduce driving (48 percent) (Table 6).

Table 6. Top Priorities for City Planning and Policies

Category	Selected in Top Three Responses	
	#	Percentage
Support energy efficiency improvements in homes and businesses	19	57
Increase tree canopy and shaded areas to help keep the community cooler	17	51
Improve walking, biking, and transit options to reduce driving	16	48
Improve energy efficiency in City-owned buildings and vehicles	9	27
Expand community access to electric vehicle charging stations	8	24
Plan for more compact, connected development to reduce travel distances	6	18

Seven respondents chose to write their own responses, which included the following feedback:

- **Slowing development** until transportation infrastructure improves and concern over traffic (2 respondents)
- **Adding major retail** (e.g., grocery or department store) to reduce long-distance trips (1 respondent)
- **Identifying sea level measurements** (1 respondent)
- Beliefs that **climate change is not real** (2 respondents)
- Concern that “their tax dollars” are **funding the survey**¹ (1 respondent)

How the City Is Doing

When asked how well the City is doing in certain areas today, respondents reported higher ratings for the City's work on flooding and stormwater management (66 percent gave the City a good or excellent rating), providing walking and biking options (55 percent selected good or excellent), and protecting water quality (48 percent selected good or excellent) (Tables 7 and 8).

Respondents rated the City lower in areas such as planning for future growth (55 percent rated the City as poor or fair); maintaining infrastructure (52 percent chose poor or fair); and protecting natural areas, tree canopy, and open space (48 percent chose poor or fair) (Tables 7 and 8).

¹ Note: This survey was funded by the Washington State Department of Commerce Climate Commitment Act funding.

With regard to encouraging energy-efficient homes and buildings, the response selected most often was that respondents were “not sure” of Stanwood’s efforts on the subject (Table 7), indicating an opportunity for promoting greater awareness among the community.

Table 7. Respondent Ratings of Stanwood by Category

Category	Number Selecting Response				
	Poor	Fair	Good	Excellent	Not sure
Managing flooding and stormwater	2	6	15	7	3
Preparing for and sharing information	2	13	11	5	2
Access to spaces and resources that help people during events	4	9	11	1	8
Maintaining infrastructure	6	11	13	3	0
Protecting natural areas, tree canopy, and open space	6	10	9	5	3
Protecting water quality and managing demand	2	8	11	5	7
Providing options for walking and biking around town	7	6	9	9	2
Providing access to transit	3	10	5	7	8
Encouraging energy-efficient homes and buildings	4	7	5	2	15
Planning for future growth	12	6	8	2	5

Table 8. Respondent Ratings of Stanwood, Combined Categories and Percentages

Category	Poor or Fair	Percentage	Good or Excellent	Percentage
Managing flooding and stormwater	8	24	22	67
Preparing for and sharing information	15	45	16	48
Access to spaces and resources that help people during events	13	39	12	36
Maintaining infrastructure	17	52	16	48
Protecting natural areas, tree canopy, and open space	16	48	14	42
Protecting water quality and managing demand	10	30	16	48
Providing options for walking and biking around town	13	39	18	55
Providing access to transit	13	39	12	36
Encouraging energy-efficient homes and buildings	11	33	7	21
Planning for future growth	18	55	10	30

In Their Own Words

Respondents were asked to elaborate on their ratings (shown in Tables 7 and 8) of how well Stanwood is doing in certain areas. A total of 17 respondents provided comments. The major themes and concerns are as follows, presented by frequency of response:

- **Density, growth, and the effects of the state Growth Management Act** were a top concern for respondents (7 out of 17 commenters). Seven individuals mentioned that growth without supporting systems such as transportation, schools, adequate housing, and other infrastructure were concerns. Several expressed frustration that current residents are bearing the burden through congestion, taxes, levies, and reduced quality of life.
- Concurrently, **concerns about traffic** — specifically on State Route 532, Pioneer Highway, near schools, and around civic structures — were also mentioned frequently (7 out of 17)

commenters). Pedestrian and bicycle safety was mentioned by three respondents and one person expressed fears about the inadequacy of emergency evacuation routes.

- Concerns about **threats to the area's natural systems**, the environment in general, parks, and reduced tree canopy, and habitat quality for wildlife were mentioned (6 out of 17 commenters). Several mentioned the importance of natural systems related to keeping the effects of climate change in check.
- Two respondents **praised the City for addressing flooding issues**.

In general, the responses to show a strong concern that Stanwood's growth is happening too quickly and without sufficient supporting infrastructure, environmental protection, transportation planning, or preservation of community character.

Community Priorities for Future Planning

In Their Own Words

Respondents were asked to name one or two things that, in their own words, they thought the City could do to better prepare for flooding, extreme heat, wildfire smoke, or other disruptions.

- The majority (13 of 19 respondents) had **concerns related to stormwater and flood management**. Specific concerns included the following:
 - Improve, fix, or maintain diking systems, flood gates, levees, water diversions
 - Raise road between ditch and hill, improve road designs
 - Fix or install drainage systems for streets and roads
- Five commenters were **concerned with longer-term planning and solutions to all environmental hazards**, but, again, centered primarily on flooding, including the following:
 - Provide gage readings during flooding in the Stillaguamish River; involve the community in risk and vulnerability assessments; establish long-term or long-range plans to address flooding; provide a warning system and cooling stations for wildfire smoke
- One commenter advised the City to ensure that there was **enough of a police force for traffic control**.

Top Priorities

Respondents were asked to select their top three priorities for the City as it plans for the future. The most frequently selected priorities were ensuring reliable infrastructure and services (61 percent), keeping costs affordable (52 percent), and protecting natural areas and open space (42 percent) (Table 9).

One respondent noted the need to plan for long-term conditions through 2100 and beyond.

Table 9. Community Priorities

Category	Selected in Top Three Responses	
	# Respondents	Percentage
Ensuring reliable infrastructure and services	20	61
Keeping costs affordable	17	52
Protecting natural areas and open space	14	42
Supporting local businesses and jobs	13	39

Category	Selected in Top Three Responses	
	# Respondents	Percentage
Protecting the City's history and heritage	11	21
Protecting health and safety	10	30
Strengthening community character and sense of place	7	21

Additional Thoughts

When asked whether there was anything else they would like the City to consider, 12 respondents provided additional comments. The themes that emerged underscored the concerns and issues that respondents had provided elsewhere in the survey: rapid growth in the City, transportation safety and traffic, and preparation for events related to climate change.

Rapid Growth—Several commenters (4 of 12) cited concerns about growth, noting that infrastructure to support growth has not caught up with the volume of added housing. Others felt that growth threatened the “small town feeling” that Stanwood has had.

Transportation Safety and Traffic—Another 4 of 12 commenters said they would like the City to help improve safety on State Route 532 and reduce traffic in general. Suggestions included installing roundabouts, improving public transit options, and providing more sidewalks for pedestrians and cyclists.

Preparation for Events Related to Climate Change—A few (3 out of 12) commenters expressed concerns over the City's preparedness for events related to climate change, suggesting the City involve the community in disaster mitigation efforts and bolstering resilience, provide cooling shelters, and monitor sea level rise.

Single commenters suggested stop permitting cell towers, especially near schools and neighborhoods; attract a large grocery store; and expanding recycling options.

Attachments

A—Survey Instrument

B—Frequency Charts and Tables

Attachment A

Survey Instrument



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City of Stanwood: Planning for a Resilient Future

Introduction

The City of Stanwood is developing a Climate Element as part of its Comprehensive Plan, a required element under Washington State's Growth Management Act that will be included in the City's 2029 Comprehensive Plan update.

The Climate Element will identify how Stanwood can prepare for climate-related hazards, such as flooding, extreme heat, and wildfire smoke, and identify ways to reduce greenhouse gas emissions over time. This work is supported by a grant from the Washington State Department of Commerce.

We invite Stanwood residents and others connected to the community to share their input through this short survey. We're interested in your experiences with climate-related hazards, your concerns about the future, and your ideas for strengthening community resilience.

Your input will help shape the Climate Element. Survey responses are anonymous. The survey should take no more than 5-10 minutes to complete and is open through June 21, 2026.

Funding Acknowledgement

The WA Department of Commerce climate planning grant is supported with funding from Washington's Climate Commitment Act. The CCA supports Washington's climate action efforts by putting cap-and-invest dollars to work reducing climate pollution, creating jobs, and improving public health. Information about the CCA is available at www.climate.wa.gov.

1. In the past 5 years, how much have the following affected you or your household?

	Not at all	A little	Somewhat	A lot
Flooding (roads, yards, buildings)	☐	☐	☐	☐
Extreme summer heat	☐	☐	☐	☐
Wildfire smoke or poor air quality	☐	☐	☐	☐

2. If you selected "Somewhat or "A lot" for any item, please briefly describe your experience. This helps the City understand what impacts look like for residents and where improvements may be needed.

3. Looking ahead, how concerned are you about the following potential impacts from flooding, storms, extreme heat, wildfire smoke, and related conditions?

	Not concerned	Slightly concerned	Moderately concerned	Very concerned
Damage to homes, businesses, or personal property	☐	☐	☐	☐
Damage to roads, utilities, or other public infrastructure	☐	☐	☐	☐
Health impacts (e.g., heat-related illness, poor air quality)	☐	☐	☐	☐
Increased costs for residents or businesses (e.g., repairs, energy, insurance)	☐	☐	☐	☐
Disruptions to daily life (e.g., road closures, power outages)	☐	☐	☐	☐
Reduced access to or quality of parks, recreation areas, or outdoor activities	☐	☐	☐	☐
Impacts to more vulnerable community members (e.g., older adults, youth, people with disabilities)	☐	☐	☐	☐

4. Overall, how well is Stanwood doing today in each of the following areas?

	Poor	Fair	Good	Excellent	Not sure
Managing flooding and stormwater	☐	☐	☐	☐	☐
Preparing for and sharing information during emergencies and disruptions	☐	☐	☐	☐	☐
Access to spaces and resources that help people during events (e.g., cooling spaces)	☐	☐	☐	☐	☐
Maintaining reliable roads, utilities, and infrastructure	☐	☐	☐	☐	☐
Protecting natural areas, tree canopy, and open space	☐	☐	☐	☐	☐
Protecting water quality and managing water demand	☐	☐	☐	☐	☐
Providing options for walking and biking around town	☐	☐	☐	☐	☐
Providing access to transit	☐	☐	☐	☐	☐
Encouraging energy-efficient homes and buildings	☐	☐	☐	☐	☐
Planning for future growth	☐	☐	☐	☐	☐

5. If you would like to elaborate on any of your answers to question 4, please do so here.

6. What are one or two things the City could do to better prepare for flooding, extreme heat, wildfire smoke, or other disruptions?

* 7. Which of the following should be the City's top priorities for reducing energy use and greenhouse gas emissions? Choose your top three.

- ☐ Improve energy efficiency in City-owned buildings and vehicles
- ☐ Expand community access to electric vehicle charging stations
- ☐ Improve walking, biking, and transit options to reduce driving
- ☐ Increase tree canopy and shaded areas to help keep the community cooler
- ☐ Support energy efficiency improvements in homes and businesses (e.g., retrofits, rebates, incentives)
- ☐ Plan for more compact, connected development to reduce travel distances
- ☐ Other (please specify)

* 8. What is most important to you as the City plans for the future? Choose your top three.

- ☐ Keeping costs affordable
- ☐ Ensuring reliable infrastructure and services
- ☐ Protecting health and safety
- ☐ Supporting local businesses and jobs
- ☐ Protecting the City's history and heritage
- ☐ Strengthening community character and sense of place
- ☐ Protecting natural areas and open space
- ☐ Other (please specify)

9. Is there anything else you'd like the City to consider?

* 10. Which of the following best describes your relationship with Stanwood? Select all that apply.

- ☐ I live within Stanwood city-limits
- ☐ I work within Stanwood city-limits
- ☐ I go to school within Stanwood city-limits
- ☐ I own property or a business within Stanwood city-limits
- ☐ Other (please specify)

11. What is your age?

- ☐ Under 18
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65+
- ☐ Prefer not to say

12. What is your ethnicity? Select all that apply.

- ☐ American Indian or Alaska Native
- ☐ Asian or Asian American
- ☐ Black or African American
- ☐ Hispanic or Latino/a/x
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Prefer not to say
- ☐ Another race or ethnicity:

Attachment B

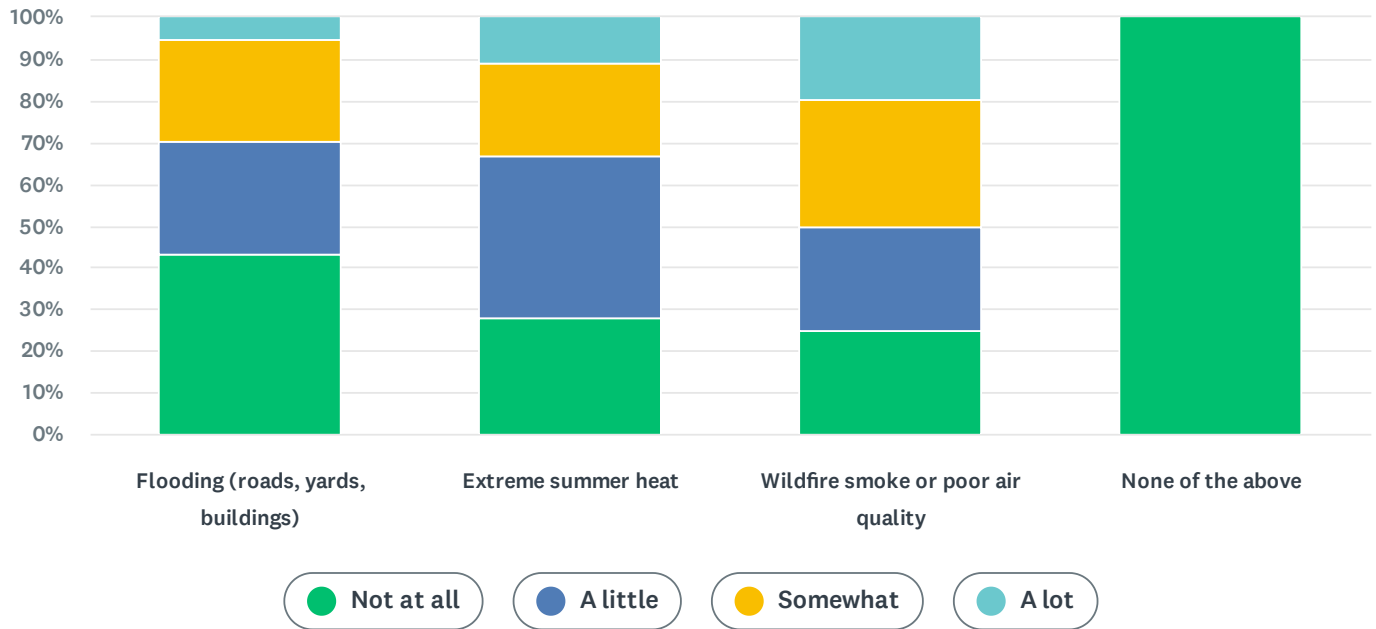
Frequency Charts and Tables



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Q1 37 responses

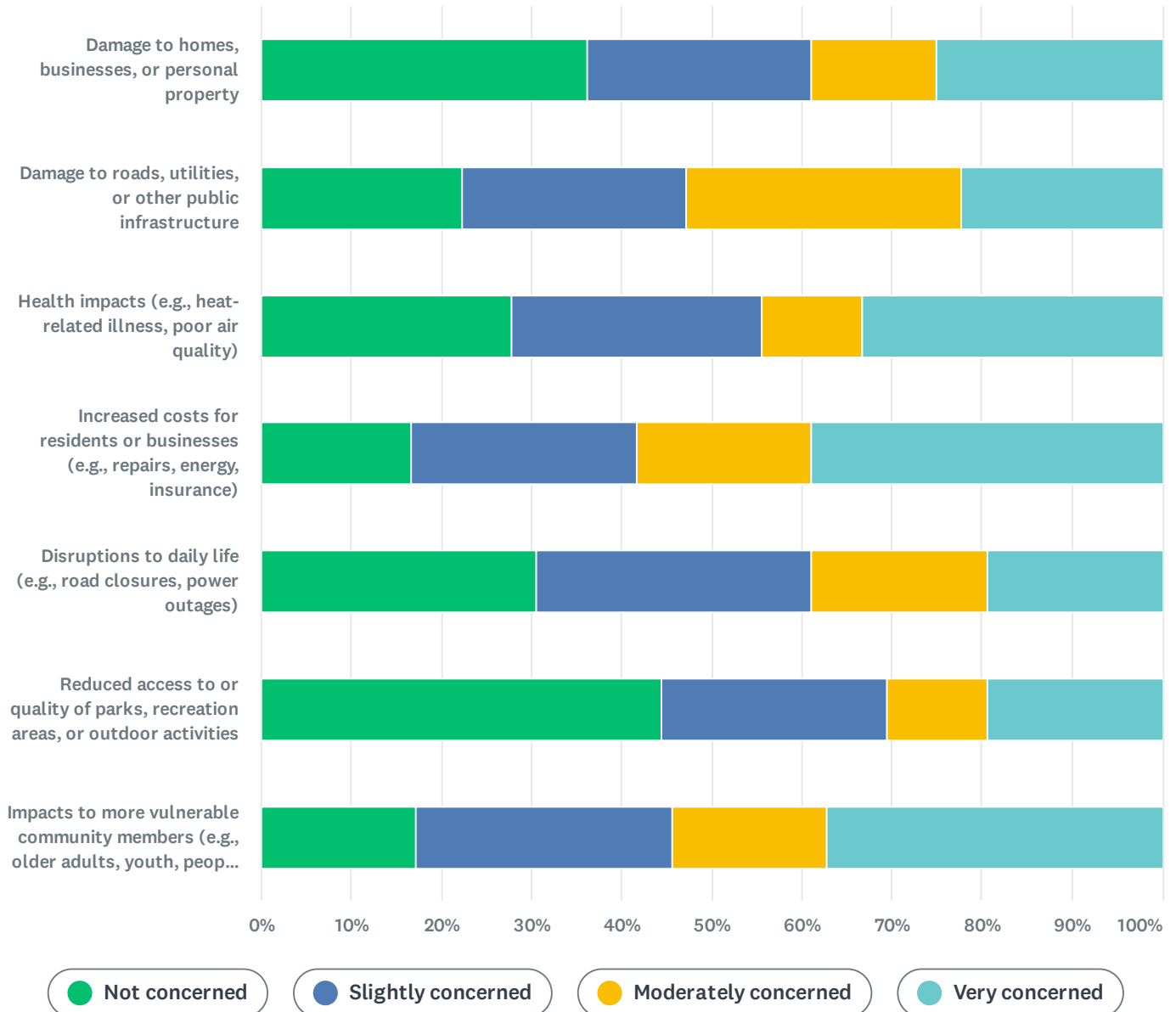
In the past 5 years, how much have the following affected you or your household?



