

CITY OF EDGEWOOD

DRAFT CLIMATE IMPACTS

2029



Prepared by

MEASURE
 **MEANT**

Table of Contents

About this Report	3	Conclusion & Recommendations	48
Introduction	3	Conclusion	49
Purpose	3	Recommendations	50
Acknowledgments	3		
Report Overview	4	Appendices	52
Summary of Climate Impacts	4	Appendix A: Climate Data Summaries	53
Understanding the Impacts of Climate Change	5	Summary of Edgewood Temperatures	53
Future Climate Scenarios	6	Summary of Edgewood Temperatures	54
		Summary of Edgewood Precipitation &	
Details of Climate Impacts	7	Drought	55
Health & Wellbeing	8	Summary of Edgewood Wildfire Risk	56
Overview	8	Appendix B: Climate Tool Summaries	57
Key Climate Impacts	9	Tool Overview – Climate Toolbox	57
Temperatures	10	Tool Overview – Climate Mapping for a	
Heat and Humidity	11	Resilient Washington	58
Wildfire Smoke	12	Appendix C: Equity Review	59
Emergency Response	13	Objectives	59
Winter Recreation	14	Introduction	60
Winter Recreation (cont.)	15	Community Overview	61
Gardening	16	Community Data Analysis	63
Water Resources & Ecosystems	17	Conclusion	72
Overview	17	Figures & Tables List	73
Key Climate Impacts	18		
Ground Water	19		
Precipitation	20		
Mountain Reservoirs	21		
Native Fish	23		
Forests	24		
Infrastructure	25		
Overview	25		
Key Findings	26		
Extreme Precipitation	27		
Flood Damage	28		
Wildland Urban Interface	29		
Wildfire Risk to Energy Delivery Systems	31		
Heat Island Effect	32		
Economic Impacts	33		
Overview	33		
Key Climate Impacts	35		
Industry Impacts – Construction	36		
Industry Impacts – Finance, Insurance,			
and Real Estate	38		
Household Impact – Cooling Degree Days	39		
Household Impact – Flood Risk	40		
Household Impact – Landslide Risk	41		
At-Risk Communities	42		
Overview	42		
Key Climate Impacts	43		
Proximity to Pollution	44		
High-risk Housing	46		
Pre-existing Health Conditions	47		

About this Report

Introduction

This climate impact report is a first step in the City of Edgewood's broader climate planning process. In 2023, the State of Washington adopted House Bill 1181 which requires all cities and counties planning under the Growth Management Act to include climate planning as part of their comprehensive plans. The City of Edgewood must adopt a new climate element with their 2029 Comprehensive Plan update.

This project follows the climate planning guidance provided by the Washington State Department of Commerce with funding from the Climate Commitment Act.



Purpose

A climate impact report is an analysis of how future climate projections are expected to interact with key assets and systems within a community. For example, increasing temperatures are likely to impact human health which may strain resources within the healthcare system. Increased risk of wildfire may justify increasing investment into emergency services. Understanding the extent of these impacts will help policy makers better plan for future climate-related hazards.

The City of Edgewood intends to use the data and analyses in this report to guide the creation of their Climate Resilience Sub-Element as required by state law.

Acknowledgments

This report was prepared by Measure Meant with support from City of Edgewood Planning Department and Lotus Engineering & Sustainability.

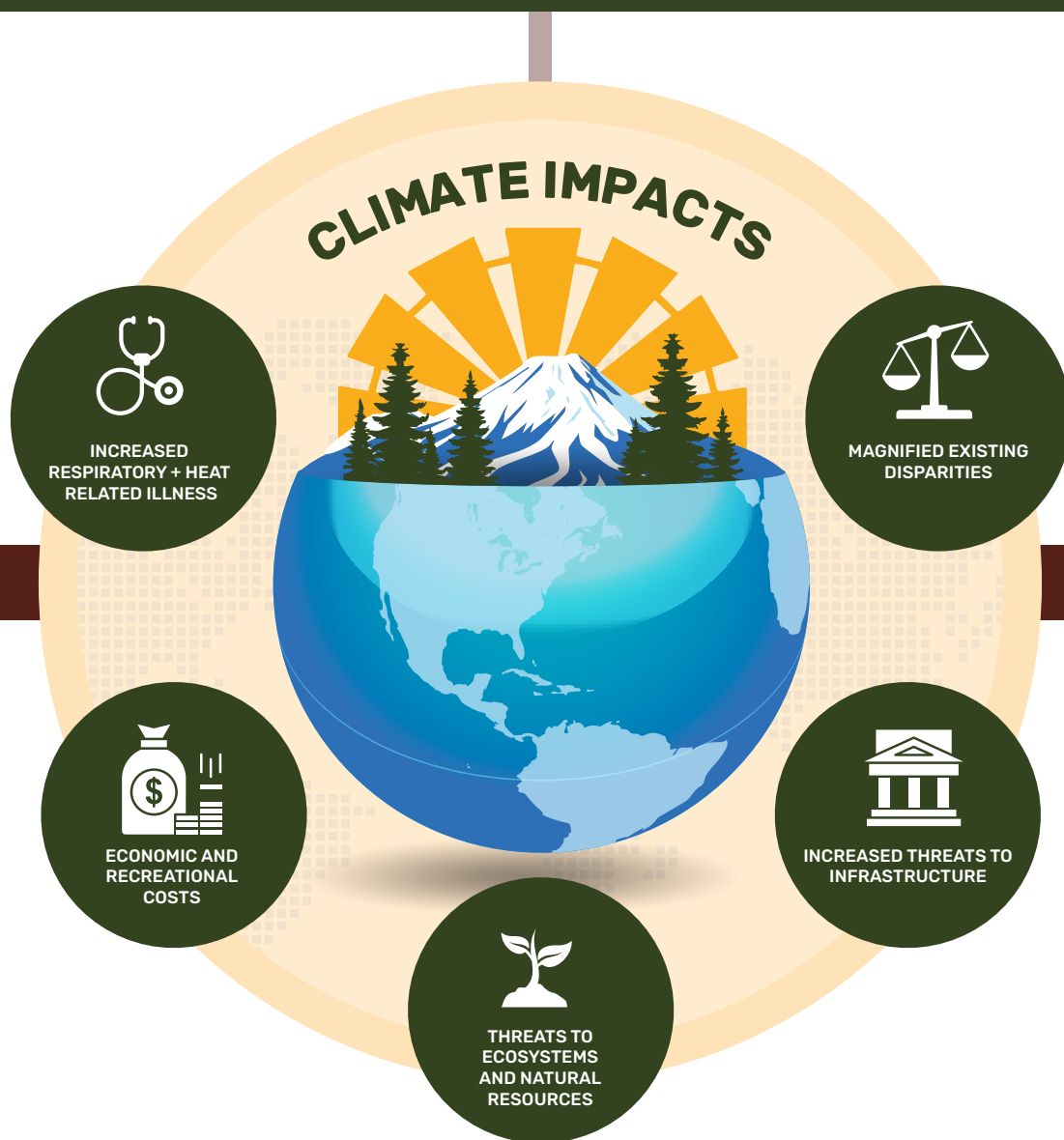


This report was reviewed and edited for accuracy by Dr. Katherine Hegewisch. Dr. Hegewisch created the statistically downscaled climate data used in this report and helped to develop the visuals from both the Climate Toolbox and the Climate Mapping for a Resilient Washington tools which were used in this report.

Report Overview

Summary of Climate Impacts

Communities across the country are already experiencing effects of climate change due to global temperature rise. In the Pacific Northwest, these effects are primarily experienced through increasing temperatures, shifts in precipitation, rising sea levels, increased storms, and more intense wildfires.¹ As the impacts intensify, so do the costs. Human health, natural resources, infrastructure, and economic systems are all at risk.



1. The Fifth National Climate Assessment, <https://nca2023.globalchange.gov/>

Understanding the Impacts of Climate Change

Climate change will impact all aspects of life in Edgewood. In fact, many impacts are already being felt in the form of warmer summers and increased wildfire smoke. This report examines how changes in temperature and precipitation will impact the following aspects of life in Edgewood. In brief, climate change is expected to impact Edgewood residents in the following ways:



Health & Wellbeing

- Increasing temperatures, especially during the summer months, increases the risk of heat-related illnesses.
- Wildfire smoke is expected to increase with longer, more intense fire seasons throughout the Pacific Northwest, exacerbating asthma and other pre-existing diseases.
- Emergency resources like cooling centers, emergency response, and medical facilities may be strained by increased demand as the frequency of climate-related events increases.



Water Resources & Ecosystems

- Shifting precipitation and increasing temperatures threaten aquifer recharge.
- Projected increases in water temperatures will put native fish species, including salmon and trout, at risk.
- A slight decrease in soil moisture may threaten the health of Edgewood's forests and will likely raise wildfire risk.



Infrastructure

- Increased flood events have the potential to disrupt transportation routes, impacting both commuters and businesses.
- Current data trends show no significant increase in wind gusts above 40 miles per hour which could lead to infrastructure damage. Continued monitoring is recommended.
- People living in or near forests or vegetation are likely to experience increasing fire risk to their homes.



Economic Impacts

- Local and global climate hazards may negatively impact Edgewood businesses, which could have a direct impact on the financial resilience of the entire community.
- Insurance premium increases and rising demand for cooling during heat waves may create additional financial burdens for businesses and residents.
- Climate-related migration is increasing and access to housing may be constrained if more people relocate to Edgewood in search of a safer environment.