	● Not at all	● A little	● Somewhat	● A lot	Total
Flooding (roads, yards, buildings)	43.24% 16	27.03% 10	24.32% 9	5.41% 2	37
Extreme summer heat	27.78% 10	38.89% 14	22.22% 8	11.11% 4	36
Wildfire smoke or poor air quality	25.00% 9	25.00% 9	30.56% 11	19.44% 7	36
None of the above	100.00% 1	0% 0	0% 0	0% 0	1
					110

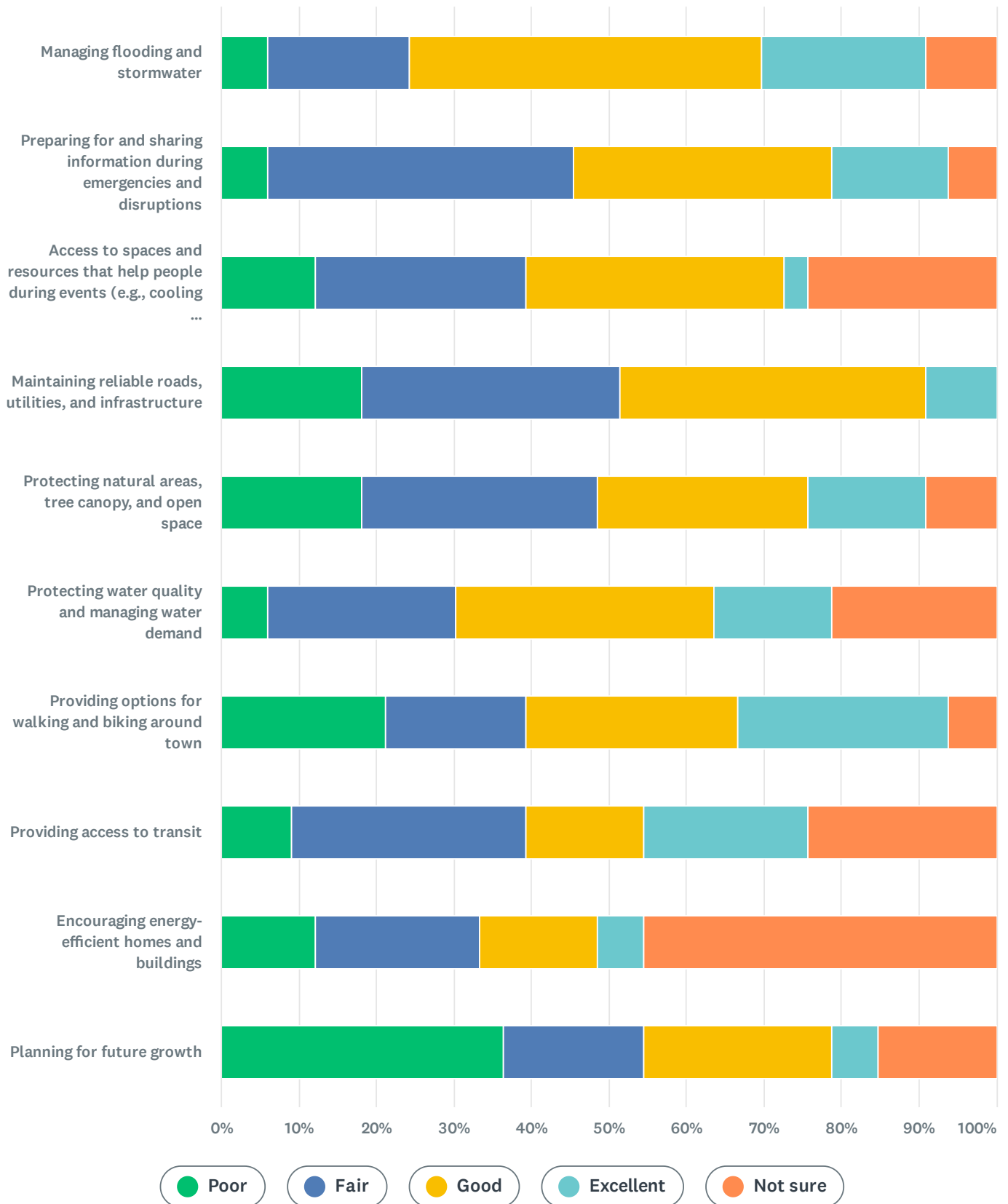
Q3 36 responses

Looking ahead, how concerned are you about the following potential impacts from flooding, storms, extreme heat, wildfire smoke, and related conditions?



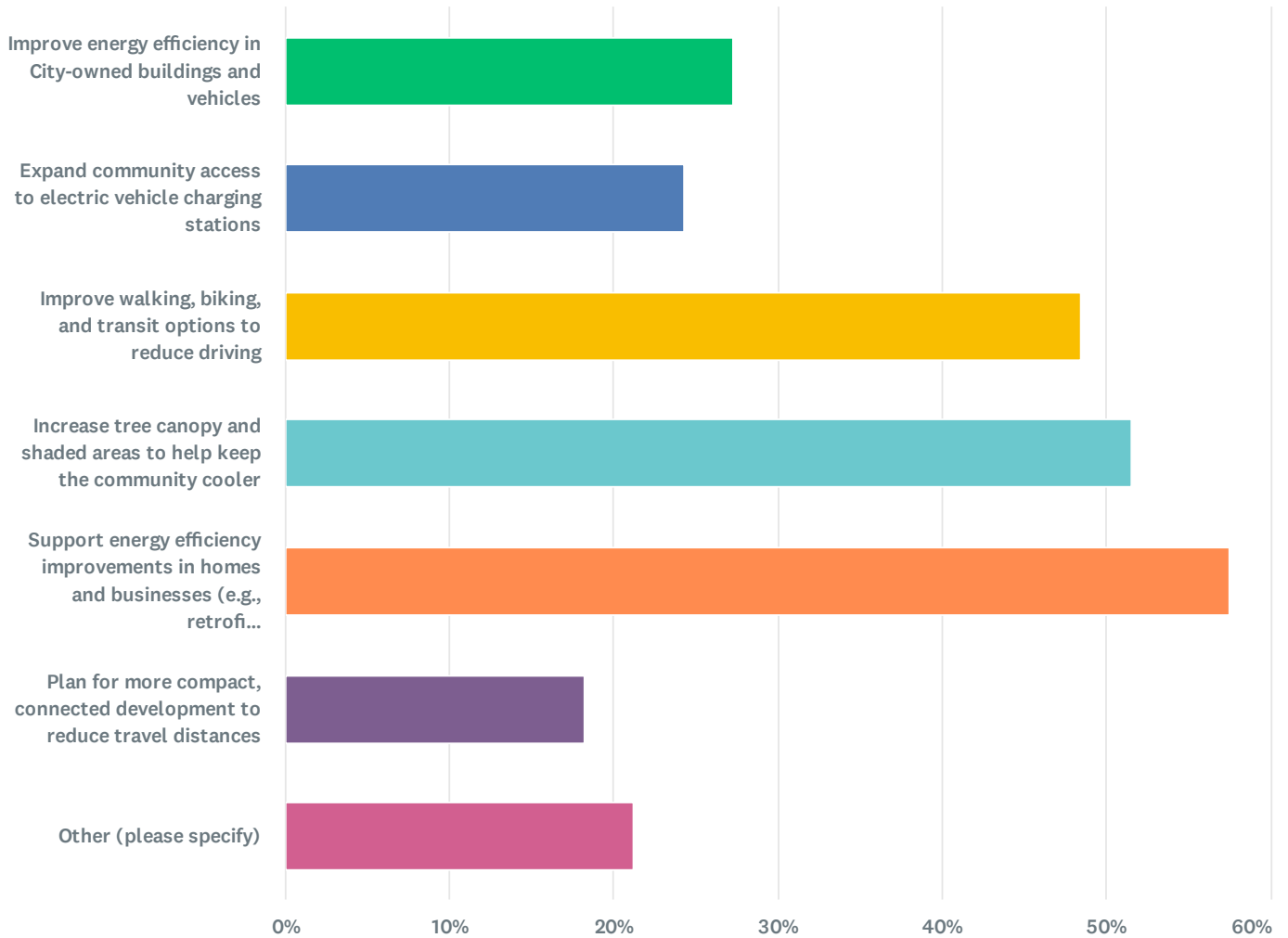
Q4 33 responses

Overall, how well is Stanwood doing today in each of the following areas?



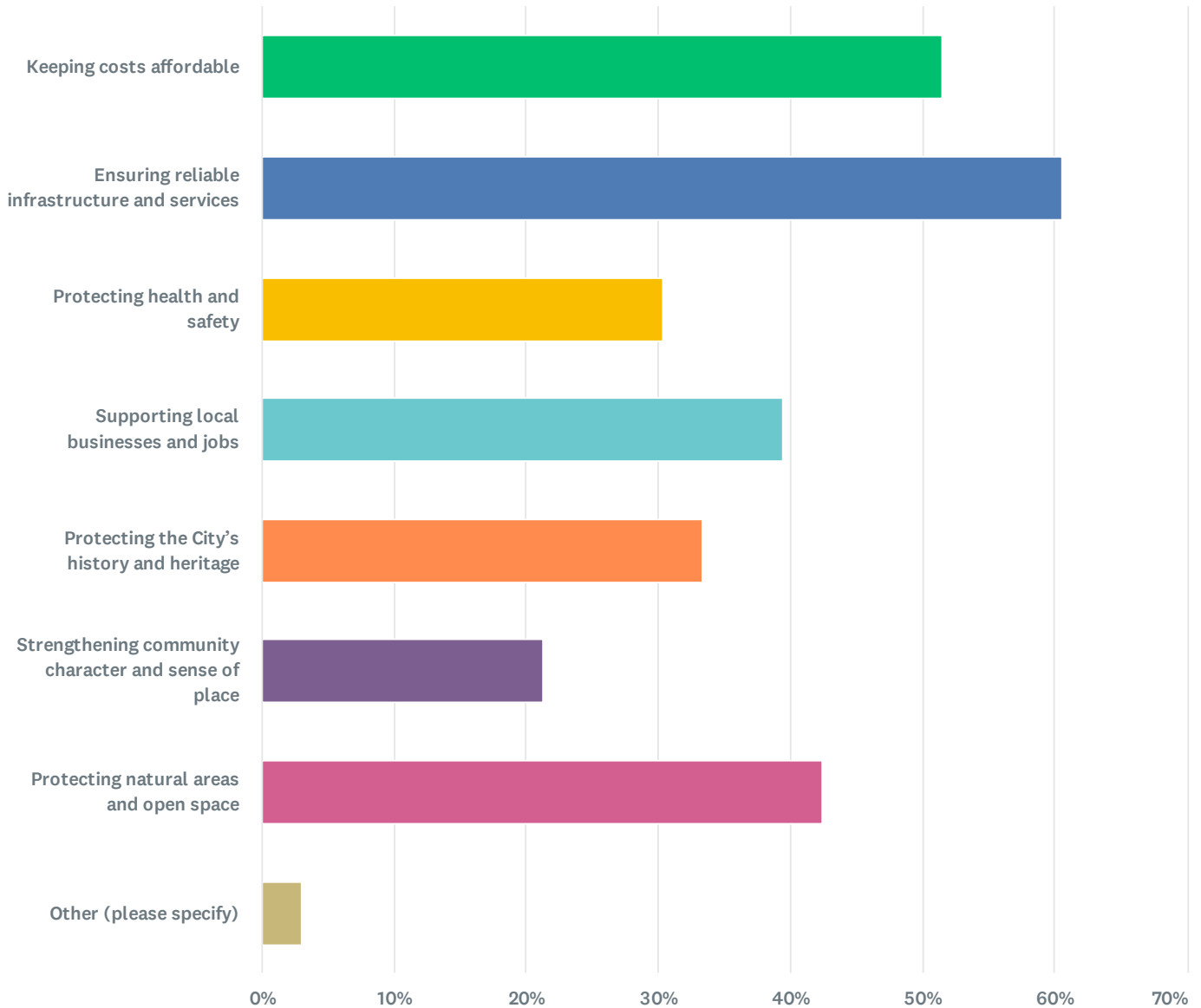
Q7 33 responses

Which of the following should be the City's top priorities for reducing energy use and greenhouse gas emissions? Choose your top three.



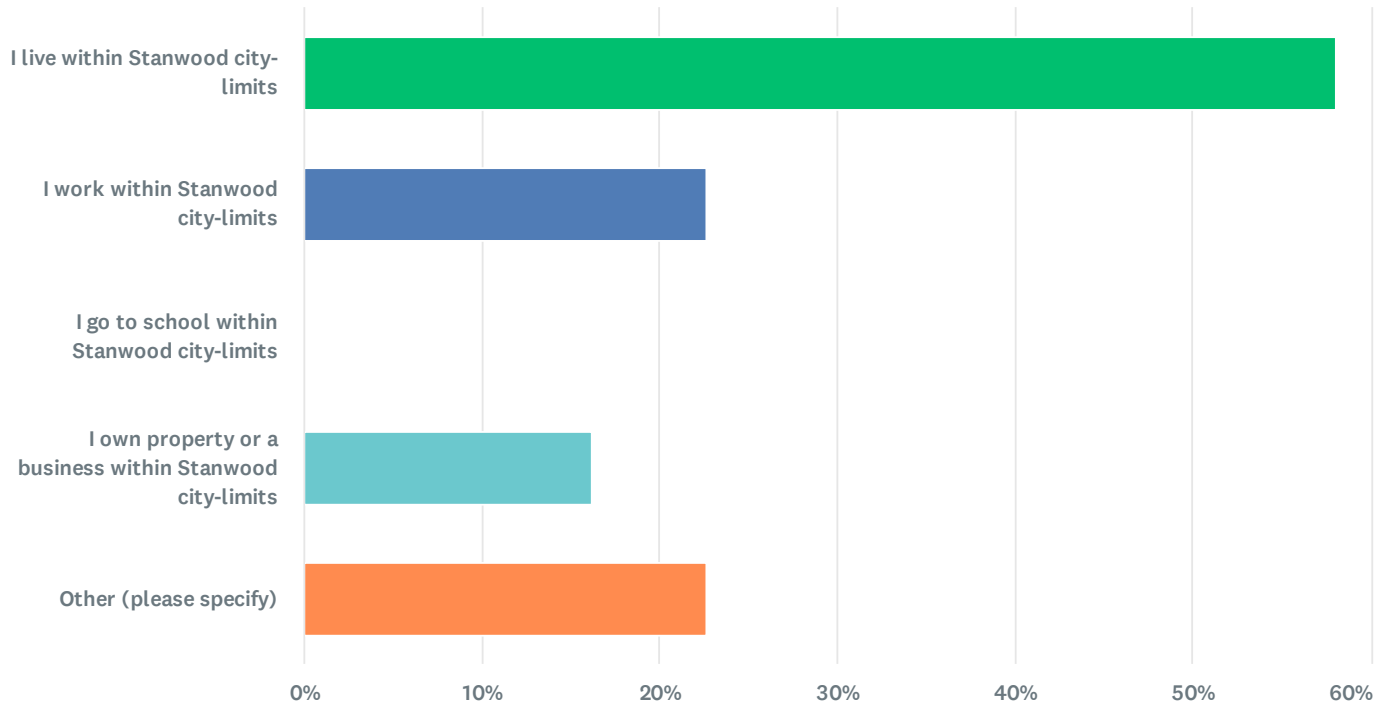
Q8 33 responses

What is most important to you as the City plans for the future? Choose your top three.