At-Risk Communities

- Climate change is already impacting all people living in the city of Edgewood, but existing socio-economic factors mean that some people will be hurt more than others.
- Children, outdoor workers, first-responders, people who are under-sheltered, and those living near high-traffic corridors are more exposed to climate impacts.
- Children, seniors, low-income and low-wealth households, people with pre-existing health conditions like asthma, heart disease, respiratory disease, and diabetes may be the most impacted by climate change.

Future Climate Scenarios

Future climate realities depend on two key variables: decisions humans make today and over the next couple decades, and how climate systems impacted by those decisions affect the planet.² These two variables lead to some level of uncertainty in our future climate projections. One way we adjust for this uncertainty is to examine projections using multiple climate scenarios.

The climate data in this report considers two future climate scenarios called Representative Concentration Pathways (RCPs). The two pathways – RCP4.5 and RCP8.5 – represent two ends of a range of possibilities and are reflected in many of the charts that follow. RCPs are based on different human activities and are dependent on time and space. RCPs also include land use and land cover, and time series of emissions and concentrations of greenhouse gases, aerosols, and chemically active gases.³

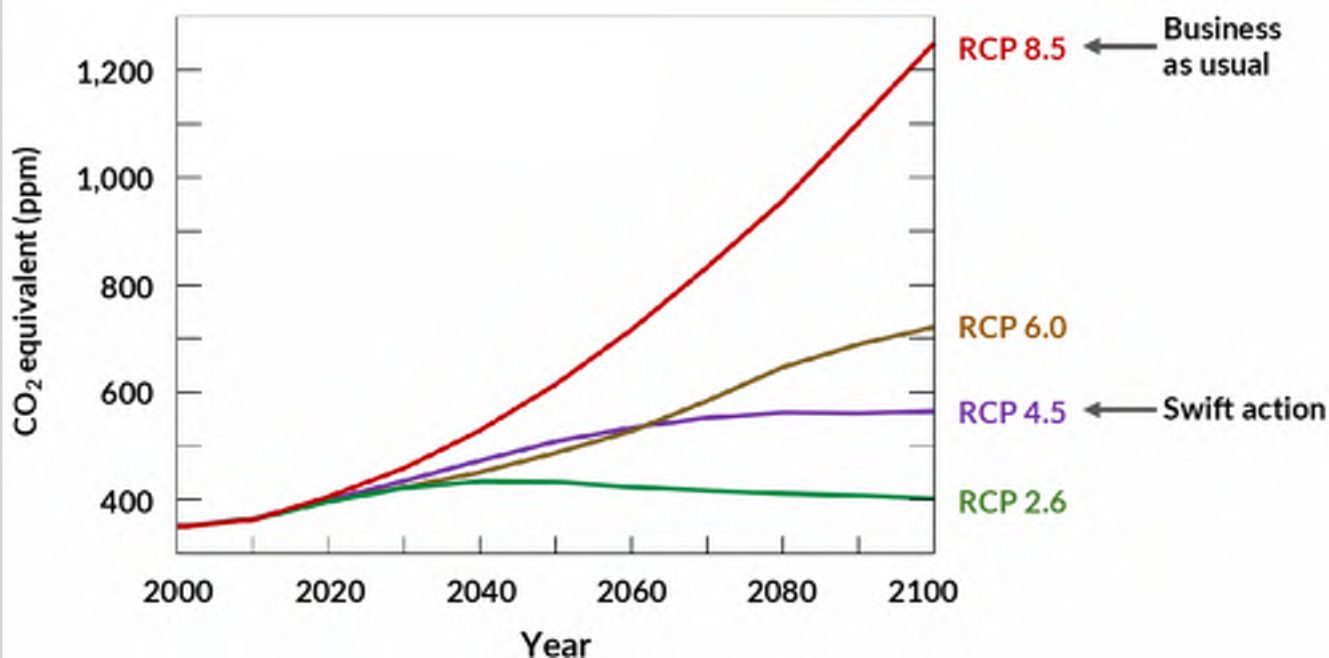
- **RCP8.5 – Higher Emissions (Business as usual)**

Considers the current trajectory of increased greenhouse gas emissions and population growth through the end of the century with nominal policies to reduce emissions. This scenario assumes a continued global dependence on coal. However, since 2010, the use of coal has continued to decrease. This scenario serves as an upper bound on what we might expect to see in the future.

- **RCP4.5 – Lower Emissions (Swift action)**

Considers a curtailment in greenhouse gas emissions through greenhouse gas mitigation efforts and global cooperation. Mitigation to achieve this scenario has still not been realized globally. This scenario serves as a lower bound of what we might expect to see in the future.

Figure 1: IPCC Representative Concentration Pathways (RCP)



Source: van Vuuren, D.P., Edmonds, J., Kainuma, M. et al. The representative concentration pathways: an overview. *Climatic Change* 109, 5 (2011). <https://doi.org/10.1007/s10584-011-0148-z>

2. Katharine Hayhoe, “Which Climate Scenario Should We Be Using”

3. [IPCC Glossary](#)

Details of Climate Impacts



Health & Wellbeing



Overview

Climate change presents a growing threat to human health and wellbeing in Edgewood, especially as rising temperatures, increased wildfire smoke, and worsening air pollution converge. Already, residents face elevated exposure to airborne pollutants—particularly in census tracts near high-traffic corridors, which rank among the highest in the state for air pollution from vehicle emissions. These existing conditions amplify the physical and mental health burdens posed by climate change.

Extreme heat events, such as the 2021 heat dome, are expected to become more common, increasing the risk of heat-related illnesses including heat stroke and cardiovascular stress. Children, seniors, outdoor workers, and people with pre-existing health conditions like asthma—already prevalent in Edgewood—will be disproportionately affected. Compounding this, rising humidity levels will intensify the health impacts of heat, and longer wildfire seasons will significantly

increase exposure to harmful fine particulate matter (PM2.5) from smoke, aggravating respiratory and cardiovascular diseases.

Climate change also threatens mental health. Prolonged smoke events, dangerous heat, and disrupted outdoor activities contribute to feelings of isolation and anxiety. Among youth, climate anxiety is especially acute, with growing numbers expressing deep concern about the future—including fears around starting families.⁴

As the frequency and severity of extreme events increase, Edgewood's emergency response systems and healthcare infrastructure may face added strain. Equitable climate adaptation strategies must include expanding access to cooling, air filtration, and medical support, particularly in underserved and pollution-burdened neighborhoods.

Health & Wellbeing Facts

- Median age - 38.8 years
- 65 years and older - 14.1%
- Under 18 years old - 25.1%
- Disabled population - 7.3%
- Poverty - 4.7%
- Married - 60.8%
- Nearest Hospital – 3.7 miles from city center (St Francis Hospital)
- Urgent Care – 2 locations on the edge of city limits

Source: U.S. Census Bureau, "Edgewood City, Washington Profile,"
https://data.census.gov/profile/Edgewood_city_Washington?g=160XX00US5320645.



4. Climate Anxiety is Taking Its Toll on Young People" (2025) <https://time.com/7280989/climate-anxiety-mental-health-young-people/>

Health & Wellbeing

Key Climate Impacts

- Strong evidence suggests that climate change is leading to rising temperatures that will likely correspond to a rise in heat-related illnesses in Edgewood.
- Projected increases in regional wildfires is likely to increase the risk of respiratory illnesses.
- Under the high emissions scenario, the average hottest summer day is projected to increase by more than 10°F by the end of the century compared to historic averages.
- Humidity intensifies the impact of high temperatures on the body, increasing the likelihood of heat stress on individuals most at-risk including children, seniors, and people with pre-existing conditions.
- Climate change is expected to increase demands on emergency systems and resources.
- People without access to cooling or air filtration are at higher risk of climate impacts than the general population.
- By the end of the century, the growing season is projected to increase by over 3 months.



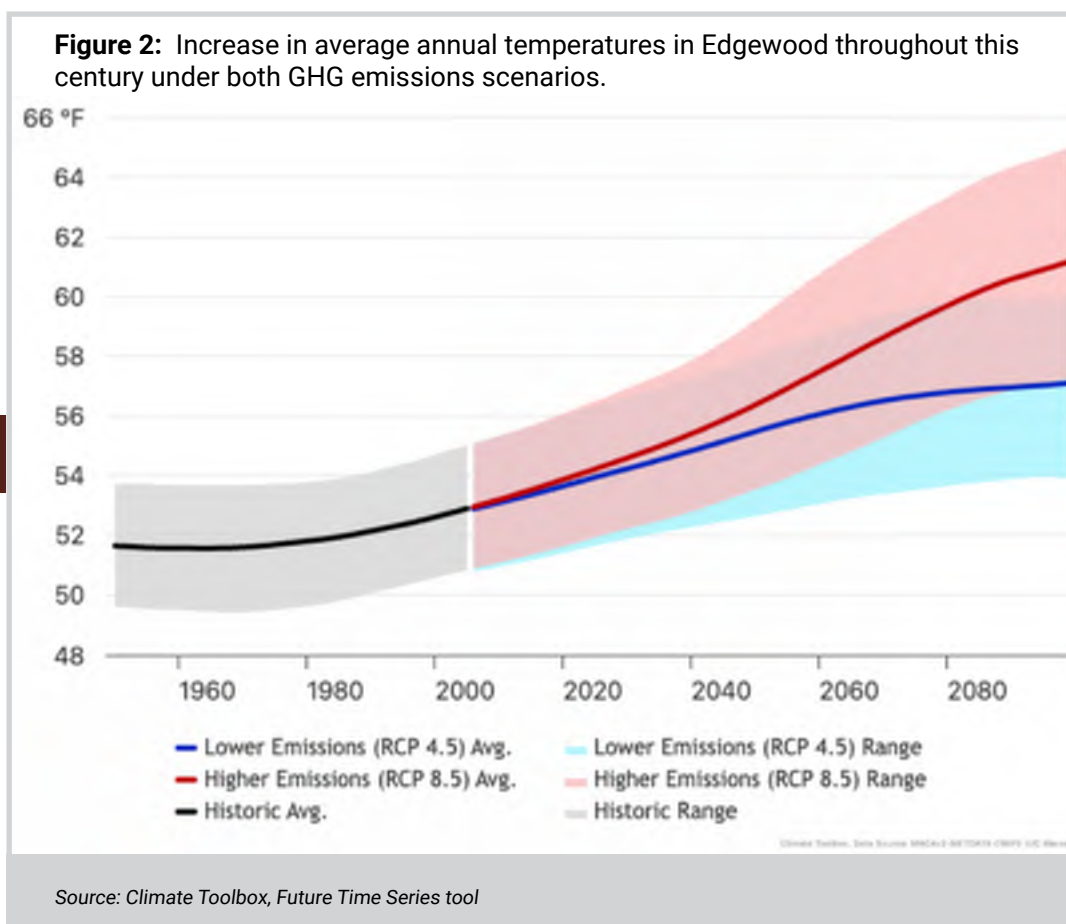
Health & Wellbeing

Temperatures

Average annual temperatures will likely increase over the next 80 years. The lower emissions scenario represents a potential 3°F increase by the end of the century while the higher emissions scenario shows a 11°F increase over the same period (see Figure 2).

Temperatures, including daytime highs and nighttime lows, are rising during all seasons and will continue to rise unless greenhouse gas emissions are significantly reduced. Heatwaves and extreme heat events, such as

the 2021 heat dome, will become more frequent mid-to-late century. Temperature extremes will especially impact people who are most exposed (including children, outdoor workers, summer recreationalists, first responders, people without adequate housing) and those who are most impacted (including people with pre-existing diseases, children, low-income individuals). Children are both more exposed and more impacted to the effects of climate change.⁵



5. EPA Climate Change & Children's Health <https://www.epa.gov/climateimpacts/climate-change-and-childrens-health>

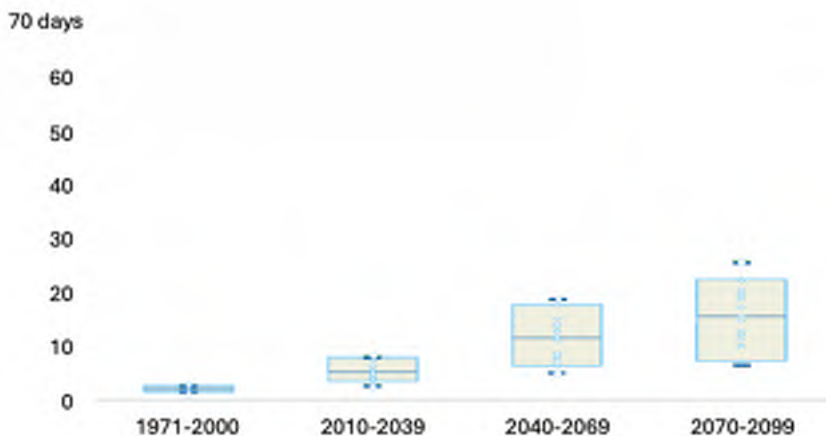
Health & Wellbeing

Heat and Humidity

Heat index is a measure of how hot the day feels considering both heat and humidity. Heat index is often the measurement for the “feels like” statement on weather reports. High temperatures and high humidity make it difficult for the body to cool itself through sweating. Days with a heat index greater than or equal to 90°F are projected to increase by 36.3 days by the

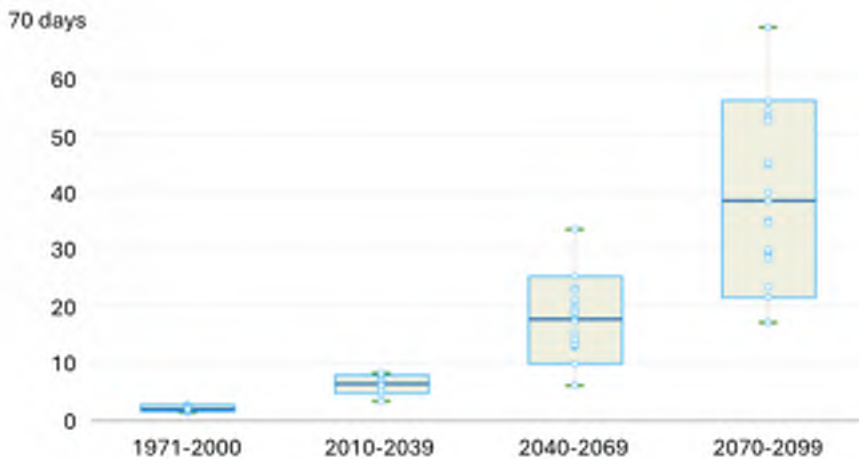
end of this century under the RCP8.5 scenario (see Figure 4). The increase in heat index days will likely lead to an increase in heat-related illnesses. People who participate in outdoor recreation, play sports, or work outdoors in the summer will be especially impacted by increasing heat index days.

Figure 3: Days with Heat Index $\geq 90^{\circ}\text{F}$ in Edgewood under RCP4.5



Source: Climate Toolbox, Future Boxplot tool

Figure 4: Days with Heat Index $\geq 90^{\circ}\text{F}$ in Edgewood under RCP8.5



Source: Climate Toolbox, Future Boxplot tool



Health & Wellbeing

Wildfire Smoke

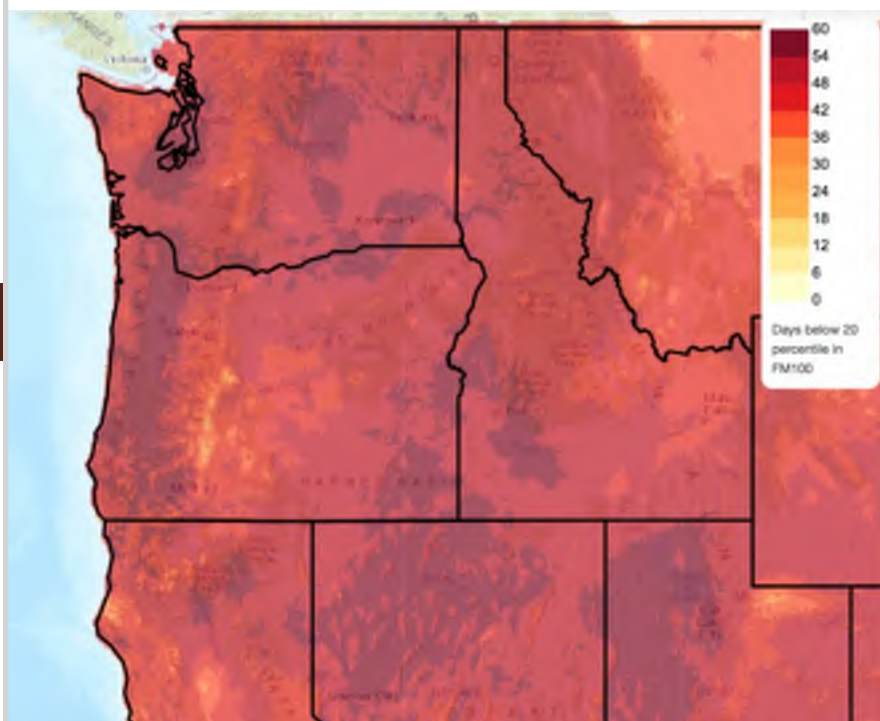
One way to evaluate the risk of wildfire is using fire danger days. In the case of “high” fire danger days, the measurement is the number of days with 100-hour fuel moisture that is below the 20th percentile from historical years. “High” fire danger days are expected to increase across the Pacific Northwest by mid-century under the RCP8.5 scenario.

Increased risk of regional wildfires will increase the risk of smoke throughout the Pacific Northwest, resulting in more days with poor air quality. Wildfire smoke is one of the leading causes of air pollution in

the summer and fall months. The primary pollutant in wildfire smoke is PM2.5, a type of air pollution composed of particles smaller than 2.5 micrometers in diameter.⁶ Increased concentration of PM2.5 can cause and exacerbate existing cases of asthma and other respiratory illnesses and in otherwise healthy individuals, it can cause eye and throat irritation.⁷

Poor air quality and extreme heat together are especially dangerous for those who spend time outdoors and for people with preexisting health conditions such as asthma and cardiovascular disease.

Figure 5: Regional “High” Fire Danger Days (Jun-Jul-Aug), RCP8.5, 2040 vs. Historical Simulation 1971-2000.



Source: Climate Toolbox, Climate Mapper tool

During smoke events, cooling indoor air temperatures by opening windows becomes less feasible, resulting in either higher electricity use for cooling or greater exposure to harmful particulate matter.

6. Washington State Department of Labor & Industries. “Wildfire Smoke.” <https://www.lni.wa.gov/safety-health/safety-topics/topics/wildfire-smoke#:~:text=Fine%20particulates%20known%20as%20PM2.5,of%20concern%20in%20wildfire%20smoke>.