Q10 31 responses

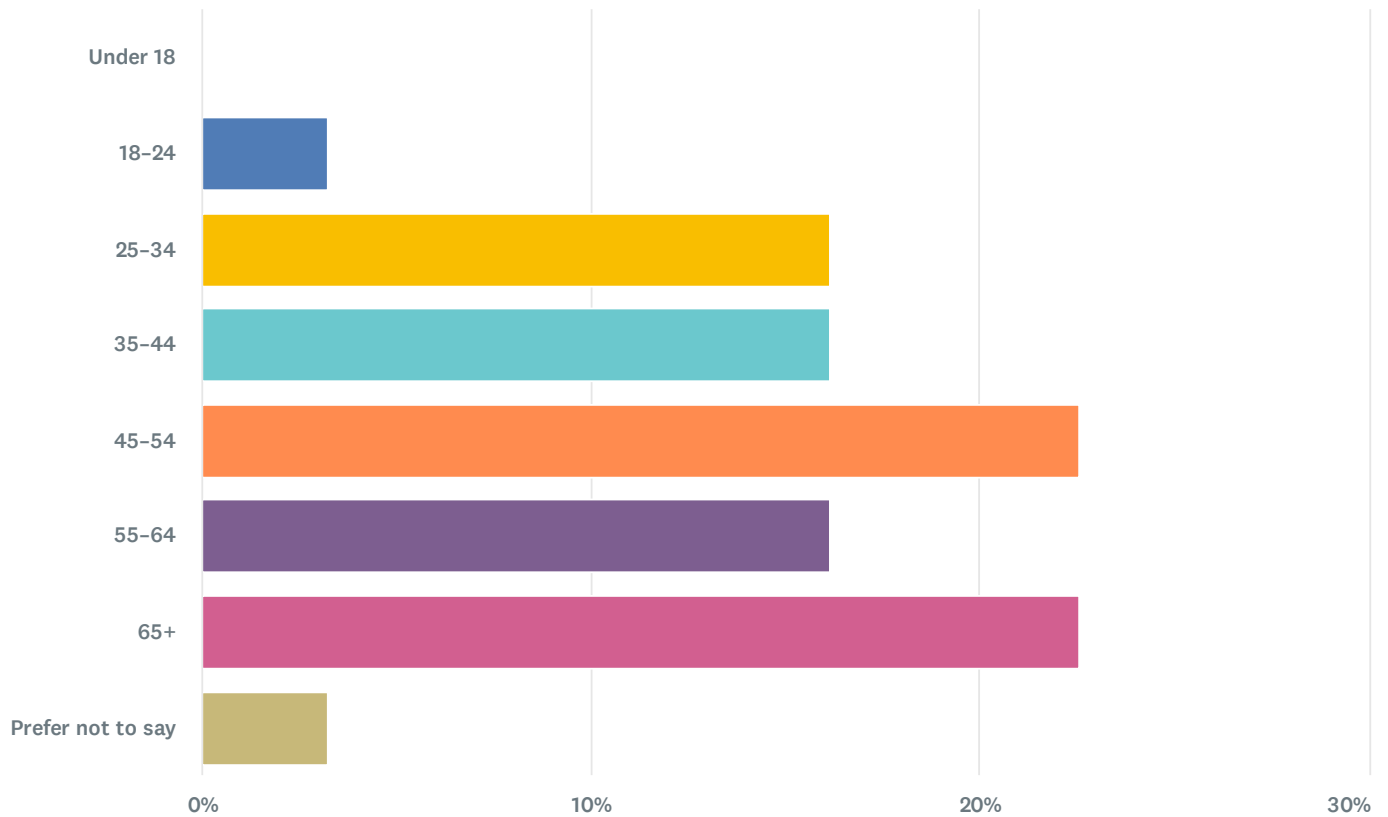
Which of the following best describes your relationship with Stanwood? Select all that apply.



Answer Choices	Percentage	Responses
● I live within Stanwood city-limits	58.06%	18
● I work within Stanwood city-limits	22.58%	7
● I go to school within Stanwood city-limits	0%	0
● I own property or a business within Stanwood city-limits	16.13%	5
● Other (please specify)	22.58%	7
Total		37

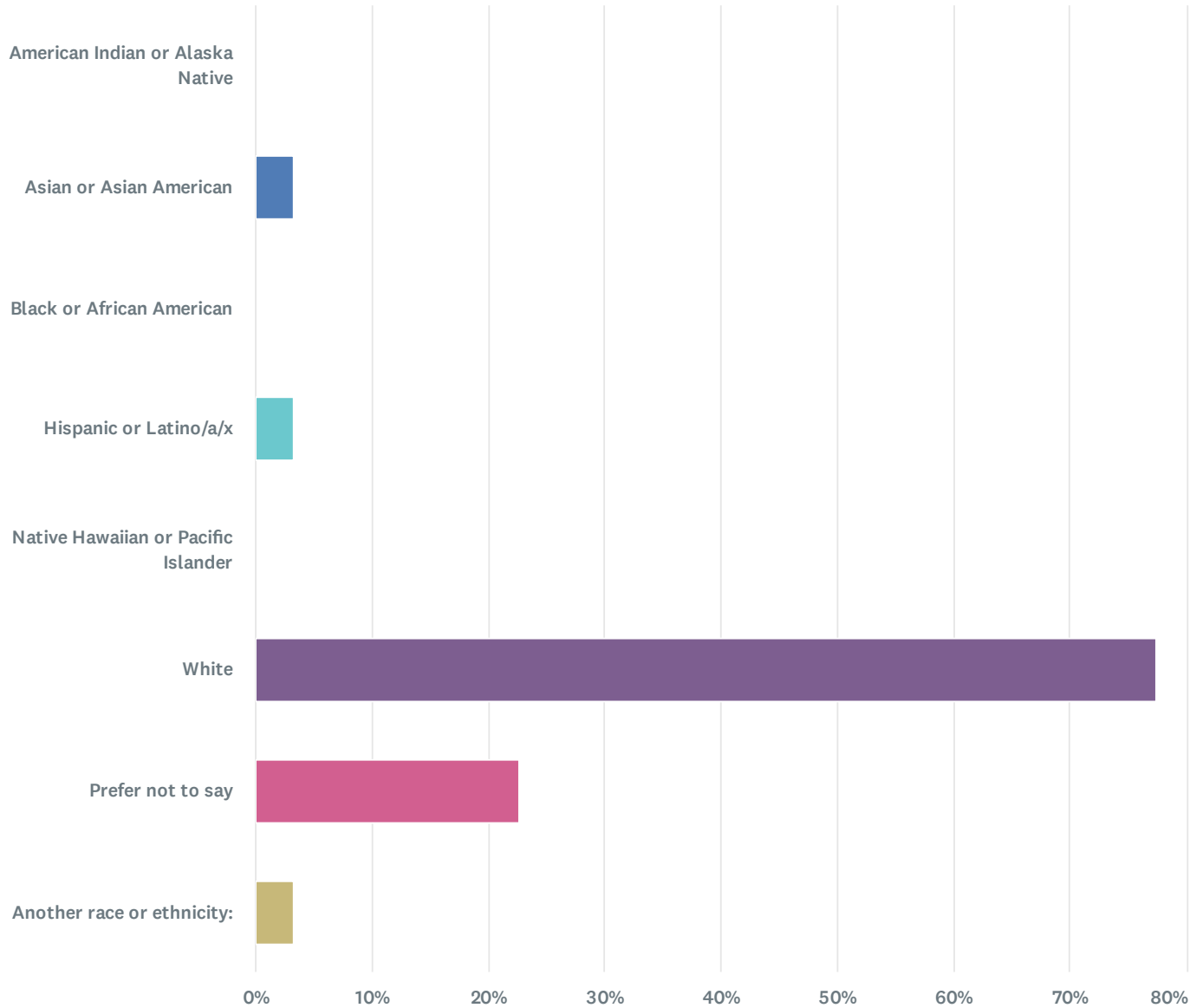
Q11 31 responses

What is your age?



Q12 31 responses

What is your ethnicity? Select all that apply.





Technical Memorandum

To: Patricia Love, City of Stanwood Date: May 7, 2026

From: Jed Roberts, Maul Foster & Alongi, Inc. Project No.: M1030.10.002

Re: Climate Assessment in Support of Comprehensive Plan Sub-Element on Climate Resilience

Introduction

This memorandum provides the City of Stanwood (City), Washington, with an analysis of its climate resilience. As climate change creates new and intensifying challenges, it is essential to understand the City's capacity to withstand and adapt to these evolving conditions. This analysis will serve as a resource for planners, policymakers, and community leaders as they integrate climate resilience into Stanwood's comprehensive planning efforts, strengthening the City's preparedness for climate-induced challenges.

The report is organized into three sections.

- **Vulnerable Populations:** Identifying those most at risk from climate impacts, including the elderly, young children, and economically disadvantaged groups.
- **Community Assets:** Identifying infrastructure, services, and resources essential to maintaining the City's resilience.
- **Climate-Induced Hazards:** Mapping flooding, sea-level rise, excessive heat, and drought, outlining potential exposure and associated risks to vulnerable populations and community assets.

Maul Foster & Alongi, Inc. (MFA), prepared this analysis using the Washington Department of Commerce's *Climate Element Planning Guidance* (Commerce Guidance, Commerce 2026). The findings serve as a technical foundation for developing goals and policies that will shape the climate resilience sub-element of Stanwood's upcoming comprehensive plan update.

Vulnerable Populations

Climate change does not impact all community members equally. The Revised Code of Washington (RCW) 70A.02.010 defines vulnerable populations as groups more likely to experience poor health outcomes in response to environmental hazards. This heightened risk is due to socioeconomic factors such as low income, limited access to health care, and linguistic isolation, as well as sensitivity factors like low birth weight or higher hospitalization rates. These populations are more likely to live in areas disproportionately exposed to climate hazards and often have fewer resources to prepare for, respond to, or recover from climate impacts.

Vulnerable populations are also a key component of overburdened communities, a term commonly used in Washington's climate resilience and environmental justice frameworks. Under RCW 70A.02.010, overburdened communities are defined as geographic areas where vulnerable populations face combined multiple environmental harms and health impacts that may contribute to

adverse health outcomes. This analysis of the City’s demographics focuses specifically on vulnerable populations.

To plan effectively for climate resilience, it is essential to identify and locate vulnerable populations in relation to climate-induced natural hazards. Knowing where sensitive groups such as the elderly, children, and economically disadvantaged people live helps the City prioritize resources and implement targeted adaptation strategies. This analysis uses detailed population data and existing development data to build a picture of where vulnerable populations are concentrated within the city. Because the analysis relies on available quantitative datasets, it may not fully capture all experiences or conditions that shape climate vulnerability. Pairing this analysis with additional qualitative methods, such as interviews, participatory mapping, or community surveys, would help reveal factors not reflected in the data and provide a more complete understanding of community vulnerability.

Demographic Profile of Stanwood

Tables 1 through 4 present demographic indicators that summarize the distribution of vulnerable populations in Stanwood, compared to statewide demographics for Washington.

Table 1. Citywide Population by Race and Ethnicity

Race/Ethnicity	City Population	Percent of City	State Population	Percent of State
White	6,913	82.8	4,975,929	64.3
Hispanic or Latino ethnicity	587	7.0	1,089,609	14.1
Two or more races	486	5.8	500,698	6.5
Asian	150	1.8	720,927	9.3
Black or African American	0	0.0	295,487	3.8
American Indian and Alaska Native	214	2.6	63,389	0.8
Other race	1	0.0	42,271	0.5
Native Hawaiian and Other Pacific Islander	0	0.0	52,674	0.7
Total Population	8,351	—	7,740,984	—

Source: 2023 5-Year Estimate, American Community Survey, Table DP05.

Notes

— = not applicable.

City = City of Stanwood.

State = State of Washington.

Table 2. Citywide Vulnerable Population Indicators

Group	City Population	Percent of City	State Population	Percent of State
Age 4 or younger ¹	430	5.1	437,433	5.7
65 years old and over ¹	1,366	16.4	1,259,313	16.3
With a disability ²	1,274	15.3	1,010,563	13.1
Below poverty level ³	613	7.5	753,455	9.9
Less than a high school diploma, 25 years and older ⁴	216	4.0	421,541	7.5
Spanish speakers (age 5 and over) who speak English less than very well ⁵	204	2.6	684,332	12.2
Asian and Pacific Island language speakers (age 5 and over) who speak English less than very well ⁵	13	0.2	483,173	8.6
Indo-European language speakers (age 5 and over) who speak English less than very well ⁵	0	0.0	315,708	5.6
Other language speakers (age 5 and over) who speak English less than very well ⁵	0	0.0	105,152	1.9
Asthma prevalence ⁶	1,307	12.2	679,657	11.1
Total Population¹	8,351	—	7,705,281	—

Sources

¹2023 5-Year Estimate, American Community Survey, Table DP05.

²2023 5-Year Estimate, American Community Survey, Table B18101.

³2023 5-Year Estimate, American Community Survey, Table S1701. Percent is based on population for which a poverty determination was made, which is 8,168 for the city and 7,606,327 for the state.

⁴2023 5-Year Estimate, American Community Survey, Table S1501. Percent is based on population 25 years and older, which is 5,346 for the city and 5,409,147 for the state.

⁵2023 5-Year Estimate, American Community Survey, Table S1601. Percent is based on population 5 years and older, which is 7,921 for the city and 5,631,460 for the state.

⁶U.S. Center for Disease Control PLACES database. The PLACES database reports on 2020 census population. The reporting area comprises the census tracts intersecting the City of Stanwood and has a population 18 years and older of 10,670.

Notes

— = not applicable.

City = City of Stanwood.

State = State of Washington.

Table 3. Citywide Vulnerable Household Indicators

Group	Estimated City Households	Percent of City	Estimated State Households	Percent of State
Renter households ¹	962	32.2	1,090,864	36.1
Household income < \$10,000 ²	215	7.3	114,781	3.8
Household income \$10,000 to \$24,999 ²	239	8.0	229,562	7.6
Household income \$25,000 to \$49,999 ²	334	11.5	419,858	13.9
Total households	2,991	—	3,020,558	—

Sources

¹2023 5-Year Estimate, American Community Survey, Table B25011.

²2023 5-Year Estimate, American Community Survey, Table S1901.

Notes

— = not applicable.

City = City of Stanwood.

State = State of Washington.

Vulnerable Population Maps

Attachment A includes a set of maps illustrating the distribution of vulnerable populations for populated areas within each city census block for specific indicators.

Geospatial data for the Decennial Census and American Community Survey are readily accessible through Esri's demographic variable database. American Community Survey estimates are provided at the census tract or block group level and were apportioned to individual blocks using Esri's enrichment methodology (Esri 2025). The following is a list of the demographic variables mapped and the corresponding maps, located in Attachment A.

- Population of Children Age 4 or Younger (Figure A-1)
- Population of Adults 65 or Older (Figure A-2)
- Population of Persons Identifying as Black, Indigenous, or of Color (Figure A-3)
- Households with One or More Disabled Resident (Figure A-4)
- Population Age 5 or Older Speaking English Not Well or Not at All (Figure A-5)
- Households Below the Poverty Level (Figure A-6)

MFA used these maps to develop a composite index of vulnerable populations for the city. Census blocks were ranked by the ratio of vulnerable persons or households to the total count in each block. Census blocks with no population were excluded. The overall index is the sum of ranks for each of the six indicators (Figure A-7). For additional demographic context, population density is shown in Figure A-8.