7. Allergy and Asthma Network <https://allergyasthmanetwork.org/news/how-wildfire-smoke-can-worsen-your-asthma/>

Health & Wellbeing

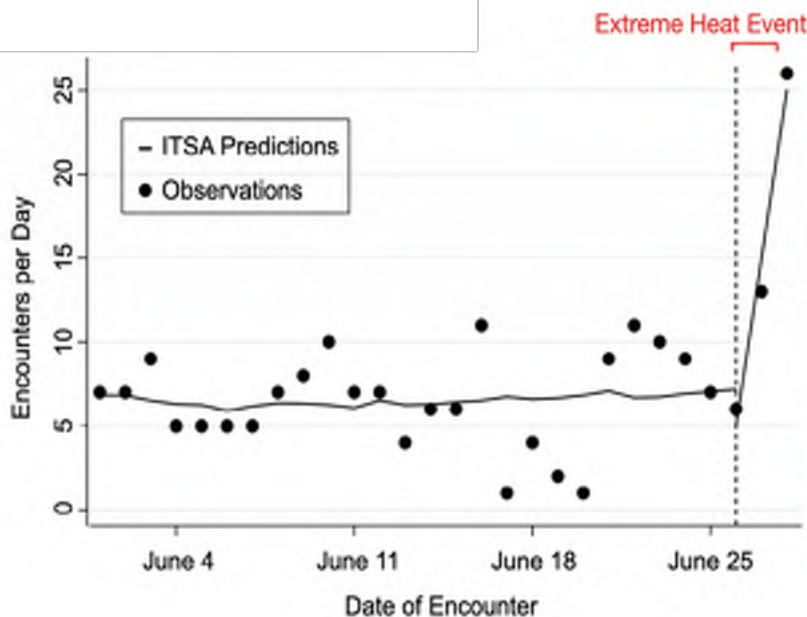
Emergency Response

Climate change is expected to increase demands on emergency systems and resources. With an increase in the intensity, duration, and frequency of extreme events, both the private and public sectors will need to plan for increased resource needs. This includes coordination among healthcare providers, emergency management, and government agencies. This is especially true for smaller cities like Edgewood that may not have their own emergency management resources, instead relying on the county and larger neighboring cities. There is an increasing potential for extreme weather events to occur simultaneously, such as extreme heat and wildfire smoke. Compounded

events will lead to further resource strain, and local response teams should update their emergency response and Hazard Mitigation Plans accordingly.

During the 2021 heat dome, emergency room visits in the Seattle area increased by 21.7 per day.⁸ Sudden increases in hospital visits strains resources and could lead to over occupancy and force people to travel longer distances for care. People who are uninsured or who lack access to transportation may find it difficult to receive needed care which may result in increased fatalities.

Figure 6: Unplanned hospitalizations due to heat-related illnesses during the 2021 Heat Dome in the Seattle area.



Source: Wettstein ZS, Hall J, Buck C, Mitchell SH, Hess JJ. "Impacts of the 2021 heat dome on emergency department visits, hospitalizations, and health system operations in three hospitals in Seattle, Washington." JACEP Open. 2024;5:e13098. <https://doi.org/10.1002/emp2.13098>

“ Climate change is increasing the chances of multiple climate hazards occurring simultaneously or consecutively across the US and its territories. Such interactions between multiple hazards across space or time, known as compound events, exacerbate the societal and ecosystem impacts of individual hazards and hinder the ability of communities, particularly frontline communities, to respond and cope. Therefore, infrastructure design, planning, governance, and disaster preparedness for compound events are critical for building resilient systems. ”

- Fifth National Climate Assessment

U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023.F1>

8. Wettstein ZS, Hall J, Buck C, Mitchell SH, Hess JJ. "Impacts of the 2021 heat dome on emergency department visits, hospitalizations, and health system operations in three hospitals in Seattle, Washington." JACEP Open. 2024;5:e13098. <https://doi.org/10.1002/emp2.13098>

Health & Wellbeing

Winter Recreation

The amount and timing of snowfall in the mountains is projected to shift mid-to-late century, with rising temperatures causing more winter precipitation to fall as rain rather than snow. Future mountain snowpack is expected to melt earlier in the spring compared to past observations.

On nearby Mount Rainier, and throughout the Cascade Mountains, winter recreation that depends on snowpack will be negatively impacted. The availability

of opportunities for skiing, climbing, and other forms of winter recreation decreases each winter as snowpack decreases and winter rain increases.

The type of snow falling in higher elevations will also change. Typically, drier, powdery snow falls at high elevations. As temperatures warm, snow falling at higher elevations will become increasingly wet and heavy as compared to the drier, powdery snow preferred by skiers and snowboarders.

Figure 7: Percent Change in April 1st Snowpack in Pierce County, RCP8.5



Source: Climate Mapping for a Resilient Washington, Snowpack graph

Health & Wellbeing

Winter Recreation (cont.)

Snow Water Equivalent (SWE) measures the volume of water contained in the snowpack on April 1st. It is calculated by multiplying snow depth by snow density. Under RCP8.5, the SWE on April 1st at The Summit at Snoqualmie is projected to decrease by 36.1 inches by the end of the century (see Figure 8). At Crystal

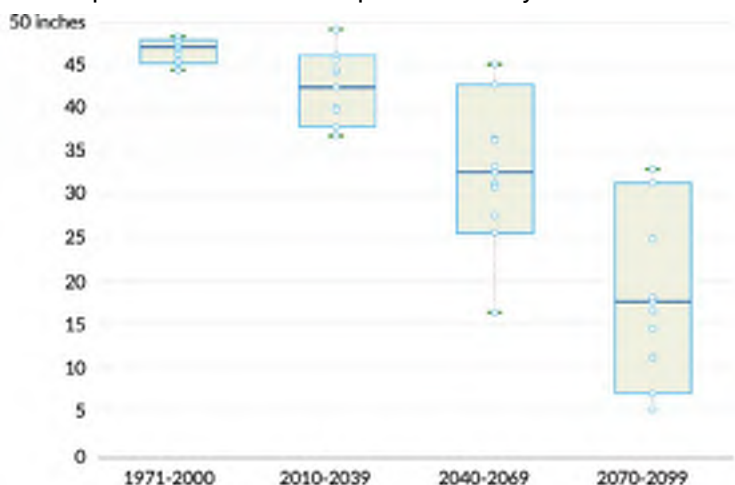
Mountain Resort the April 1st SWE is projected to decrease by 26.6 inches (see Figure 9). As snowpack decreases there will be shorter ski seasons. If winter temperatures continue to get warmer, local ski resorts may struggle to remain economically viable and the opportunity for outdoor winter recreation may diminish.

Figure 8: April 1st Snow Water Equivalent at The Summit at Snoqualmie, RCP8.5



Source: Climate Toolbox, Future Boxplots tool

Figure 9: April 1st Snow Water Equivalent at Crystal Mountain Resort, RCP8.5



Source: Climate Toolbox, Future Boxplot tool

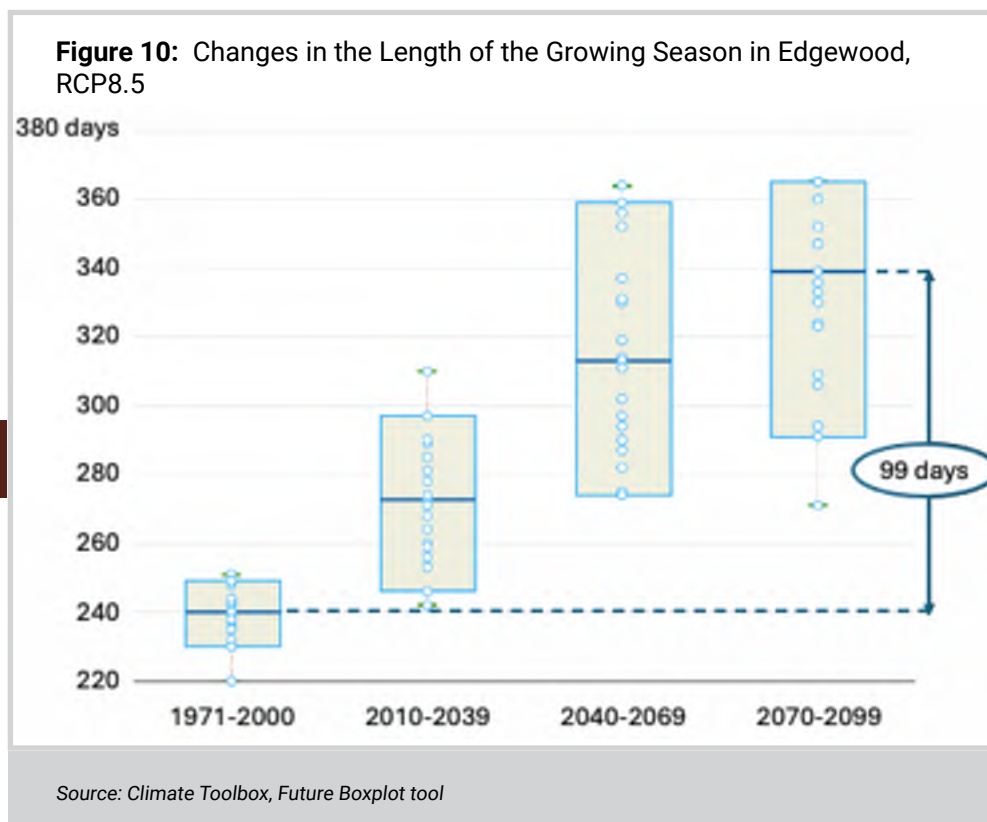


Health & Wellbeing

Gardening

In the Northeastern corner of Edgewood on a 10-acre plot sits Nelson Farm Park. It houses 30 raised garden beds available for community members to rent and a small flock of sheep. Community farms and backyard gardens will be impacted by warming temperatures, longer growing seasons, and increasing drought. By the end of the century, the growing season is projected to increase by over 3 months (see Figure 10).

While the longer growing season may provide more opportunity for growing food, increasing drought and summer temperatures may stress plants. Seasonal drought is projected to increase throughout the century across most of the state.⁹ Increased temperatures increases evaporation, which may lead to less moisture in the soils. Although the growing season will likely lengthen, water demand is likely to increase as well.