As shown in Figure A-7, the most vulnerable populations are spread throughout the city and urban growth area. Clusters of high vulnerability are found in five areas of the city: (1) the downtown business district, centered around the Josephine Caring Community and Stanwood Villas; (2) single-family residences along Nordic Way and Myrtle Road; (3) single-family and multifamily residential developments near the intersection of Pioneer Highway and Highway 532, anchored by the Bayview Gardens and Island View apartments; (4) single-family and multifamily residential developments in uptown and the nearby urban growth area, along 72nd Avenue and Pioneer Highway south of Highway 532, including Creekside Apartment Homes, Cambridge Place, Madison Place, Taylor Place, and Village Commons; (5) recently built single-family residences near the intersection of 68th Avenue and 278th Street.

Community Assets

To assess the potential impacts of climate-induced hazards on the community, MFA identified and mapped community assets. The assets identified followed the sectors outlined in the Commerce Guidance:

- | | |
|------------------------------------|-------------------------|
| • Agriculture and food systems | • Health and well-being |
| • Buildings and energy | • Ecosystems |
| • Cultural resources and practices | • Transportation |
| • Economic development | • Water resources |

- Emergency management
- Zoning and residential development

Source Data

Zoning

The zoning overlay was obtained from the City and reflects the most current data as of December 2025.

Point Locations and Linear Features

Point locations include civic and cultural centers providing community services, large senior and residential developments, schools, electrical substations, transit centers, parks, wells, and booster stations. Data came from the City's public facilities dataset.

Linear features were acquired from the City and include sidewalks and roads. MFA digitized the City's levee system from topographic lidar data provided by the Washington Department of Natural Resources (2025) flown in two separate aerial surveys in 2017 and 2019.

Natural Areas

Parks data were provided by the City. Waterbodies were acquired from the U.S. Geological Survey's National Hydrographic Dataset (USGS 2025). Rivers and streams, categorized by fish presence, were obtained from Snohomish County (2025).

Community Asset Maps

Attachment B includes a set of maps showing the location of community assets by sectors.

- Community Assets—Zoning (Figure B-1)
- Community Assets—Facilities and Infrastructure (Figure B-2)
- Community Assets—Natural Areas (Figure B-3)

Climate-Induced Hazards

The analysis of exposure and risk to Stanwood's community assets and vulnerable populations incorporated data for climate-induced hazards most likely to affect the area, namely flooding, sea-level rise, excessive heat, drought, and wildfire smoke. This assessment used hazard data from the University of Washington Climate Mapping for a Resilient Washington tool to project future climate scenarios (Raymond and Rogers 2022), National Oceanic and Atmospheric Administration sea-level rise viewer (NOAA 2025a), Federal Emergency Management Agency flood maps to identify flood-prone areas (FEMA 2020), U.S. Environmental Protection Agency AirNow database to provide air quality observations (EPA 2026), and National Oceanic and Atmospheric Administration land cover maps to identify the natural and altered landscapes susceptible to these climate hazards (NOAA 2025b). These data sources were used to highlight location-specific impacts and potential threats to vulnerable populations. When available, the projections of future climate are shown with both low- and high-greenhouse gas (GHG) emissions scenarios to provide a range of possible scenarios.

Priority Hazards and Data Sources

Flooding

The primary potential flooding sources for Stanwood are the Stillaguamish River, the Skagit River, and Puget Sound. Flooding impacts the city from multiple directions: the Stillaguamish River from the south, the Skagit River from the north, and Puget Sound generally from the west. The city's position near where the two major rivers empty into Puget Sound creates complex water dynamics, blending river and coastal influences. When these elements interact, they can intensify flooding effects. To

help prevent flooding, the lower elevation areas of the city are ringed by a levee system that follows the Stillaguamish River and stretches north along Puget Sound. A topographic map of the city (Figure C-1) shows the low elevations of downtown Stanwood, much of it below 10 feet.¹

The Stillaguamish and Skagit Rivers both originate in the Cascade Range and discharge into Puget Sound. The Stillaguamish River's drainage basin covers 662 square miles upstream of stream gage #12170300, which is situated just south of the city at the Marine Drive bridge (USGS 2026). The Skagit River's drainage basin encompasses 3,093 square miles upstream of stream gage #12200500, located approximately 12 miles north of the city in Mount Vernon (USGS 2026).

Recent major flood events recorded at the Stillaguamish River gage (#12170300) include February 1, 2020 (19.0 feet),² December 6, 2023 (19.1 feet), and November 18, 2015 (19.2 feet). Major floods at the Skagit River gage (#12200500) were observed on October 21, 2003 (36.2 feet) and November 16, 2021 (37.0 feet). During the development of this analysis, a substantial flood event occurred on December 11, 2025, resulting in water levels of 18.0 feet at the Stillaguamish River gage and 37.7 feet at the Skagit River gage (USGS 2026).

Peak flows on both the Stillaguamish and Skagit rivers are expected to increase under both low and high GHG emission scenarios, according to the University of Washington (Raymond and Rogers 2022). For the lower Stillaguamish River, compared to peak flows observed between 1980 and 2009, low- and high-GHG emission scenarios result in 16 percent and 22 percent increases in peak flows, respectively, over the period from 2030 to 2059. For the lower Skagit River, compared to peak flows observed between 1980 and 2009, low- and high-GHG emission scenarios result in 13 percent and 11 percent increases in peak flows, respectively, over the period from 2030 to 2059.³

Extreme precipitation events can result in flooding within the interior of the city's levee system. In a high-GHG emission scenario, the highest daily rain total during a 25-year storm event is expected to increase by 3 percent over the period of 2030 to 2059 when compared to observed totals from 1980 to 2009. The predicted impact of a low-GHG emission scenario was not available (Raymond and Rogers 2022).

For the purposes of mapping flood hazards at a scale appropriate for assessing risk to vulnerable populations and community assets, MFA used the regulatory Federal Emergency Management Agency flood map for Stanwood from 2020 (Figures C-2 and C-3). The flood elevations represent a hypothetical 100-year event, which should be considered an extreme peak flow event in the context of recent observed peak flows, with an elevation of 19.1 feet at the location of Stillaguamish River gage #12170300.

Sea-Level Rise

Stanwood is situated close to the Puget Sound, making it vulnerable to rising sea levels. The city relies heavily on its levee system, which plays a key role in protecting Stanwood from both coastal and river flooding.

Sea level is expected to rise under both low- and high-GHG emission scenarios, according to the University of Washington (Raymond and Rogers 2022). Relative to the average sea level recorded from 1991 to 2009, projections indicate that by 2050, likely⁴ sea-level rise will be 0.67 feet under

¹ Relative to the North American Vertical Datum of 1988.

² The stream gage elevations are relative to the North American Vertical Datum of 1988.

³ While perhaps counterintuitive, modeling of near-term periods (e.g., 2030–2059) can indicate lower increases in peak flow in the high-GHG emission scenario due to methodology choices. Projecting further into the future (e.g., 2070–2099), high-GHG emission scenarios consistently indicate higher peak flow increases than for low-GHG emission scenarios.

⁴ 50 percent likelihood of occurring for a future 30-year period compared to the average sea level in 1991–2009.

low-GHG emission scenarios and 0.75 feet under high-GHG scenarios. For higher⁵ estimates, sea levels are expected to rise by 1.42 feet with low emissions and 1.5 feet with high emissions by 2050, again compared to the 1991 to 2009 average.

To assess sea-level rise risk to vulnerable populations and community assets, MFA mapped data layers from the National Oceanic and Atmospheric Administration's Sea-Level Rise Viewer (NOAA 2025a). Scenarios of a 0.5-foot rise, 1-foot rise, and 1.5-foot rise are depicted as a reference to the likely and high sea-level rise estimates noted above (Figures C-4 and C-5). It is notable that, without the protection of levees, much of the downtown area of Stanwood would be at risk of inundation at current high tide levels.

Excessive Heat

Summer maximum temperatures in Stanwood are expected to increase in low- and high-GHG emission scenarios, according to the University of Washington (Raymond and Rogers 2022). Compared to summer maximum temperatures observed from 1980 to 2009, low- and high-GHG emission scenarios result in 3.8°F and 4.9°F increases, respectively, over the period from 2030 to 2059. Similarly, cooling degree days⁶ are expected to increase by 4.2 days and 7.7 days annually in low- and high-GHG emission scenarios, respectively, over the 2030 to 2059 period compared to 1980 to 2009. More cooling degree days mean higher potential cooling demand for buildings in summer.

The Tree Equity Score tool (American Forests 2026), provided through a partnership between the Washington Department of Natural Resources and American Forests, publishes various measures related to the urban heat island effect, which will be exacerbated under expected GHG emission scenarios. Stanwood has an average heat disparity index⁷ of -0.6°F across the city's eight census block groups, an indication that the city, as a whole, does slightly better than the average U.S. urban area in mitigating extreme heat. Heat disparity varies locally, ranging from +2.3°F downtown to -2.6°F in parts of uptown.

High-resolution land cover data provided by NOAA (2025b) have been used here to depict the heat island effect in Stanwood through mapping of tree canopy areas and impervious surfaces (Figure C-6). Tree canopy covers 468 acres of the urban growth area (21.0 percent) and impervious surfaces cover 594 acres (26.7 percent).

Drought

Persistent drought conditions in the region can pose significant challenges for agricultural production and local water resource management. Stanwood's public water source is fed by groundwater and accessed via City-owned wells. During drought conditions, groundwater-fed systems such as the City's may encounter water supply challenges due to reduced aquifer recharge rates. The likelihood of precipitation drought in Snohomish County is expected to increase in a high-GHG emission scenario, according to the University of Washington (Raymond and Rogers 2022). A high-GHG emission scenario is projected to result in a 26 percent annual chance for precipitation drought (total summer precipitation [June through August] below 75 percent of historical levels) over the period from 2030 to 2059.

⁵ 1 percent likelihood of occurring for a future 30-year period compared to the average sea level in 1991–2009.

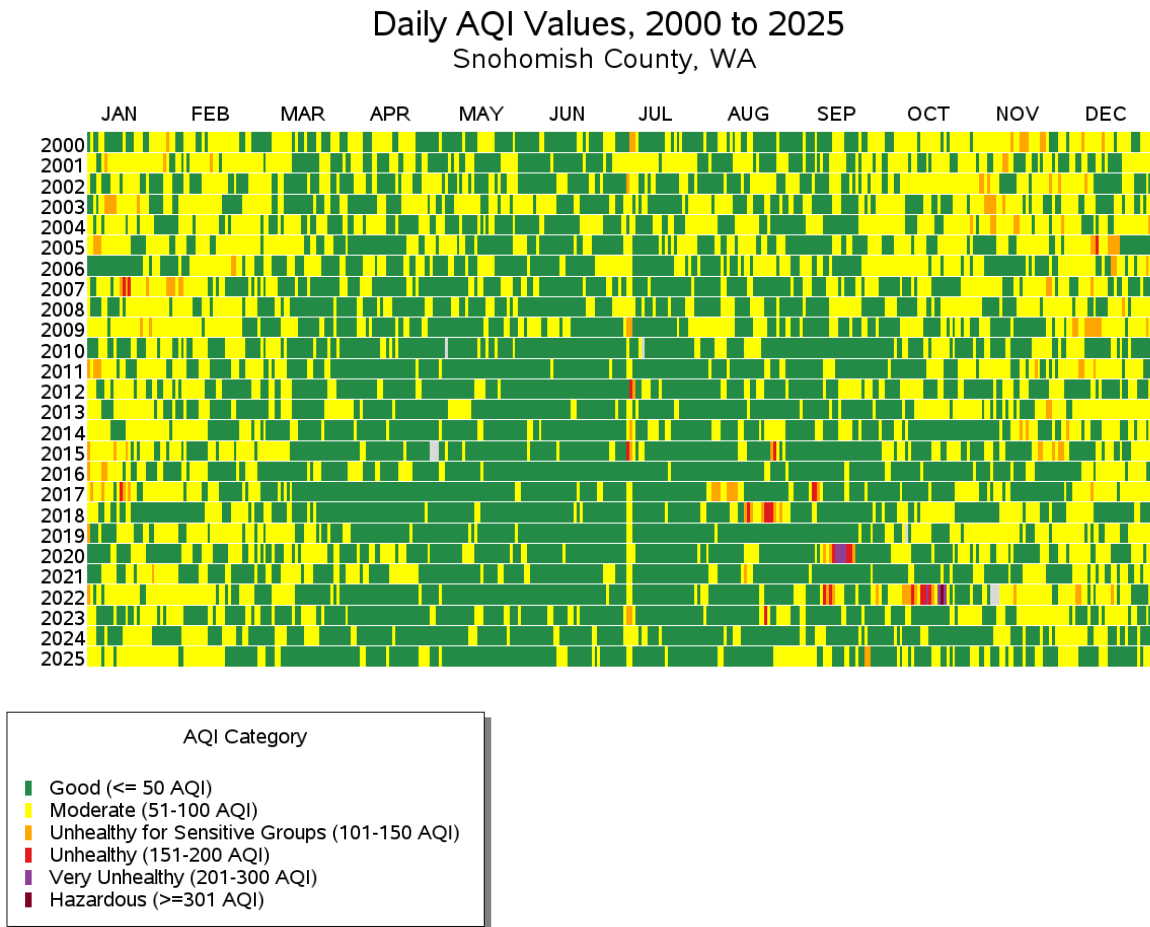
⁶ Cooling degree days are the annual number of degree-days above a threshold of average daily temperature of 65°F. An increase in the number of cooling degree days is an indicator of greater potential for more cooling demand for buildings in the summer.

⁷ The average heat disparity index compares all urban areas in the United States to their collective average maximum surface temperature and expresses the difference from that average in degrees.

Wildfire Smoke

Wildfire likelihood is extremely low in Stanwood and is expected to remain so in various GHG emission scenarios, according to the University of Washington (Raymond and Rogers 2022). However, northern Washington and Canada will face a significant rise in wildfire risk, leading to more widespread smoke. In the latter portion of the period between 2000 to 2025, the air quality index in Snohomish County saw its first instances of very unhealthy air quality during the fire season from June to October (Figure 1 below).

Figure 1. Daily Air Quality Values, 2000–2025, Snohomish County, Washington



Notes

Graph from the U.S. Environmental Protection Agency AirNow database.
Gray areas of the graph indicate data gaps.
AQI = air quality index.

Climate-Induced Hazard Maps

Attachment C includes a set of maps showing the distribution of climate-induced hazards and related overlays.

- Topographic Map (Figure C-1)
- River Flooding Hazard with Levee Protection (Figure C-2)
- River Flooding Hazard without Levee Protection (Figure C-3)

- Sea-Level Rise with Levee Protection (Figure C-4)
- Sea-Level Rise without Levee Protection (Figure C-5)
- Tree Canopy and Impervious Surface (Figure C-6)

Climate Impacts

This climate risk assessment analyzed the vulnerable population, community asset, and climate-induced hazard data to understand the potential climate impacts in Stanwood. This examination determined specific locations and populations at risk from flooding, sea-level rise, excessive heat, and drought. MFA conducted this assessment based on principles established in the Commerce Guidance.

Pairing Hazards with Vulnerable Populations and Community Assets

Table 4 summarizes the possible impacts to vulnerable populations and community assets resulting from the identified priority hazards.