9. National Integrated Drought Information System; National Conditions, Washington accessed on May 9th, 2025 <https://www.drought.gov/states/washington>

Water Resources & Ecosystems



Overview

Water plays a foundational role in both human and ecological systems. In Edgewood, climate change is expected to alter precipitation patterns and temperature, which may in turn affect groundwater recharge, streamflows, and soil moisture. Edgewood relies on groundwater drawn from aquifers that are recharged by rainfall and natural features like wetlands and potholes. Shifts in the timing, intensity, and duration of precipitation events, as well as increased evaporation during warmer summers, may reduce the efficiency of this natural recharge system.

Future projections suggest that summer drought will likely increase throughout this century, while more intense precipitation events in other seasons could lead to flooding, potentially impacting both infrastructure and natural systems. Mountain snowpack and glacier melt—critical to the timing and quantity of streamflow in nearby river systems such as the Puyallup—are also projected to shift, with implications for native fish species and aquatic habitats.

Edgewood's natural areas, including wetlands, flood zones, and mature forests, contribute important ecosystem services such as water filtration, habitat provision, and aquifer recharge. As the community continues to grow, additional demand for water resources will need to be carefully balanced with efforts to preserve these systems. While more research is needed to fully understand the long-term effects of climate change on local water availability, proactive planning and conservation strategies will be essential to maintaining resilience across the city's environmental and human systems.

Water Resources & Ecosystems Facts

- Edgewood was once an agricultural and wooded area but has become increasingly urban in the last two decades.
- Elevation ranges from 20 feet above sea level at the lowest point to 500 feet at the highest.¹⁰
- The natural areas within city limits include steep slopes, natural reserves, wetlands, streams, flood areas, aquifer recharge areas, native growth easements, and stands of mature trees.¹¹



10. City of Edgewood. "City of Edgewood Comprehensive Plan." <https://cityofedgewood.org/DocumentCenter/View/3040/DRAFT-Comprehensive-Plan-11-22-2024?bidId=>

11. See above

Water Resources & Ecosystems



Key Climate Impacts

- Slight shifts in precipitation patterns combined with increased temperatures may threaten aquifer recharge while growing population increases demand for water. More information is needed to understand how climate change will impact drinking water resources in Edgewood.
- By the end of the century, summer drought is projected to increase strain on ground and surface water.
- Projected increases in water temperatures will put native fish species, including salmon and trout at risk.
- Increasing heavy rain events will likely increase impact to flood-prone areas.



Water Resources & Ecosystems



Ground Water

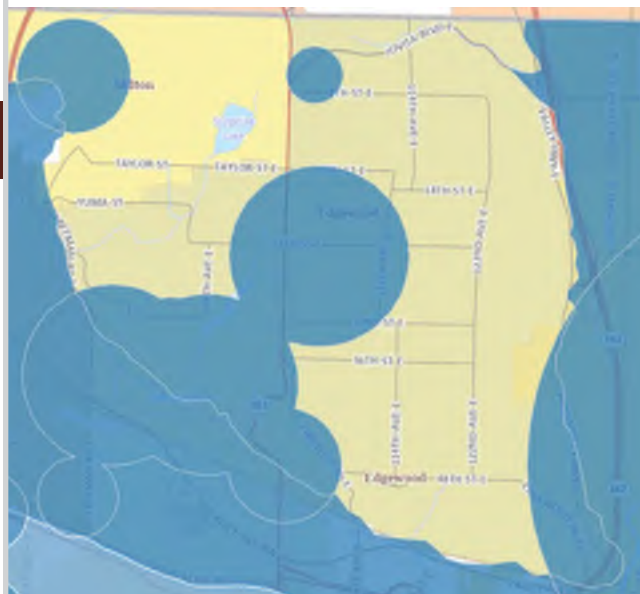
Edgewood's water supply is sourced from groundwater, which is accessed through wells that tap into local aquifers. The primary aquifer serving the area is the Redondo-Milton Channel (RMC), which extends south into the Mountain View–Edgewood region. Aquifer recharge areas—zones where rainwater infiltrates the ground to replenish aquifers—are essential to maintaining this water supply. As shown in Figure 11, the blue-shaded regions represent recharge areas within Edgewood and neighboring jurisdictions.

Edgewood is also home to naturally occurring closed depressions known as potholes. These are low-lying areas that collect water during heavy rainfall events. Because they have no engineered drainage systems,

potholes serve a dual function: they support wetland ecosystems by providing habitat for plants and wildlife, and they aid aquifer recharge by slowly allowing water to percolate into the ground.

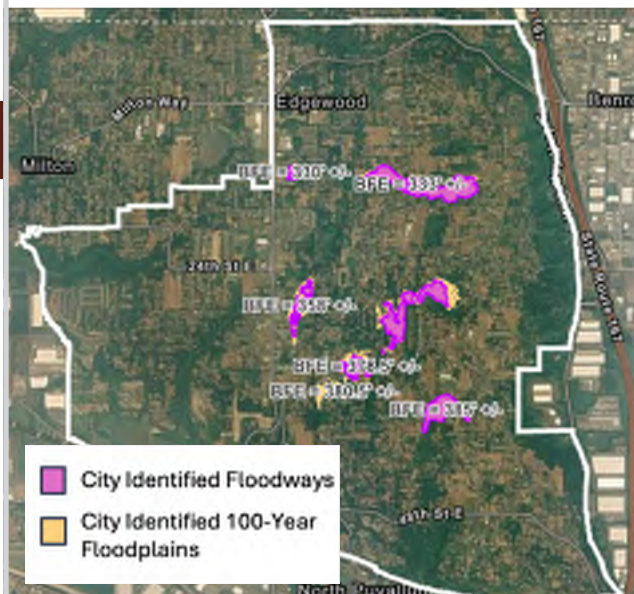
However, this slow drainage presents challenges. Water can accumulate and linger, complicating infrastructure development and land use planning. In summer months, much of the standing water in potholes is lost to evaporation, reducing the potential for aquifer recharge. With climate projections indicating an increase in extreme precipitation events, the limited drainage capacity of potholes may become a growing concern for stormwater management and groundwater sustainability.

Figure 11: Location of Aquifer Recharge Areas in Edgewood



Source: Pierce County Open Geospatial Data Portal, Aquifer Recharge Areas, <https://gisdata-piercecowa.opendata.arcgis.com/>. Accessed May 2025.

Figure 12: Potholes in Edgewood, Represented by Floodplains and Floodways



City of Edgewood GIS Web Application, City Identified Floodways and Floodplains Map, <https://edgewood-wa.maps.arcgis.com>. Accessed June 2025.

Water Resources & Ecosystems



Precipitation

Future climate projections for Edgewood indicate relatively modest changes in overall annual precipitation, but seasonal patterns are expected to shift. Under both RCP4.5 and RCP8.5 scenarios, precipitation is projected to increase slightly during the winter, spring, and fall. However, summer precipitation is projected to decline, contributing to drier soil conditions and an increased risk of seasonal drought. These seasonal imbalances could stress both natural ecosystems and the city's water supply systems.

Edgewood relies on groundwater drawn from local aquifers, and recharge is largely dependent on rainfall. According to the Mt. View–Edgewood Water Company, the number of water connections has increased from 2,500 to 3,800 over the last 35 years, reflecting significant population growth.¹² Existing water demand

projections are based on outdated estimates from 2005 and likely underestimate future water needs. As the community continues to grow, even small changes in precipitation timing and intensity could affect groundwater recharge and long-term water availability.

Natural climate variability, including El Niño and La Niña cycles, will continue to influence short-term precipitation and drought patterns. However, these fluctuations will now interact with long-term climate trends, potentially increasing the frequency and severity of extreme weather events. As a result, conserving aquifer recharge areas and maintaining natural drainage systems will be increasingly important to ensuring Edgewood's water resilience in a changing climate.

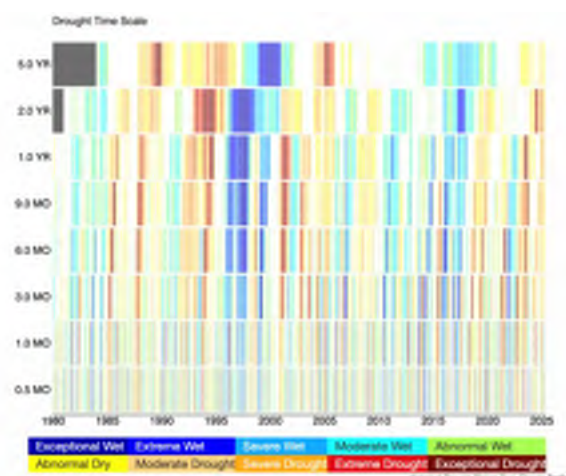
Table 1: Future Projections of Precipitation in Edgewood in Inches

RCP 4.5				
	Winter	Spring	Summer	Fall
Historic: 1971 – 2000	15.6	9.9	3.7	11.7
2040 – 2069	16.8	10	3.2	12.3
2070 – 2099	16.6	10.1	3.2	12.4

RCP 8.5				
	Winter	Spring	Summer	Fall
Historic: 1971 – 2000	15.6	9.9	3.7	11.7
2040 – 2069	16.9	10.1	3.2	12.3
2070 – 2099	17.9	10	3	12.9

Data Source: Climate Toolbox, Future Boxplots tool

Figure 13: Standardized Precipitation Index in Edgewood, 1980-2025



Source: Climate Toolbox, Historical Drought Stripes tool

12. Mike Craig, Mt View-Edgewood Water Company Personal Conversation with Measure Meant, March 20, 2025

Water Resources & Ecosystems



Mountain Reservoirs

Mount Rainier serves as a critical source of water storage for rivers that influence the greater Edgewood area, primarily through its seasonal snowpack and glacial ice. In spring and summer, melting snow and ice contribute to streamflows that support ecosystems, recreation, and downstream water users. The timing and volume of this melt are essential for maintaining reliable surface water supply throughout the year.