Table 4. Climate-Induced Hazard Exposure and Impacts

Asset/Population-Hazard Pair	Sectors	Exposure of Population/Asset to Hazard	Impacts
Vulnerable populations and flood/sea-level rise	Health/well-being, residential development	Some of the city's most vulnerable populations reside in low-lying areas (i.e., downtown business district) exposed to the deepest and most destructive conditions in a levee breach. Areas include the residences in the vicinity of Saratoga Drive, in the vicinity of 271st Street and 94th Drive, Stanwood Villas Apartments, and Josephine Caring Community.	During a major riverine or coastal flood event, there is increased risk of injury or death due to mobility limitations. In any flooding event, there is increased pressure on emergency management resources.
Vulnerable populations and excessive heat	Health/well-being, residential development	Some vulnerable populations reside in areas more susceptible to urban heat island effects (i.e., with low tree canopy and more impervious surfaces). Examples include residents in the vicinity of 271st Street and 94th Drive, Stanwood Villas Apartments, and Josephine Caring Community.	There is increased pressure on emergency management resources to mitigate acute health impacts. Long-term chronic health impacts will emerge or be exacerbated.
Tree canopy and excessive heat	Ecosystems, health/well-being	There is 21 percent tree canopy within the urban growth area. Tree canopy is especially sparse in the downtown business district area west of the railway, where there is 4.9 percent tree canopy (23.8 acres of tree canopy in an area covering 482 acres).	Sparse tree canopy exacerbates urban heat island effects which affect community health. It also results in disconnected habitat and ecosystems.
Cooling-related energy use and excessive heat	Buildings/energy, utilities	Projected increase in maximum temperatures and cooling degree days across the city.	There are increases in energy demand and load on power infrastructure.
Vulnerable populations and wildfire smoke	Health/well-being, residential development	Approximately 12 percent of the city population suffers from asthma and widespread wildfire smoke events are expected to become more common, resulting in increasing risk factors for those affected by asthma.	There is increased pressure on emergency management resources to mitigate acute health impacts. Long-term chronic health impacts will emerge or be exacerbated.
Roads/stormwater infrastructure and flooding/extreme precipitation	Transportation, utilities	The city has low-elevation roads and utilities located in the downtown business district within the levee-protected area.	More extreme precipitation events will increase the occurrence of nuisance flooding.
Levee system and sea-level rise	Utilities, emergency management	As sea levels are expected to increase by at least 0.67 feet and potentially reach 1.5 feet by 2050, the Diking District 7 levee system will be subjected to growing strain.	There is a long-term potential for a levee breach or overtopping during extreme coastal storms or riverine peak flow events, which may affect the downtown business district of the city.

Additional Climate Impacts Resources

Snohomish County has produced several related climate impacts and vulnerability assessments that include Stanwood. These recent studies are valuable resources for the City as it moves to prioritize and achieve its climate resilience goals.

Snohomish County Climate Change Vulnerability and Risk Assessment Report (2023a)

The report helps cities in Snohomish County understand how climate change is expected to affect local infrastructure, communities, and natural systems by outlining specific risks such as flooding, extreme heat, and wildfire exposure. It provides a structured vulnerability assessment that cities can use to identify which populations, facilities, and services are most at risk and why. Its census block-level analysis helps identify areas at greatest risk, supporting informed decisions for comprehensive plan updates and hazard mitigation strategies.

Snohomish County Climate Vulnerability Tool (2023b)

This tool is an interactive web map companion to the *Climate Change Vulnerability and Risk Assessment Report*.

Attachments

Attachment A—Vulnerable Population Maps

Attachment B—Community Asset Maps

Attachment C—Climate-Induced Hazard Maps

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Limitations

The services undertaken in completing this technical memorandum were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This technical memorandum is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this technical memorandum apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this technical memorandum.

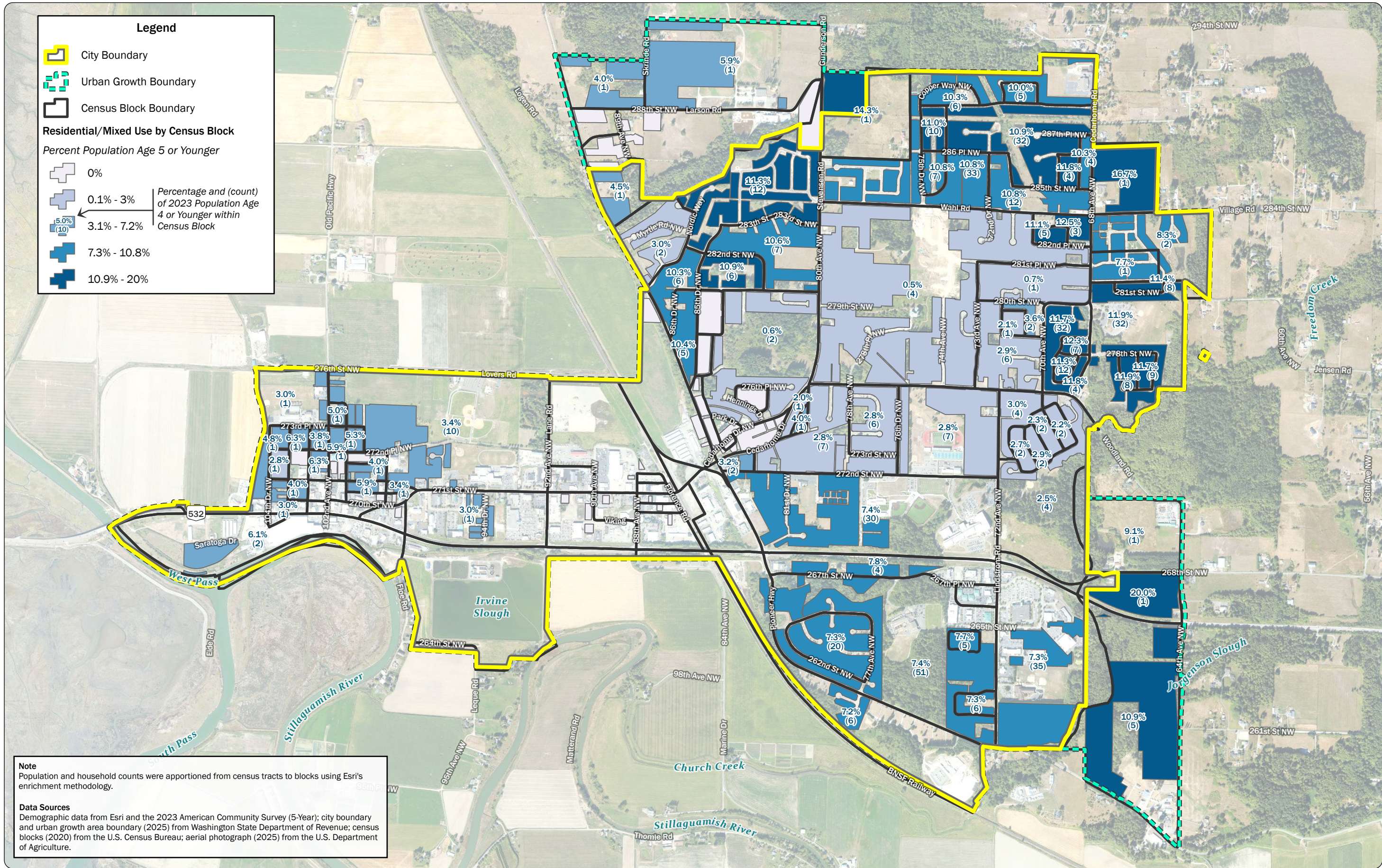
Attachment A

Vulnerable Population Maps



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Project: M2023.0.002



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Project: M2023.0.002

 City Boundary

 Urban Growth Boundary

 Census Block Boundary

Residential/Mixed Use by Census Block

Percent 2023 Population Age 65 or Older

 0%

 0.1% - 15.9%

 16% - 22.1%

 22.2% - 40%

 40.1% - 60%

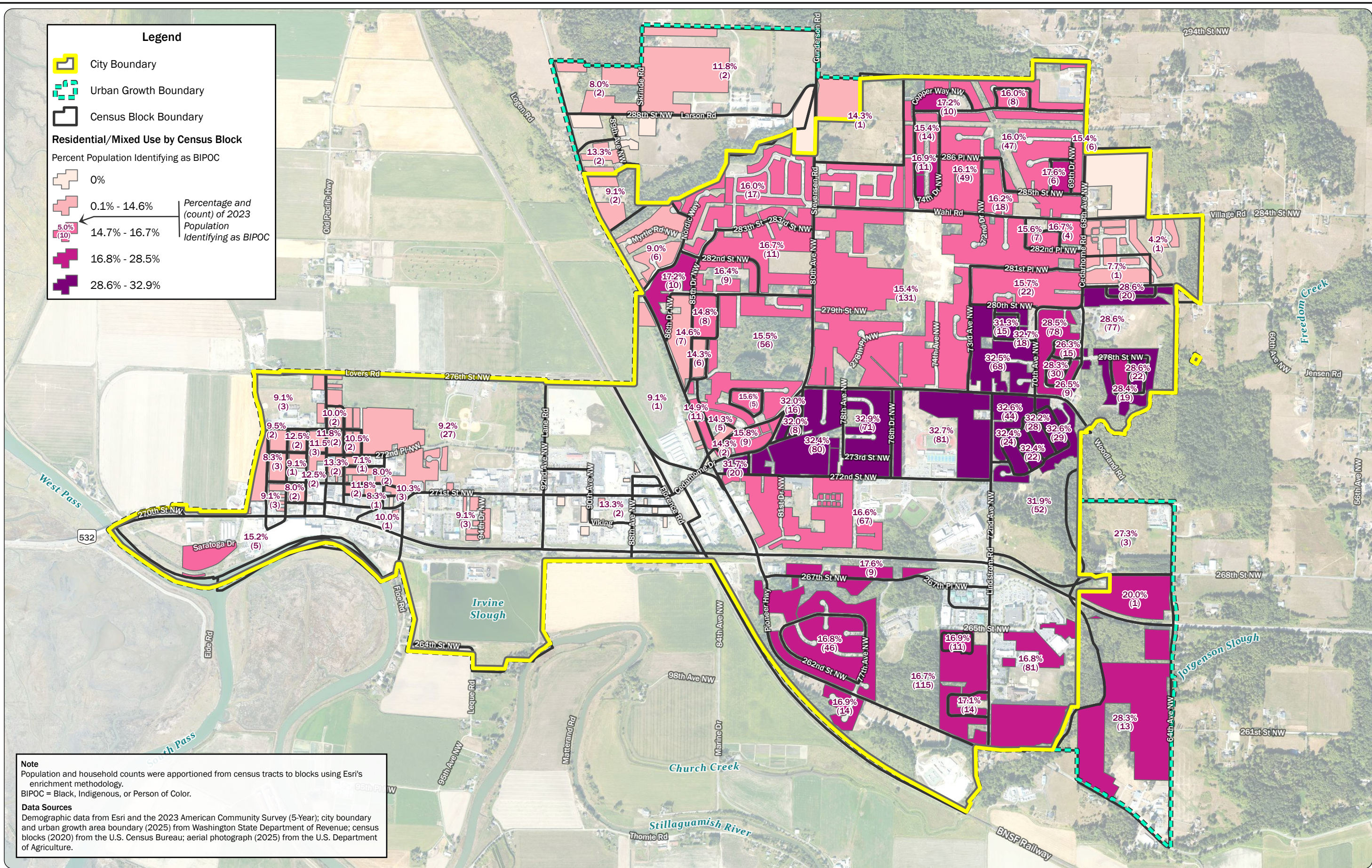
Percentage and (count)
of 2023 Population
Age 65 or Older within
Census Block

Note
Population and household counts were apportioned from census tracts to blocks using Esri's enrichment methodology.

Data Sources
Demographic data from Esri and the 2023 American Community Survey (5-Year); city boundary and urban growth area boundary (2025) from Washington State Department of Revenue; census blocks (2020) from the U.S. Census Bureau; aerial photograph (2025) from the U.S. Department of Agriculture.

Figure A-2
Population of Adults Age 65 or Older
Climate Planning
City of Stanwood, WA





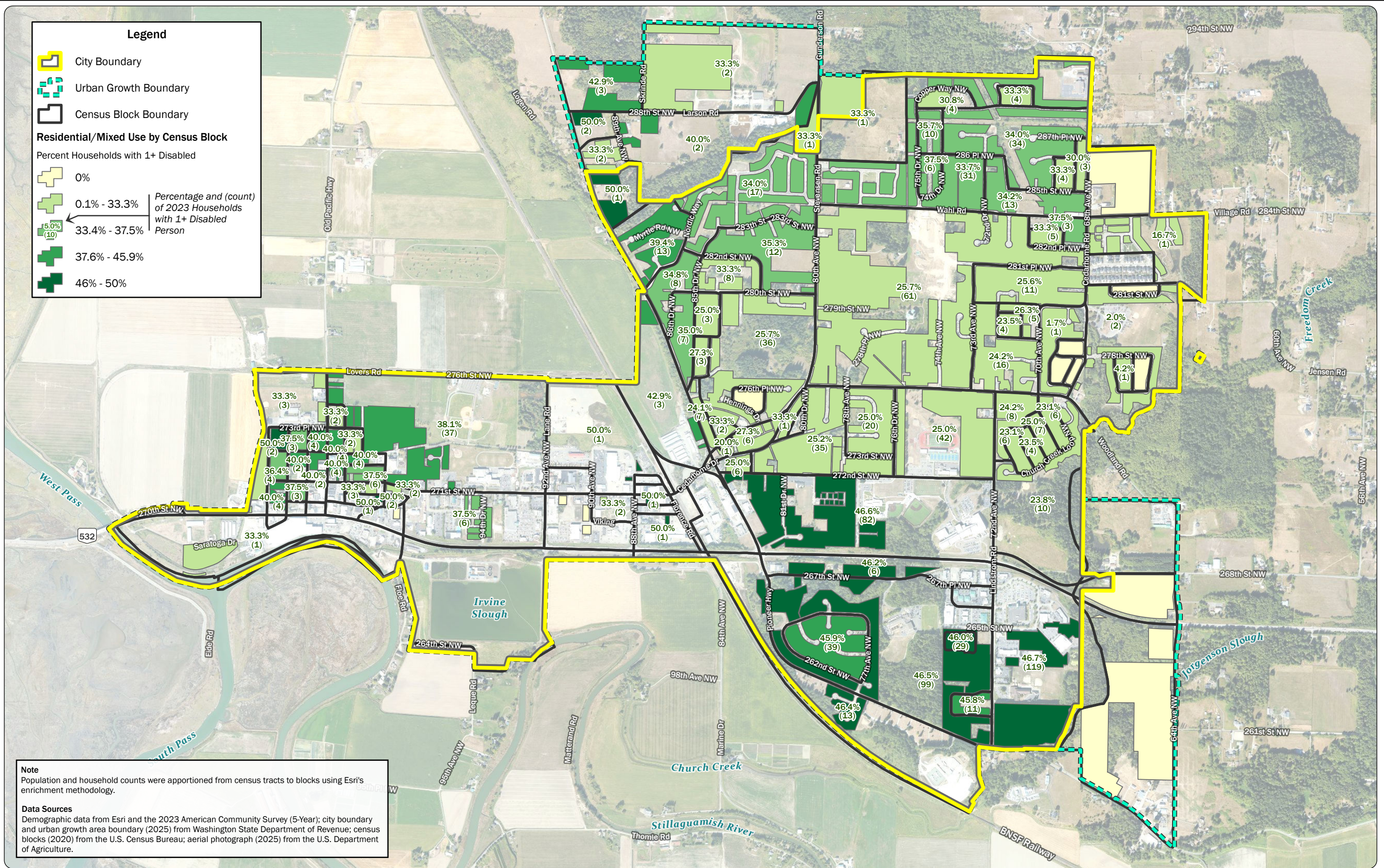
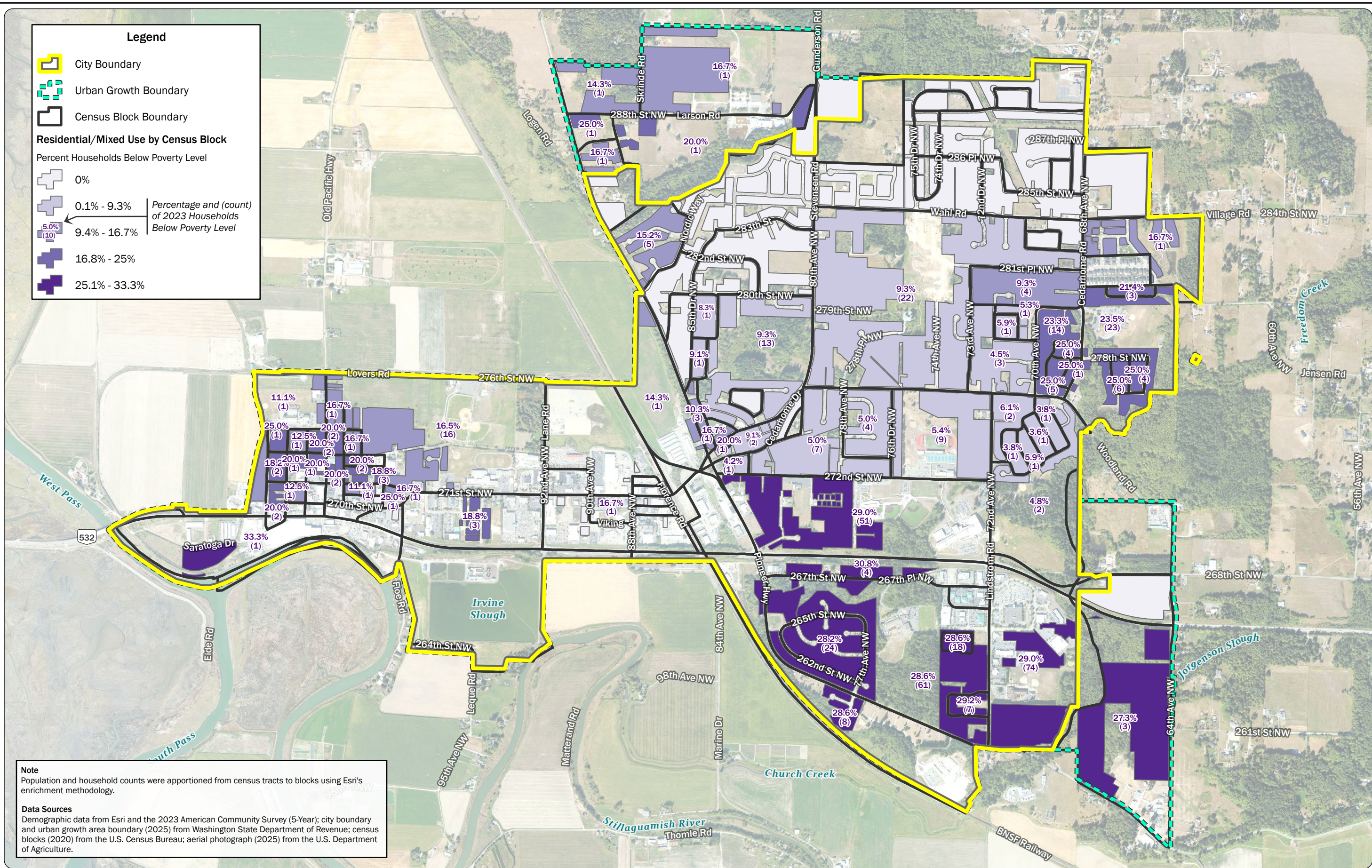