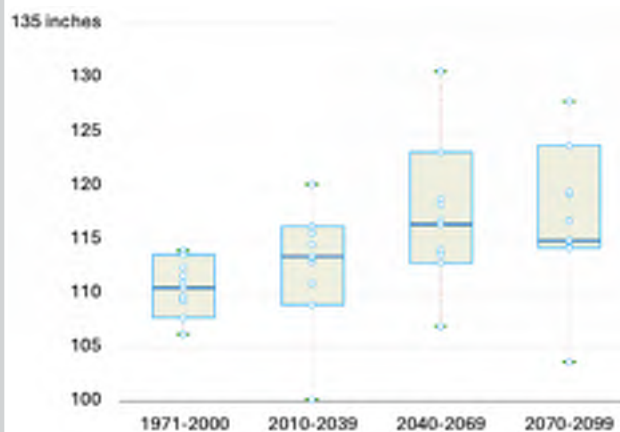
Projections indicate that the April 1st snow water equivalent (SWE)—a measure of the amount of water contained in the snowpack—at Mount Rainier may increase slightly, by about 4.4 inches by the end of the century. However, this does not reflect an increase in total precipitation. Instead, it suggests a shift in snowfall patterns, possibly driven by short-term variability or changes in storm intensity. Over the long term, warming temperatures are expected to cause more winter precipitation to fall as rain rather than snow, and to accelerate the retreat of glaciers, ultimately reducing the mountain's capacity to store water in frozen form.

This ongoing decline in snowpack has already prompted Pierce County to issue a drought advisory for its watersheds.¹³

The Puyallup River, which originates on the western slopes of Mount Rainier, relies heavily on snowmelt and glacial runoff. As snowpack diminishes and melt occurs earlier in the year, streamflow patterns are expected to shift. Projections for the Carbon River, a key tributary of the Puyallup, show that peak streamflows could occur as early as February rather than May by the end of the century. Under RCP4.5, peak flows are projected to increase by 25%, and under RCP8.5 by 38%, compared to historic averages. At the same time, summer low flows are likely to be significantly reduced.

These changes may stress aquatic ecosystems and reduce the availability of water for summer recreation and other uses.

Figure 14: April 1st Snow Water Equivalent at Mount Rainier, RCP8.5



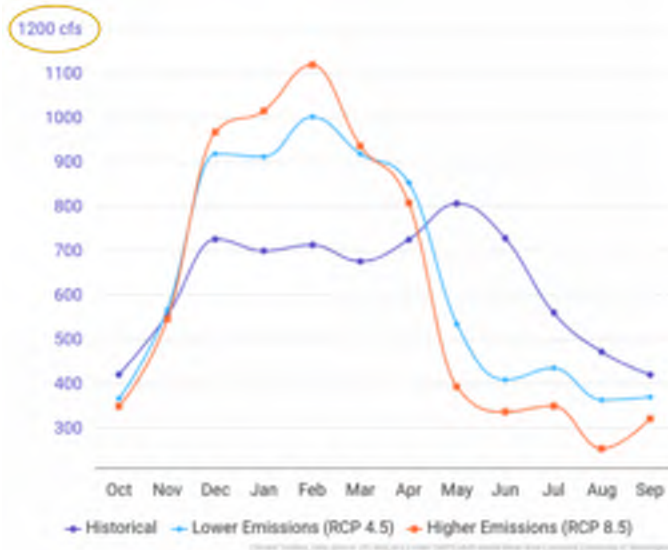
Source: Climate Toolbox, Future Boxplot tool

13. "Drought Response," Washington State Department of Ecology, n.d., <https://ecology.wa.gov/water-shorelines/water-supply/water-availability/statewide-conditions/drought-response>.

Water Resources & Ecosystems

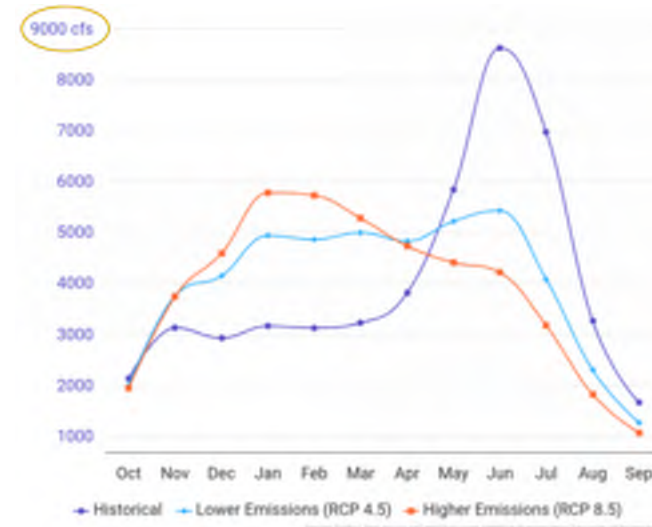


Figure 15: Projected Non-Regulated Streamflow for the Carbon River, 2070-2099 (bias-corrected)



Source: Climate Toolbox, Future Streamflows tool

Figure 16: Projected Non-Regulated Streamflow for the Puyallup River, 2070-2099 (not bias-corrected)



Source: Climate Toolbox, Future Streamflows tool

Water Resources & Ecosystems



Native Fish

Native fish species such as salmon and trout are highly sensitive to water temperature, and climate change poses a growing threat to their survival. Warmer stream temperatures can disrupt key phases of their lifecycle including spawning, migration, and reproduction.

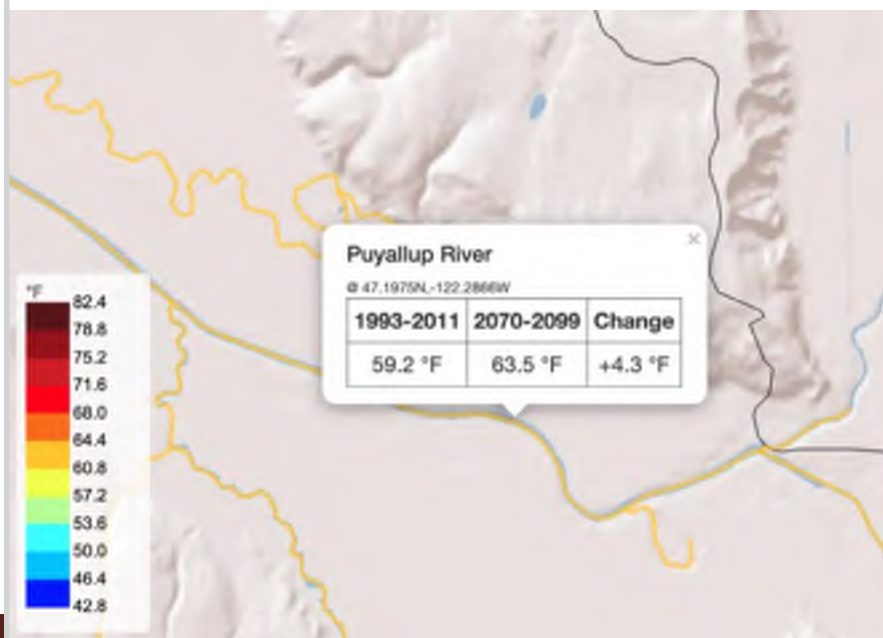
According to projections from the Tribal Climate Tool, average August stream temperatures in the Puyallup River are expected to rise from 59.2°F to 63.5°F by the end of the century, an increase of 4.3°F. This level of warming may exceed the thermal tolerance of several native fish species, potentially leading to habitat loss, reduced reproductive success, and population declines.

Given Edgewood's location within the broader Puyallup River watershed, these ecological changes could affect regional biodiversity and have cultural, economic, and environmental implications. For a more detailed

assessment of projected impacts to native fish species and potential adaptation strategies, the Puyallup Tribe's Climate Change Impact Assessment and Adaptation Options (2016) provides a comprehensive overview.¹⁴

Wapato Creek and Simon's Creek are fish-bearing streams within the City of Edgewood. These areas were not included in the scope of this report, and further research is needed to understand how climate change may affect their ecosystems.

Figure 17: Projected August Average Stream Temperature for the Puyallup River, 2070-2099 (moderate emissions)



Source: Climate Toolbox, Future Tribal Climate tool

14. Puyallup Tribe of Indians. 2016. Climate Change Impact Assessment and Adaptation Options. A collaboration of the Puyallup Tribe of Indians and Cascadia Consulting Group. https://www.puyalluptribe-nsn.gov/wp-content/uploads/PuyallupClimateChangeImpactAssessment_2016_FINAL_pages.pdf

Water Resources & Ecosystems

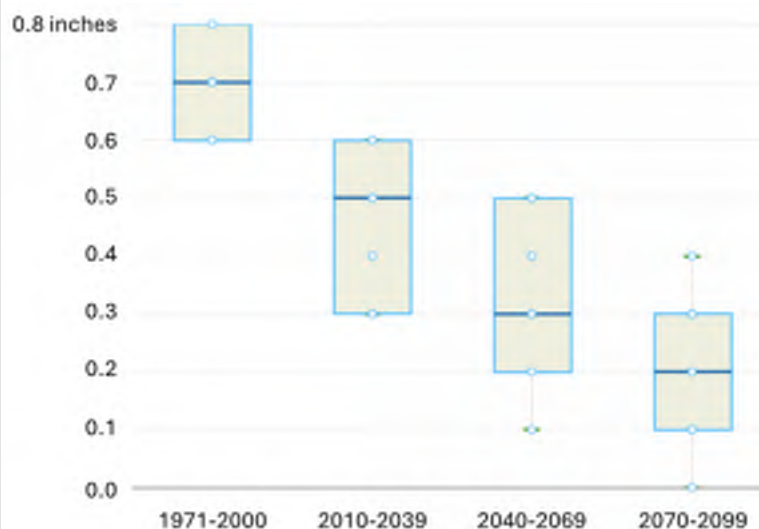


Forests

Edgewood contains approximately 20 acres of mature forests and wooded areas that provide important ecological and community benefits (see Figure 19). These forested sites play a vital role in maintaining air and water quality, supporting wildlife habitat, and reducing urban heat.