Figure A-4
Households with One or More Disabled Resident
Climate Planning
City of Stanwood, WA



Path: C:\Workspaces\0_MFA_Planets\M1030\10_002_Planets\Map1030_10_002_FigureA7\Figure A-7 Vulnerable Population Index
Print Date: 4/28/2026
Reviewed By: stalker
Produced By: jsharbert
Project: M1030_10_002

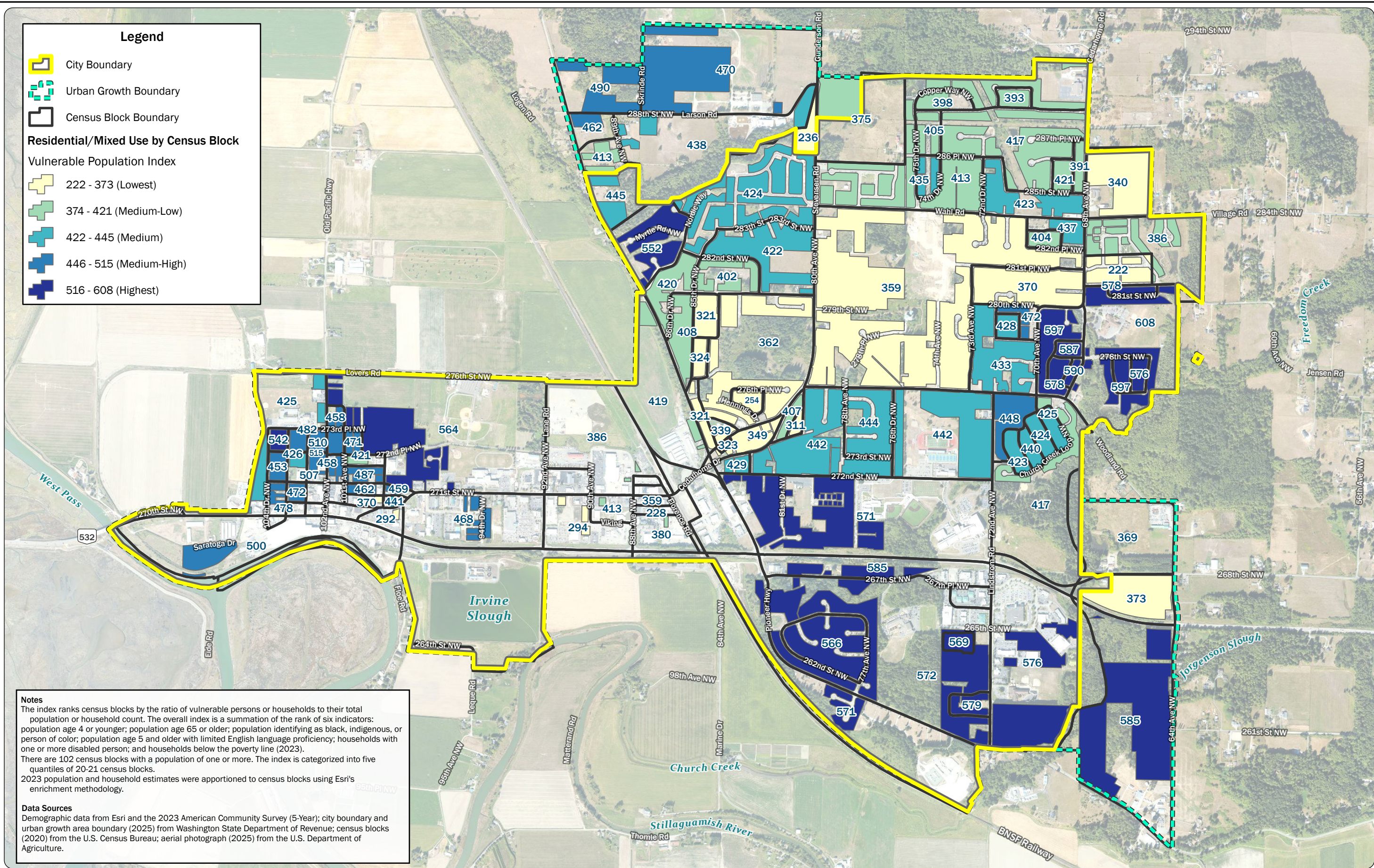


Figure A-7
Vulnerable Population Index
Climate Planning
City of Stanwood, WA



Print: C:\Users\maul\Documents\MAUL_Foster\MAUL_Foster\MAUL_Foster\Figure A-8 Population Density
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Reviewed By: [redacted]
Produced By: [redacted]
Project: MAUL_Foster\MAUL_Foster\MAUL_Foster\Figure A-8 Population Density

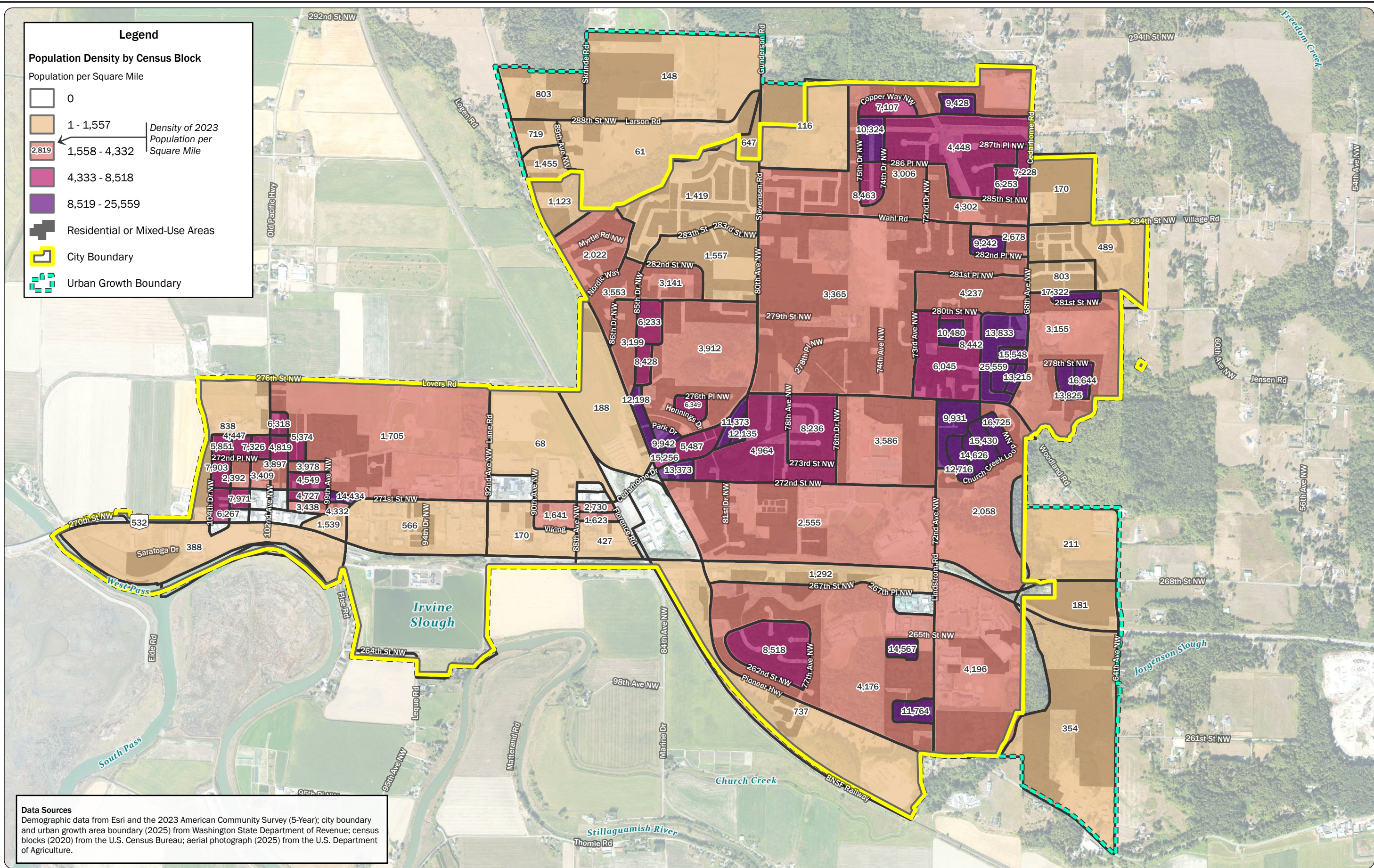


Figure A-8
Population Density by Census Block
Climate Planning
City of Stanwood, WA

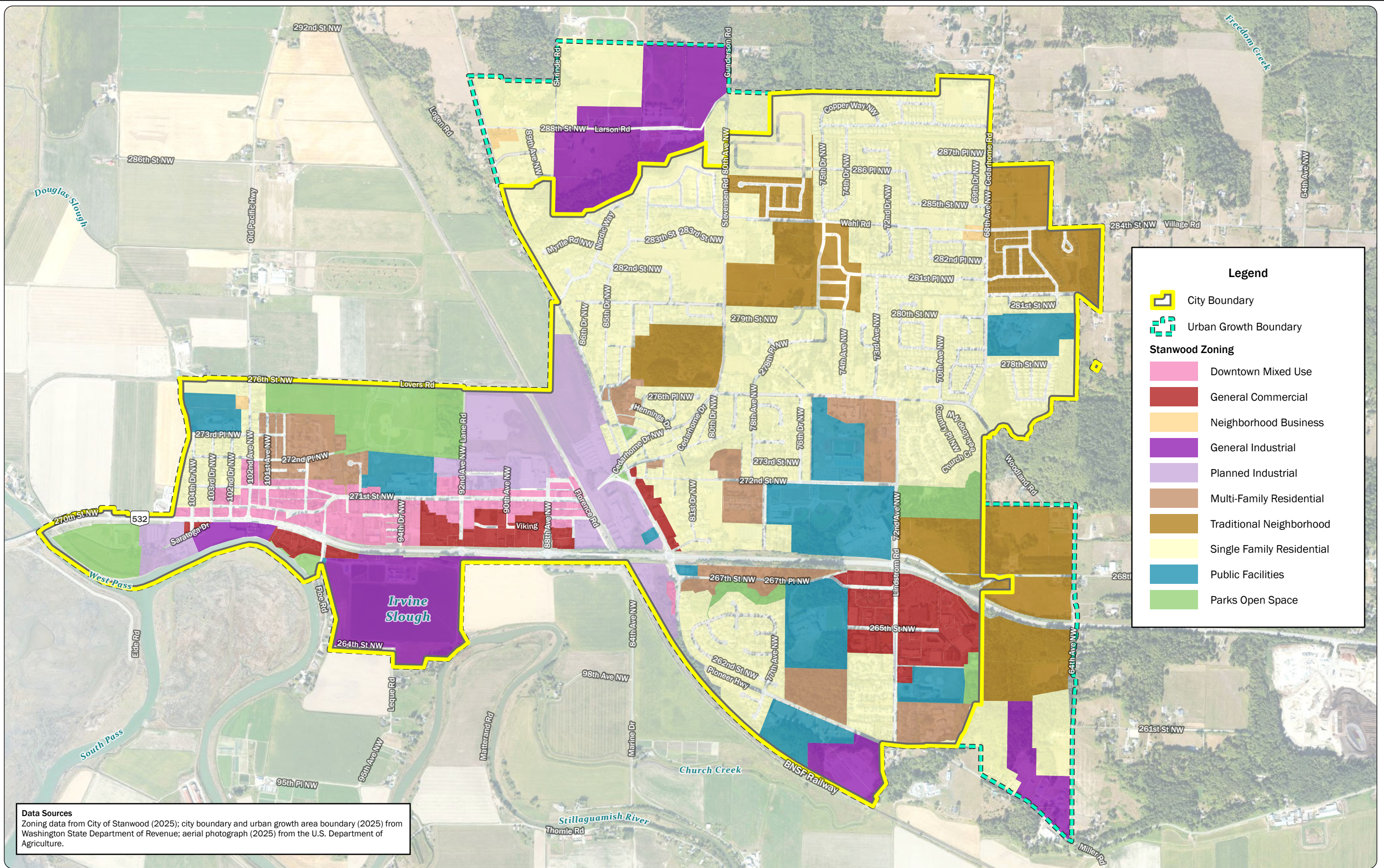


Attachment B

Community Asset Maps



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Data Sources
Zoning data from City of Stanwood (2025); city boundary and urban growth area boundary (2025) from Washington State Department of Revenue; aerial photograph (2025) from the U.S. Department of Agriculture.

Legend

City Boundary

Urban Growth Boundary

Stanwood Zoning

Downtown Mixed Use

General Commercial

Neighborhood Business

General Industrial

Planned Industrial

Multi-Family Residential

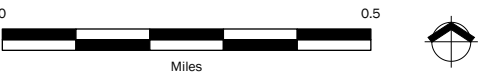
Traditional Neighborhood

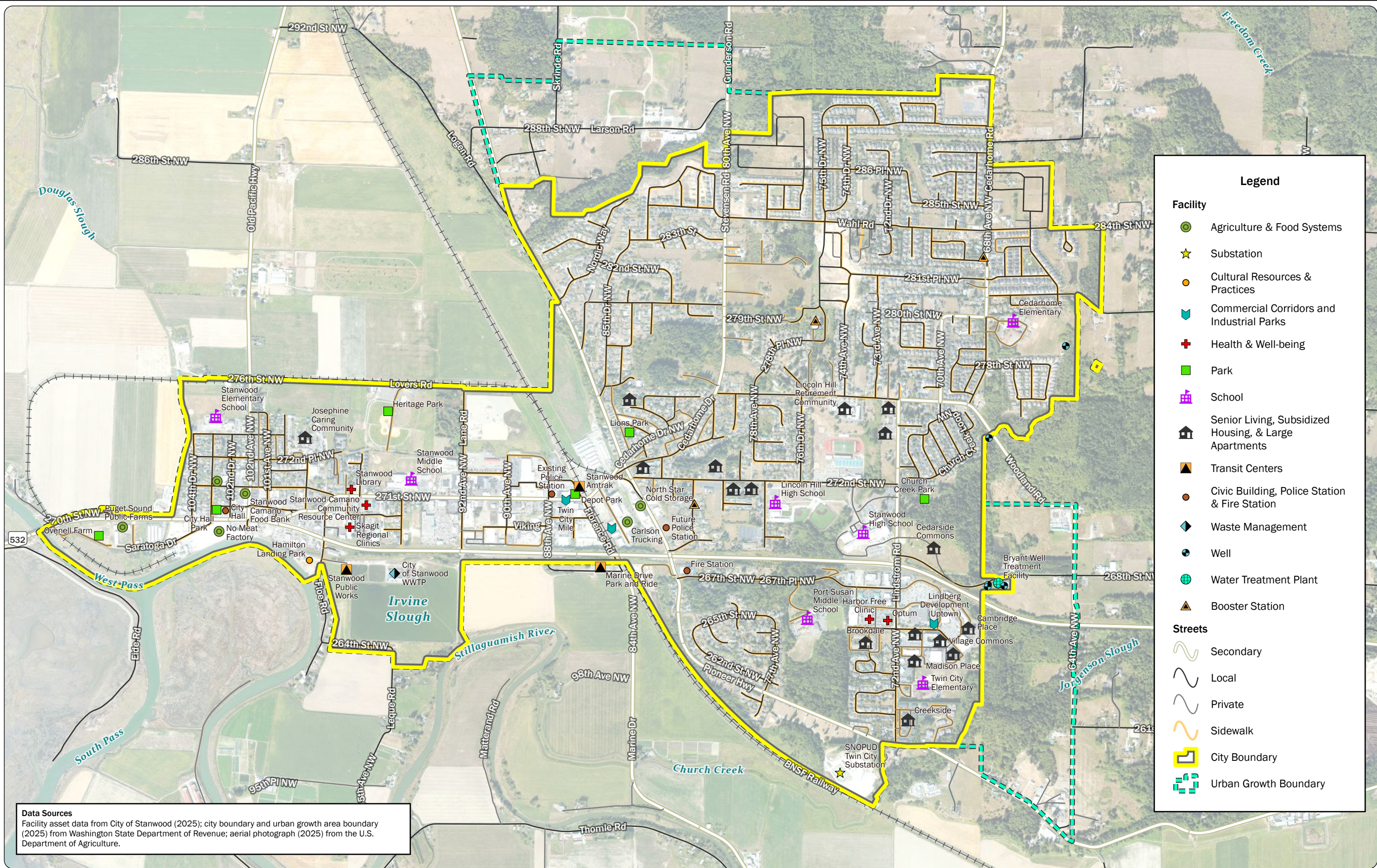
Single Family Residential

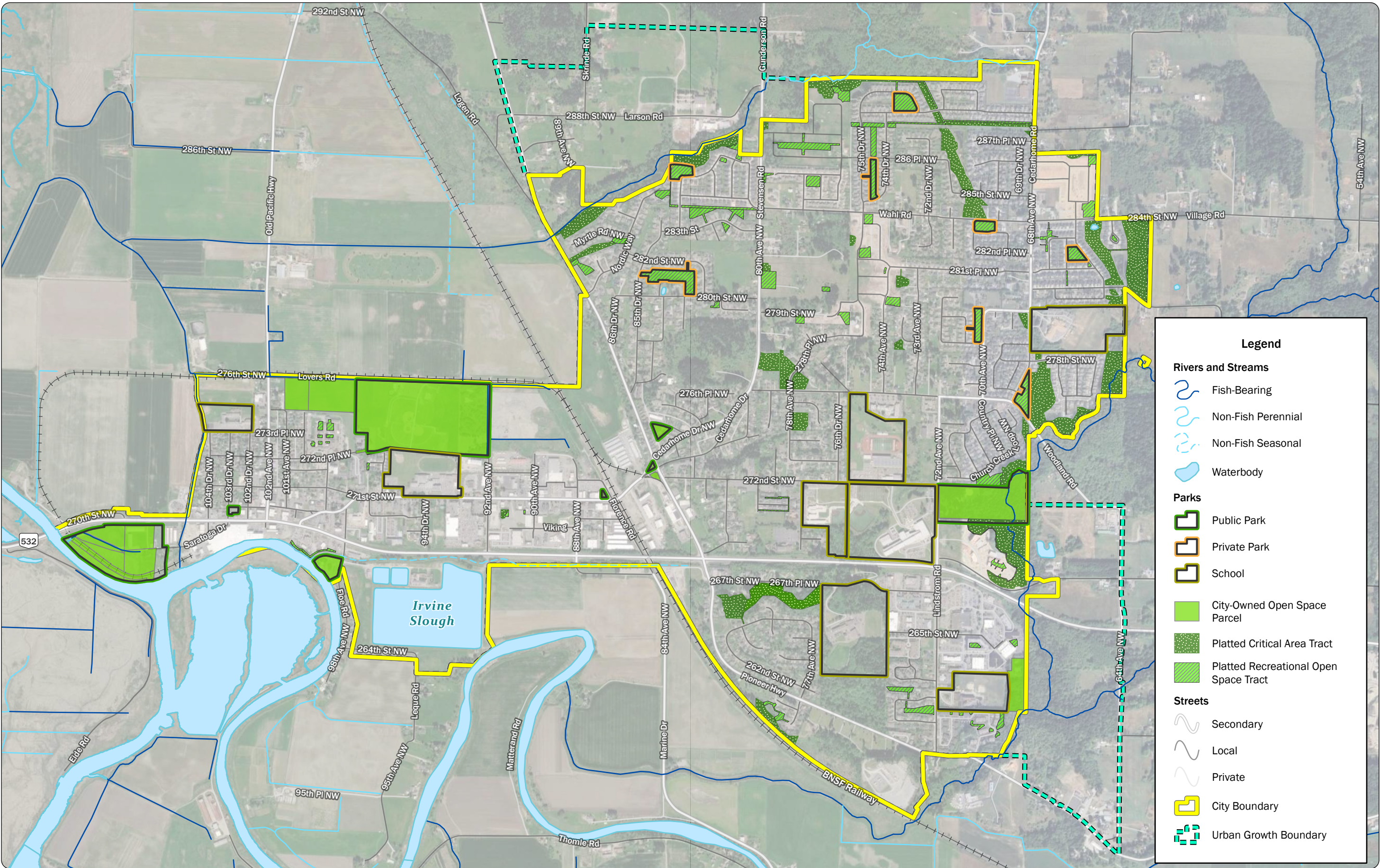
Public Facilities

Parks Open Space

Figure B-1
Community Assets - Zoning
Climate Planning
City of Stanwood, WA







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Data Sources
Parks, platted tracts and city-owned open space parcels from City of Stanwood; waterbodies from USGS; rivers and streams from Snohomish County; city boundary and urban growth area boundary (2025) from Washington State Department of Revenue; aerial photograph (2025) from the U.S. Department of Agriculture.

Figure B-3
Community Assets - Natural Areas
Climate Planning
City of Stanwood, WA



Attachment C

Climate-Induced Hazard Maps



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Reviewed By:
Produced By: jroberts
Project: M1030.10.002

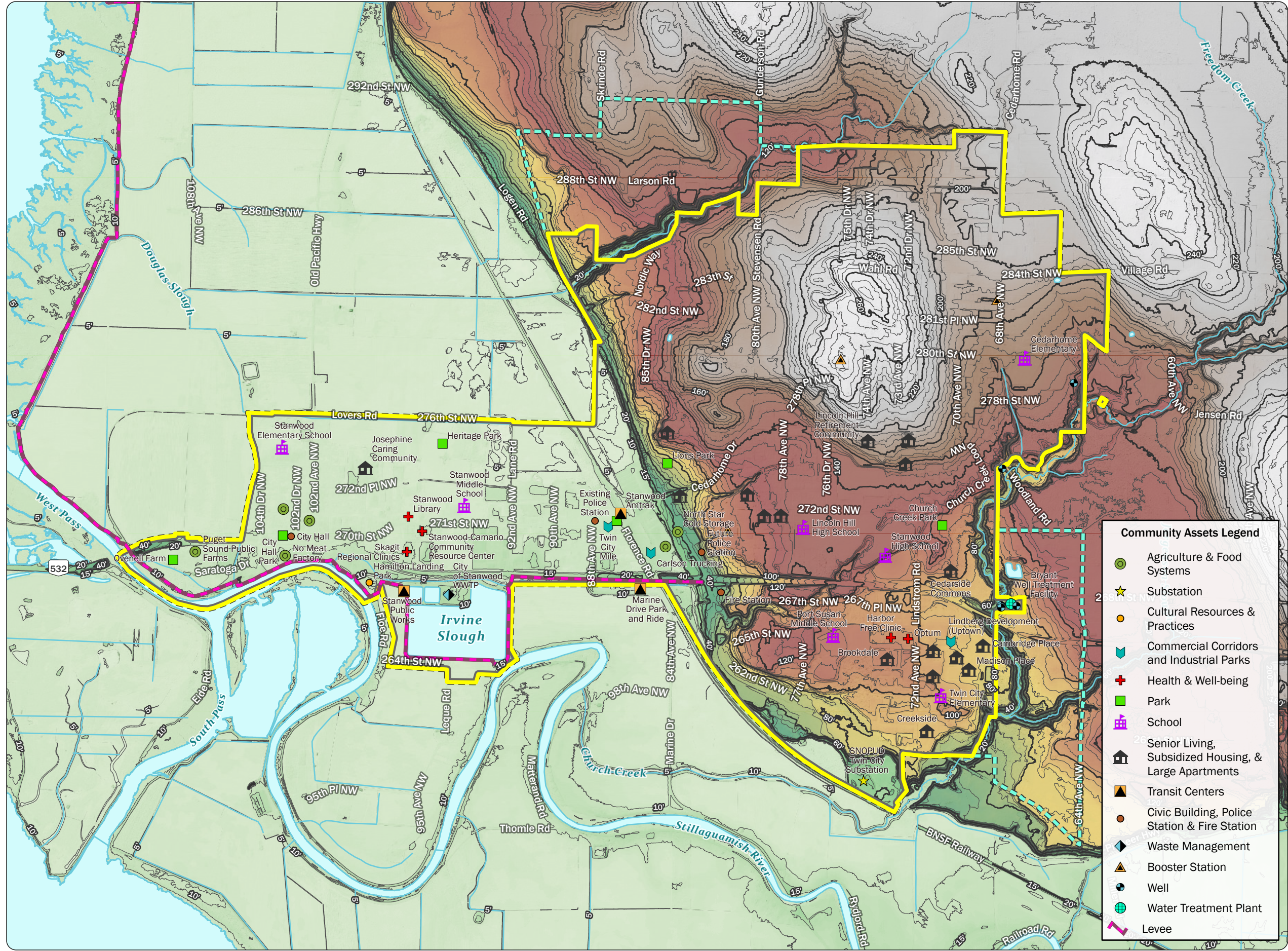


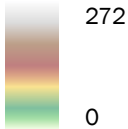
Figure C-1
Topographic Map

Climate Planning
Stanwood, WA

Legend

- City Boundary
- Urban Growth Boundary
- Waterbody
- Stream/Creek
- 5-foot Elevation Contour

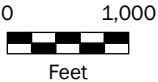
Elevation (feet, NAVD88)



Community Assets Legend

- Agriculture & Food Systems
- Substation
- Cultural Resources & Practices
- Commercial Corridors and Industrial Parks
- Health & Well-being
- Park
- School
- Senior Living, Subsidized Housing, & Large Apartments
- Transit Centers
- Civic Building, Police Station & Fire Station
- Waste Management
- Booster Station
- Well
- Water Treatment Plant
- Levee

Note
NAVD88 = North American Vertical Datum of 1988.



Data Sources
Lidar elevation base map (2017-2019) from the Washington Department of Natural Resources; city boundary (2025) from the Washington Department of Revenue.

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Path: C:\Workspaces\0_NFA_Projects\M1030\10.002\Figures_Hazards.aprx Figure C-2 River Flooding With Levee Assets
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Reviewed By:
Produced By: jroberts
Project: M1030.10.002

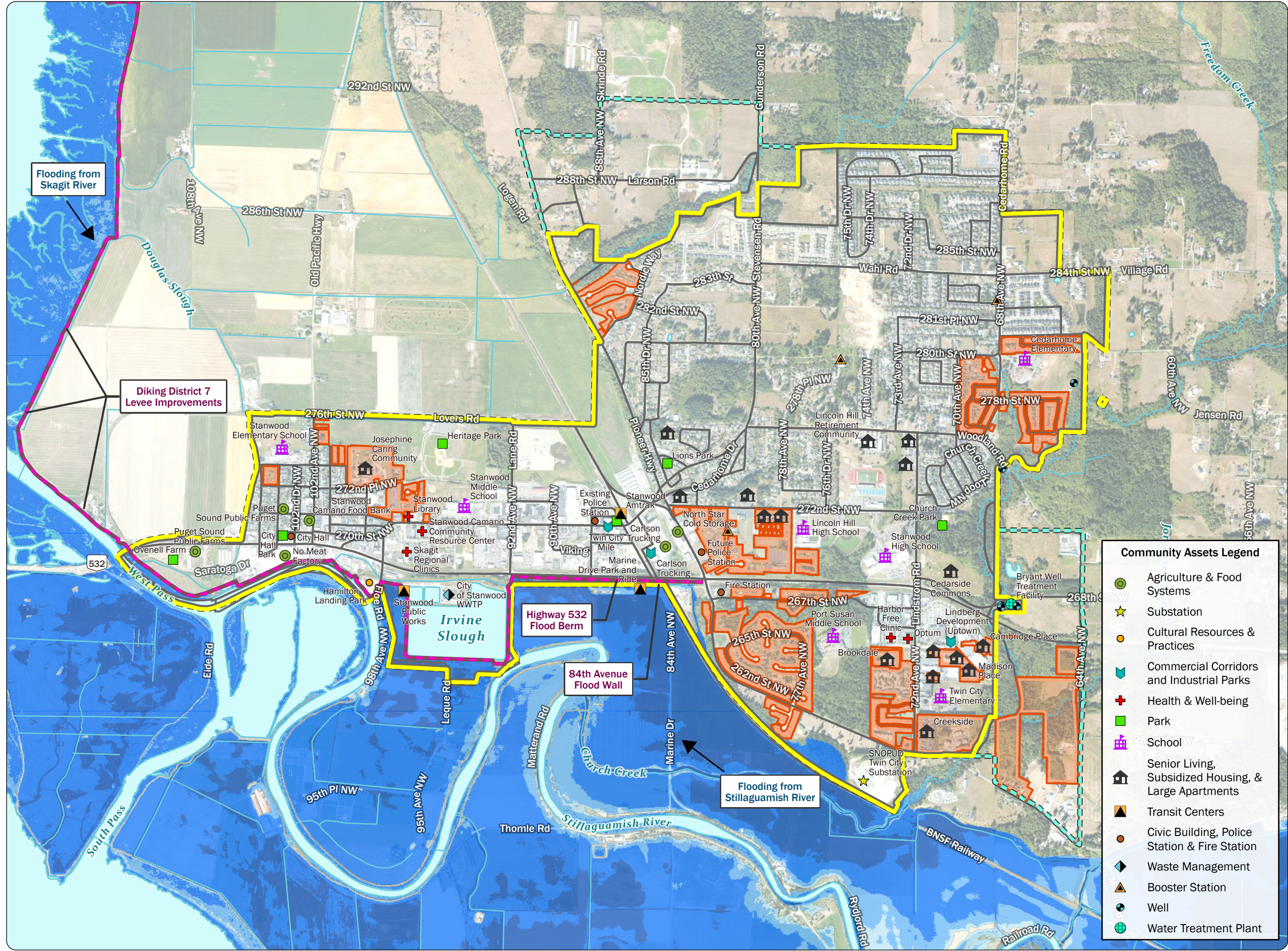


Figure C-2
River Flooding Hazard
with Levee Protection
Climate Planning
Stanwood, WA

Legend

- Levee
- City Boundary
- Urban Growth Boundary
- Highest Vulnerability Population
- Census Block Boundary
- Stream/Creek
- Waterbody

Extent and Depth of 100-Year Flood Event with Levee Protection

Depth in Feet

- < 1
- 1 - 3
- 3 - 6
- > 6

Community Assets Legend

- Agriculture & Food Systems
- Substation
- Cultural Resources & Practices
- Commercial Corridors and Industrial Parks
- Health & Well-being
- Park
- School
- Senior Living, Subsidized Housing, & Large Apartments
- Transit Centers
- Civic Building, Police Station & Fire Station
- Waste Management
- Booster Station
- Well
- Water Treatment Plant

Flooding depicted here assumes levees function as intended, fully preventing flooding in protected areas. Only unprotected areas are shown as at risk.

Note
Flooding depths were mapped using modeled 100-year flood elevations published by FEMA in March 2022 and with a compilation of lidar topographic data from 2017 and 2019 from the Washington Department of Natural Resources.