However, projected climate conditions may pose challenges to forest health. Extreme summer temperatures, combined with a decrease in summer precipitation, are expected to reduce soil moisture levels across the region. By the end of the century, soil moisture in Edgewood is projected to decline by approximately 0.5 inches (see Figure 18). This reduction may trigger ecological drought, a condition in which water deficits limit plant growth and increase forest vulnerability.

Figure 18: Summer Soil Moisture in Edgewood, RCP8.5



Source: Climate Toolbox, Future Boxplot tool

Figure 19: Inventory of Passive Open Spaces in Edgewood

FACILITY	ACRES	DEVELOPED (Y/N)	NATURAL FEATURES	CONDITION AND CAPACITY
Crawford Woods	4.57	N	Mature forest and habitat, memorial bench across the street	This site is in good condition. If developed, this park could accommodate a small interpretive loop trail.
Kempf Open Space	12.56	N	Undeveloped steep wooded site	This site is in good condition. If developed, this park could accommodate a trail.
Jovita Canyon	2.80	N	Undeveloped steep wooded site	This site is being considered for a connection between the historic Interurban Electric Railway and Jovita Boulevard along the future Interurban Trail connection.

Source: The Edgewood Comprehensive Plan, <https://cityofedgewood.org/DocumentCenter/View/3040/DRAFT-Comprehensive-Plan-11-22-2024?bidId=>

Forests in and around Edgewood, including Crawford Woods in the city's northeast corner, may experience slower growth rates, heightened susceptibility to pests and disease, and a decline in overall ecosystem services.¹⁵ Reduced soil moisture can also elevate wildfire risk, particularly during extended periods of heat and drought. Protecting and managing these forested areas will be critical to maintaining their resilience and the benefits they provide to the community.

15. National Integrated Drought Information system; Ecosystems, accessed on May 9, 2025 <https://www.drought.gov/sectors/ecosystems>

Infrastructure



Overview

Edgewood's infrastructure—roads, bridges, utilities, stormwater systems, and buildings—forms the foundation for everyday life in the community. As the climate changes, this built environment faces increasing risk from extreme heat, intense storms, flooding, and wildfire.

Projections show that extreme precipitation events are expected to increase by 17% by mid-century and 24% by the end of the century under the high emissions scenario. Heavier rainfall could overwhelm stormwater systems, flood roadways, and damage buildings. In Edgewood, areas such as 114th Avenue East and 36th Street East, along with neighborhoods like Dechaux and Cherrywood Mobile Manor, are already at elevated risk of flooding due to limited drainage infrastructure.

Rising temperatures and more frequent heatwaves may also place additional strain on the electrical grid, as more households rely on air conditioning for cooling. Prolonged heat can degrade pavement, buckle roads, and accelerate wear on other public infrastructure.

Edgewood's transportation network is essential, particularly given the city's role as a commuter community. Infrastructure failures could limit access to work, emergency services, and supply chains. Given the scale of projected climate impacts, maintaining and upgrading Edgewood's infrastructure will require proactive planning and coordination with regional partners. Resilient infrastructure is essential not only for public safety but also for the long-term economic and social stability of the community.

Infrastructure Facts

- The City of Edgewood is 8.4 square miles and is primarily zoned for residential development.
- Most residents live in single family homes, but there are also several multi-family developments and duplexes located throughout the city.
- Commercial land use is located primarily along the Meridian Avenue corridor and include services, office space, and retail sales.¹⁶
- Critical infrastructure in Edgewood consists of transportation systems, such as highways and road systems, and water and wastewater systems.



16. City of Edgewood. "City of Edgewood Comprehensive Plan." <https://cityofedgewood.org/DocumentCenter/View/3040/DRAFT-Comprehensive-Plan-11-22-2024?bidId=>

Infrastructure



Key Findings

- Under both emissions scenarios, extreme precipitation in Edgewood is projected to increase 17% by mid-century (2040-2069) and 24% by the end of the century (2070-2099).
- By mid-century, high fire danger days are projected to increase by an average of 14 days under RCP8.5, putting property and infrastructure at risk.
- Public Safety Power Shutoffs (PSPS) may become more frequent due to extreme weather events across the state, such as wildfires and high winds.
- The risk of flooding is expected to increase throughout the century, increasing damage to roads, homes, buildings, transportation systems, and other infrastructure.



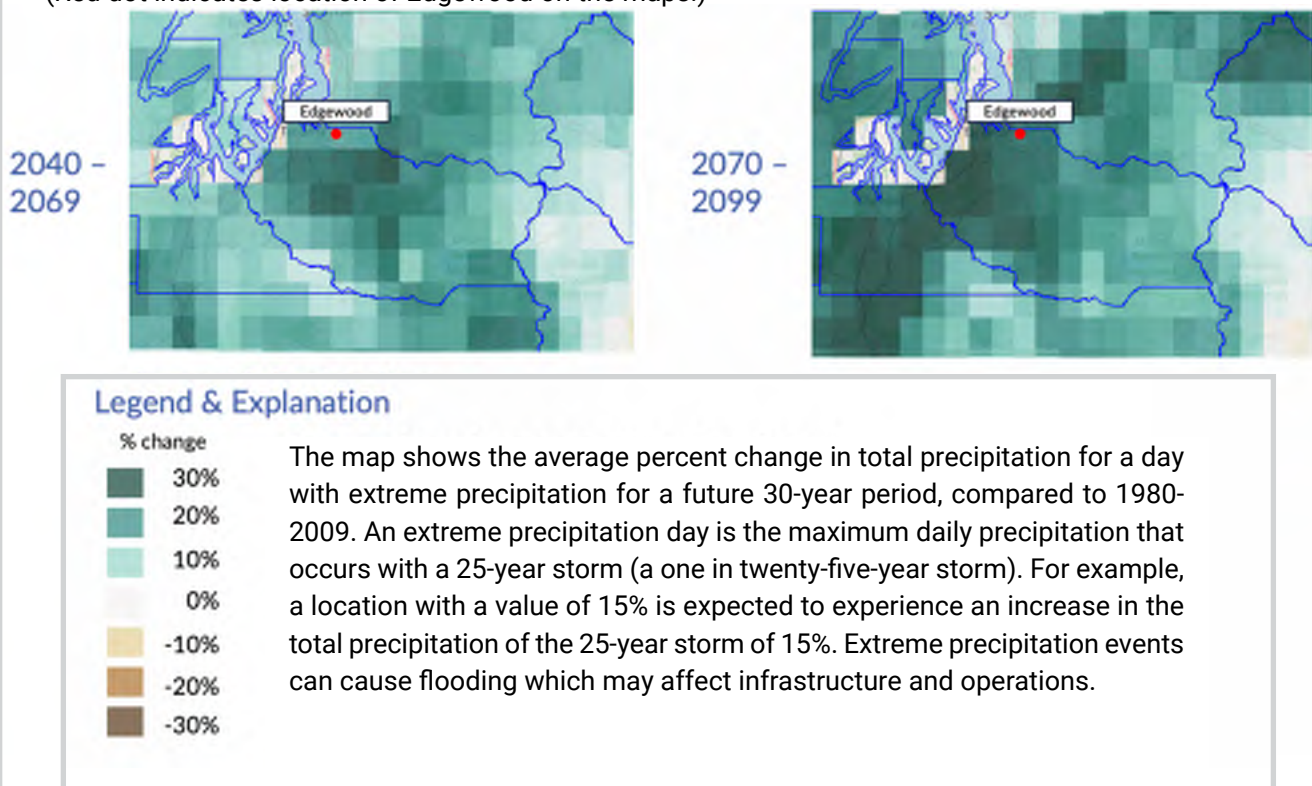


Extreme Precipitation

Edgewood has a mild climate of wet winters and cool, dry summers.¹⁷ Precipitation primarily occurs in the 8-month period from October to May, with annual average precipitation of 38.3 inches.¹⁸ Extreme precipitation is projected to increase for Edgewood throughout this century. Under RCP8.5, Edgewood is projected to see a 17% increase in 25-year storms by 2069 and a 24% increase by 2099 (see Figure 20).

Heavy precipitation events can lead to various natural disasters such as flooding and landslides and are likely to impact local transportation systems, commuters, and city infrastructure such as buildings and roads. Stormwater and septic systems may be overwhelmed during extreme precipitation events. Increasingly dry conditions during summer months increase vulnerability to flooding, because heavy precipitation is less likely to absorb into dry soils.

Figure 20: Magnitude of Extreme Precipitation under RCP8.5.
(Red dot indicates location of Edgewood on the maps.)