Data Sources
Aerial photograph (2023) from the U.S. Department of Agriculture; census blocks (2020) from the U.S. Census Bureau; city boundary (2025) from the Washington Department of Revenue; parcel data (2025) from Snohomish County; vulnerable population data from the U.S. Census Bureau (2020) and the American Community Survey 5-year estimates (2023).

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Path: C:\Workspace\0_MFL Projects\M1030\10_002\Figures_Hazards\p\Figure C-4 Sea Level Rise With Levee Assets
Print Date: 5/6/2026
Reviewed By:
Produced By: jroberts
Project: M1030.10.002

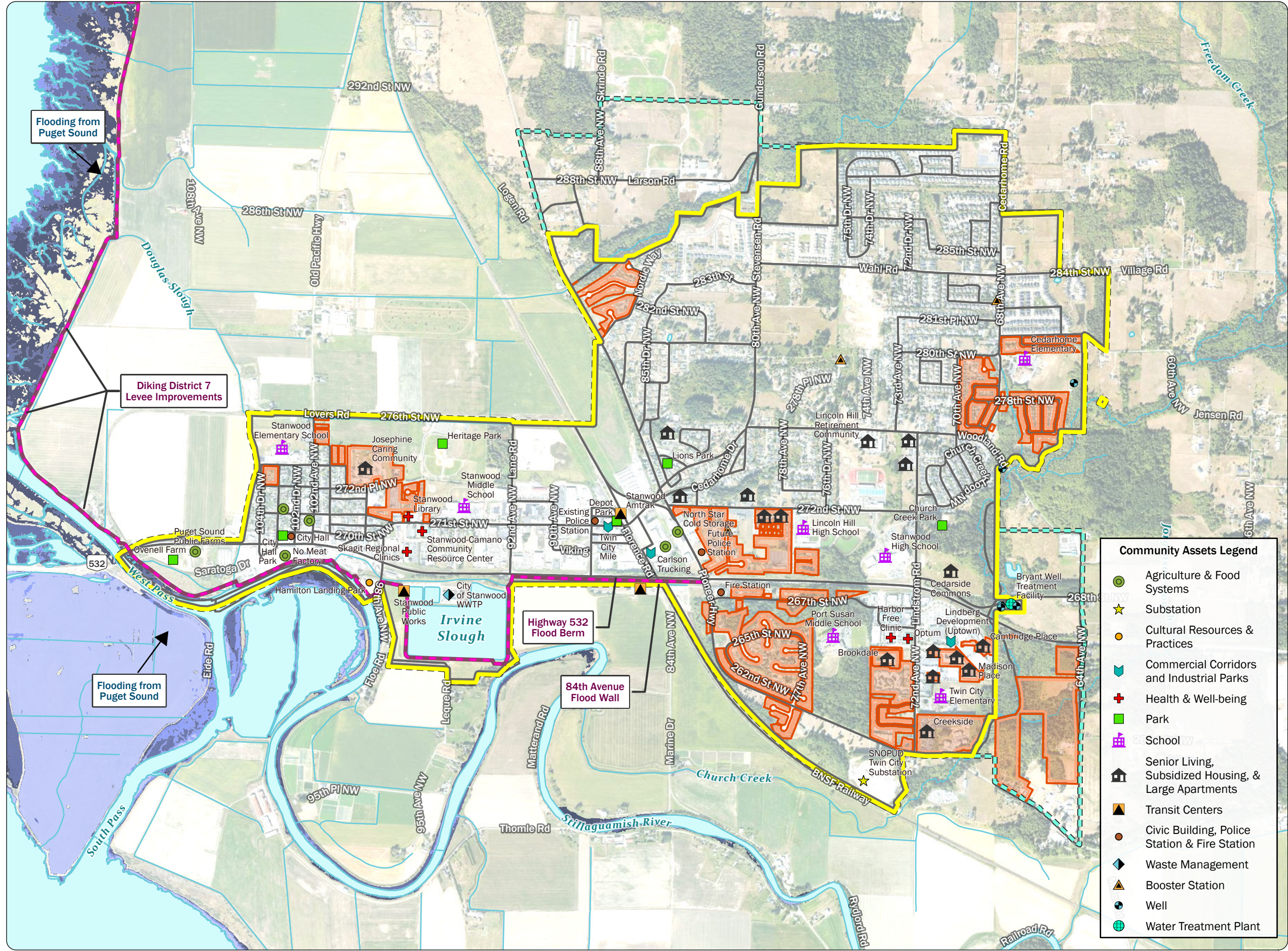


Figure C-4
Projected Sea-Level Rise
with Levee Protection
Climate Planning
Stanwood, WA

- Legend**
- Levee
 - City Boundary
 - Urban Growth Boundary
 - Highest Vulnerability Population
 - Census Block Boundary
 - Stream/Creek
 - Waterbody

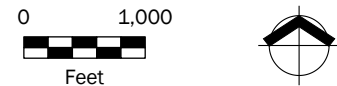
- Extent of Projected Sea-Level Rise with Levee Protection**
- High Tide (~9 feet NAVD88)
 - 0.5-foot Rise
 - 1-foot Rise
 - 1.5-foot Rise

Community Assets Legend

- Agriculture & Food Systems
- Substation
- Cultural Resources & Practices
- Commercial Corridors and Industrial Parks
- Health & Well-being
- Park
- School
- Senior Living, Subsidized Housing, & Large Apartments
- Transit Centers
- Civic Building, Police Station & Fire Station
- Waste Management
- Booster Station
- Well
- Water Treatment Plant

Flooding depicted here assumes levees function as intended, fully preventing flooding in protected areas. Only unprotected areas are shown as at risk.

Note
NAVD88 = North American Vertical Datum of 1988.



Data Sources
Aerial photograph (2023) from the U.S. Department of Agriculture; census blocks (2020) from the U.S. Census Bureau; city boundary (2025) from the Washington Department of Revenue; parcel data (2025) from Snohomish County; vulnerable population data from the U.S. Census Bureau (2020) and the American Community Survey 5-Year estimates (2023); sea-level rise inundation from NOAA (2025).

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Path: C:\Workspace\0_MFA Projects\M1030-10_002\Pro\M1030-10_002_Figures_Hazards.sppx Figure C-5 Sea-Level Rise Without Levee Assets
Print Date: 5/6/2026
Reviewed By:
Produced By: jroberts
Project: M1030-10_002

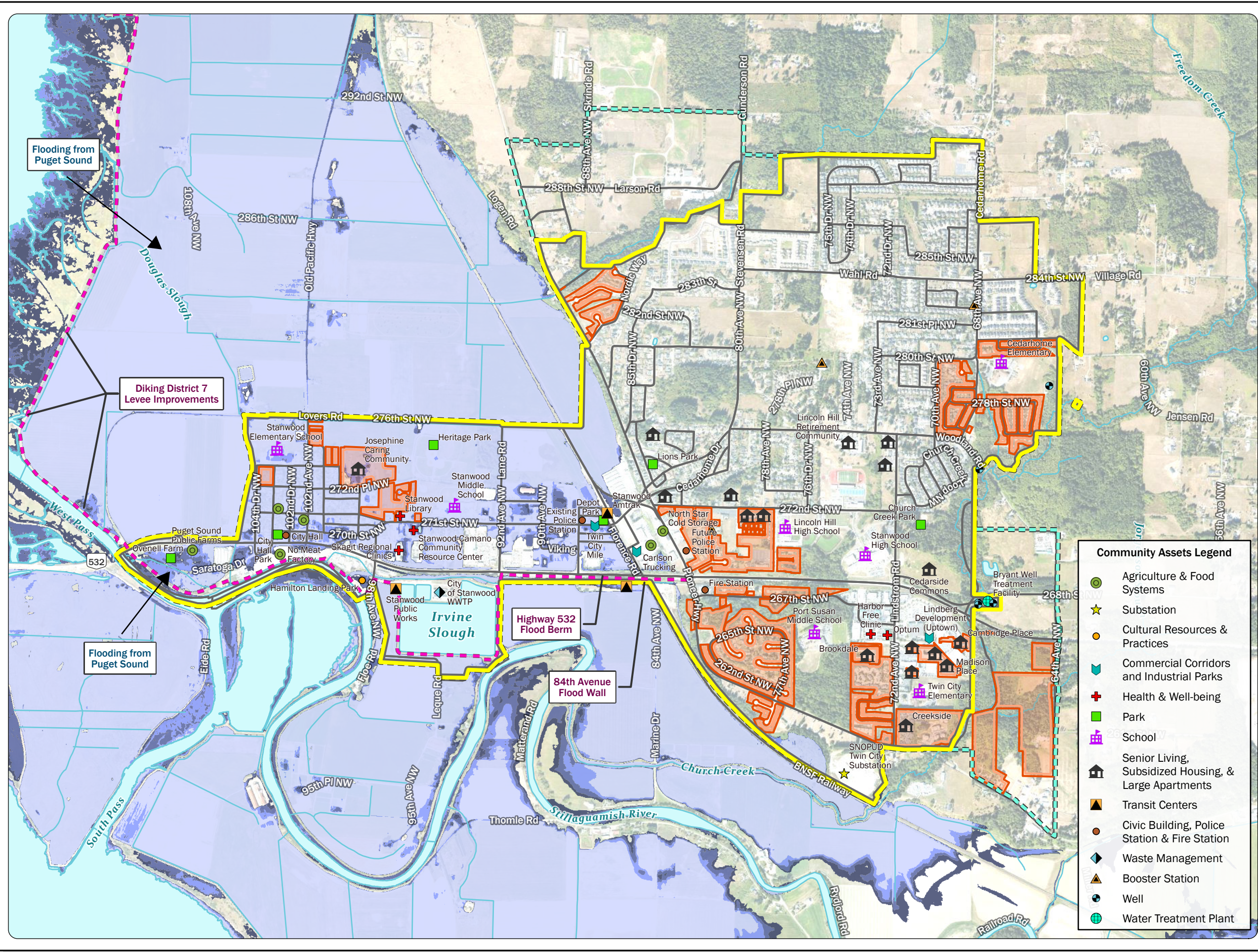
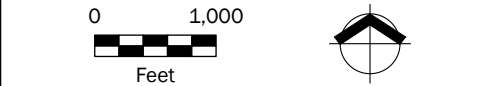


Figure C-5
Projected Sea-Level Rise
without Levee Protection
Climate Planning
Stanwood, WA

- Legend**
- Levee
 - City Boundary
 - Urban Growth Boundary
 - Highest Vulnerability Population
 - Census Block Boundary
 - Stream/Creek
 - Waterbody
- Potential Extent of Projected Sea-Level Rise without Levee Protection**
- High Tide (~9 feet NAVD88)
 - 0.5-foot Rise
 - 1-foot Rise
 - 1.5-foot Rise

Flooding is depicted as if levees were absent, showing the theoretical extent of areas within the city that could be at risk. In reality, a levee failure would likely result in localized breaches rather than widespread flooding.

Note
NAVD88 = North American Vertical Datum of 1988.



Data Sources
Aerial photograph (2023) from the U.S. Department of Agriculture; census blocks (2020) from the U.S. Census Bureau; city boundary (2025) from the Washington Department of Revenue; parcel data (2025) from Snohomish County; vulnerable population data from the U.S. Census Bureau (2020) and the American Community Survey 5-Year estimates (2023); sea-level rise inundation from NOAA (2025).

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Path: C:\Workspace\0_MFA_P\Projects\M1030\10_002\Pro\M1030_10_002_Figures\Hazards.aprx\Figure C-6 Tree Canopy Assets
Print Date: 4/28/2026
Reviewed By:
Produced By: jroberts
Project: M1030.10.002

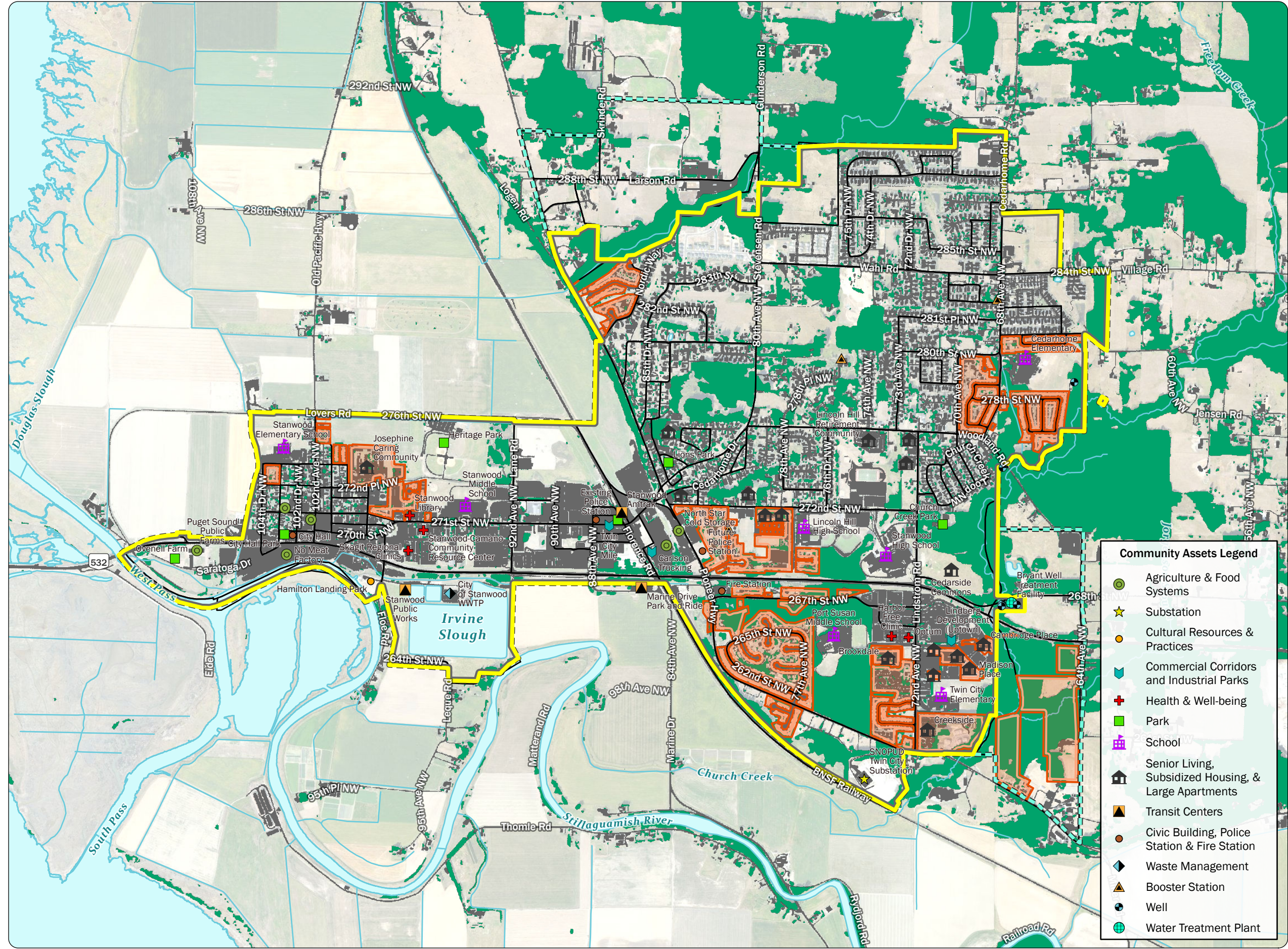
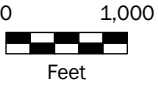


Figure C-6
Tree Canopy and
Impervious Surface
Climate Planning
Stanwood, WA

- Legend**
- Tree Canopy
 - Impervious Surface
 - City Boundary
 - Urban Growth Boundary
 - Highest Vulnerability Population
 - Census Block Boundary
 - Stream/Creek
 - Waterbody

Community Assets Legend

- Agriculture & Food Systems
- Substation
- Cultural Resources & Practices
- Commercial Corridors and Industrial Parks
- Health & Well-being
- Park
- School
- Senior Living, Subsidized Housing, & Large Apartments
- Transit Centers
- Civic Building, Police Station & Fire Station
- Waste Management
- Booster Station
- Well
- Water Treatment Plant



Data Sources
Aerial photograph (2023) from the U.S. Department of Agriculture; census blocks (2020) from the U.S. Census Bureau; city boundary (2025) from the Washington Department of Revenue; parcel data (2025) from Snohomish County; vulnerable population data from the U.S. Census Bureau (2020) and the American Community Survey 5-Year estimates (2023); tree canopy and impervious surfaces from NOAA (2023).

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