Source: Climate Mapping for a Resilient Washington, Extreme Precipitation Magnitude map

17. City of Edgewood. "City of Edgewood Comprehensive Plan." <https://cityofedgewood.org/DocumentCenter/View/3040/DRAFT-Comprehensive-Plan-11-22-2024?bidId=>

18. See above



Flood Damage

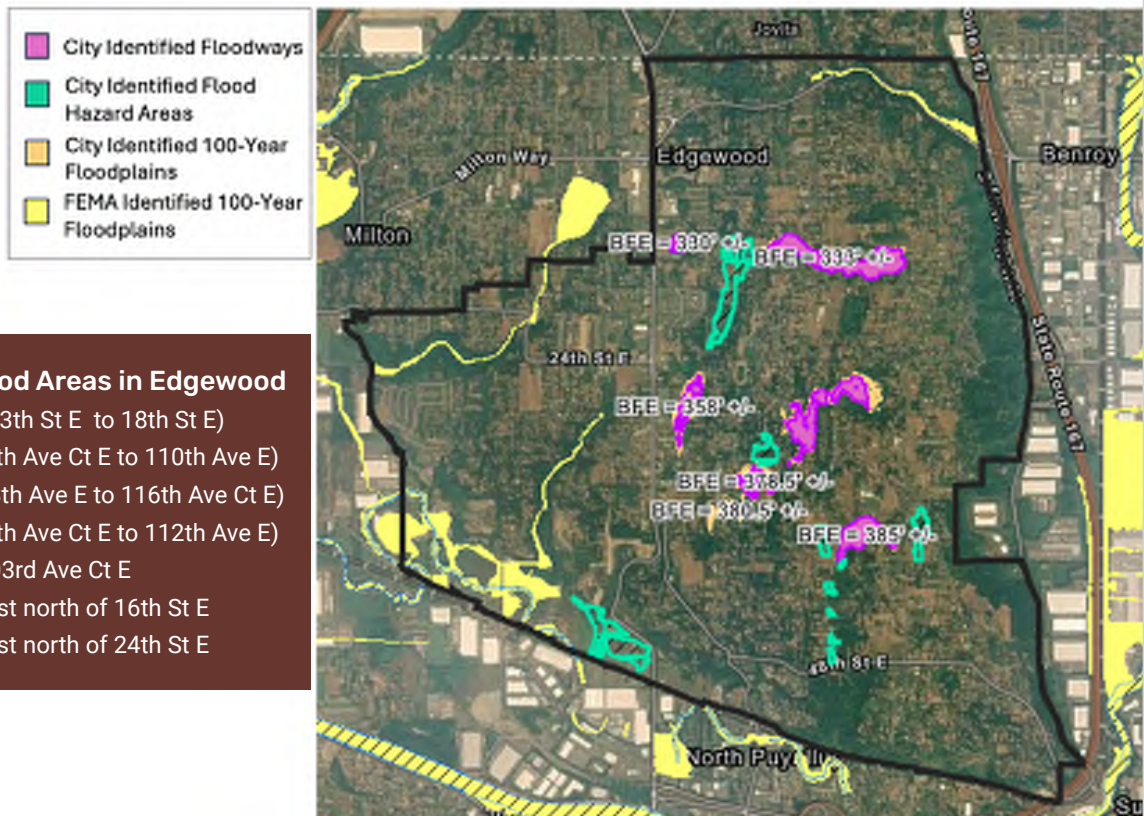
As extreme precipitation becomes more frequent and intense, Edgewood is expected to face a growing risk of localized flooding. Projections indicate a 17% increase in 25-year storm events by mid-century and a 24% increase by the end of the century under high-emissions scenarios (see Figure 20 on page 27).

Several areas in Edgewood are particularly vulnerable due to insufficient stormwater infrastructure. Roadways such as 114th Avenue East and 36th Street East, as well as neighborhoods like Dechoux and Cherrywood Mobile Manor, face higher flood risk during heavy

rainfall events. These areas may experience recurring impacts, including roadway closures, property damage, and increased maintenance demands.

Urban development can exacerbate flooding by increasing impermeable surfaces, reducing vegetation, and altering natural drainage pathways. As the city continues to grow, land use decisions that account for future precipitation trends will be critical. Integrating flood risk projections into planning and infrastructure design can help minimize damage, protect vulnerable communities, and reduce long-term recovery costs.

Figure 21: Location of city identified floodways, flood hazard areas, and 100-year floodplains



High Risk Flood Areas in Edgewood

- 114th Ave E (13th St E to 18th St E)
- 36th St E (105th Ave Ct E to 110th Ave E)
- 32nd St E (108th Ave E to 116th Ave Ct E)
- 16th St E (106th Ave Ct E to 112th Ave E)
- 29th St E @ 103rd Ave Ct E
- 110th Ave E just north of 16th St E
- 112th Ave E just north of 24th St E

Source: City of Edgewood GIS Web Application, City Identified Flood Hazard Map. <https://edgewood-wa.maps.arcgis.com>. Accessed April 2025.

Infrastructure



Wildland Urban Interface

The Wildland Urban Interface (WUI) refers to areas where developed land borders or is surrounded by wildlands. Within the WUI, “interface” areas are those where development borders wildland on one side, while “intermix” areas are where development is embedded within wildland on two or more sides.¹⁹

In Edgewood, a notable portion of development falls within intermix zones, as shown in yellow on the WUI map (see Figure 22 on page 30). For mapping purposes, wildlands are defined as areas with at least 50% burnable vegetation.²⁰ However, it is important to note that some areas included in the WUI map, such as wetlands, carry a lower risk of wildfire due to their moisture-rich environments.

As the number of high fire danger days continues to rise, Edgewood’s proximity to forested and vegetated areas presents an emerging threat to property, ecosystems, and public safety. Buildings and infrastructure located near flammable vegetation are at great risk for fire-related damage. While the risk of large-scale fires may currently be lower than in drier parts of the state, the city remains vulnerable—especially as fire and smoke from neighboring communities can easily spread across municipal boundaries.

As development continues, thoughtful land use planning and fire mitigation strategies in WUI areas will be essential to reducing future risk and protecting both residents and natural systems.

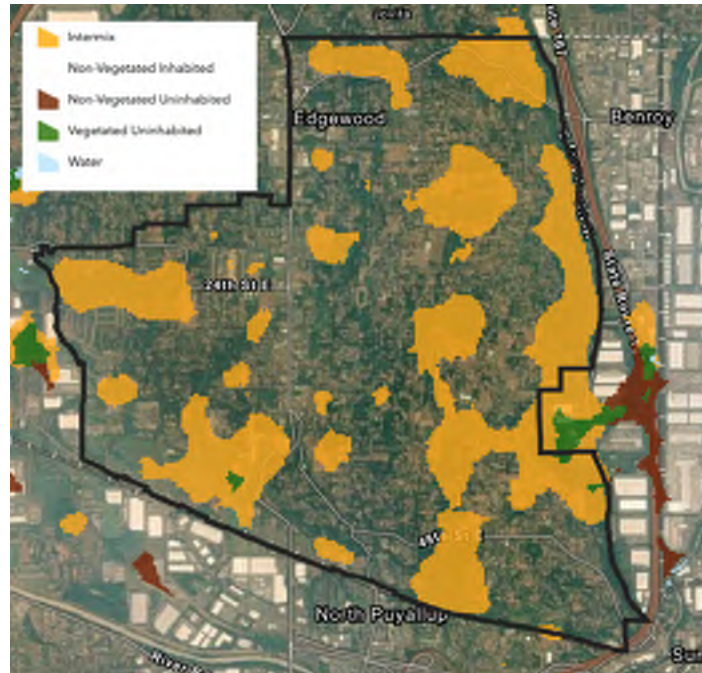


19. “The Wildland-Urban Interface,” ArcGIS StoryMaps (Forest Resilience Division & Wildland Fire Management Division, October 21, 2019), <https://storymaps.arcgis.com/stories/7016c437623a4445997c072a05e26afbb>.

20. See above



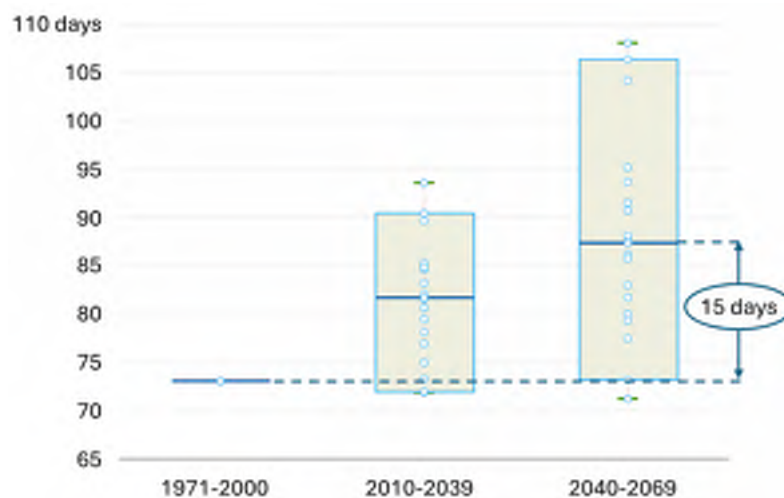
Figure 22: Wildland Urban Interface in Edgewood



Source: City of Edgewood GIS Web Application, Wildland Urban Interface Map.
<https://edgewood-wa.maps.arcgis.com>. Accessed April 2025.

Figure 23: Increase in Annual High Fire Danger Days in Edgewood (RCP8.5)

The number of high fire days is expected to rise by 15 days annually in Edgewood by the middle of this century



Source: Climate Toolbox, Future Boxplot tool



Wildfire Risk to Energy Delivery Systems

High fire danger days are projected to increase in Edgewood and across the broader Pacific Northwest (see Figure 5 on page 12). As wildfire risk grows, so does the potential for disruptions to the power grid and damage to critical energy infrastructure.

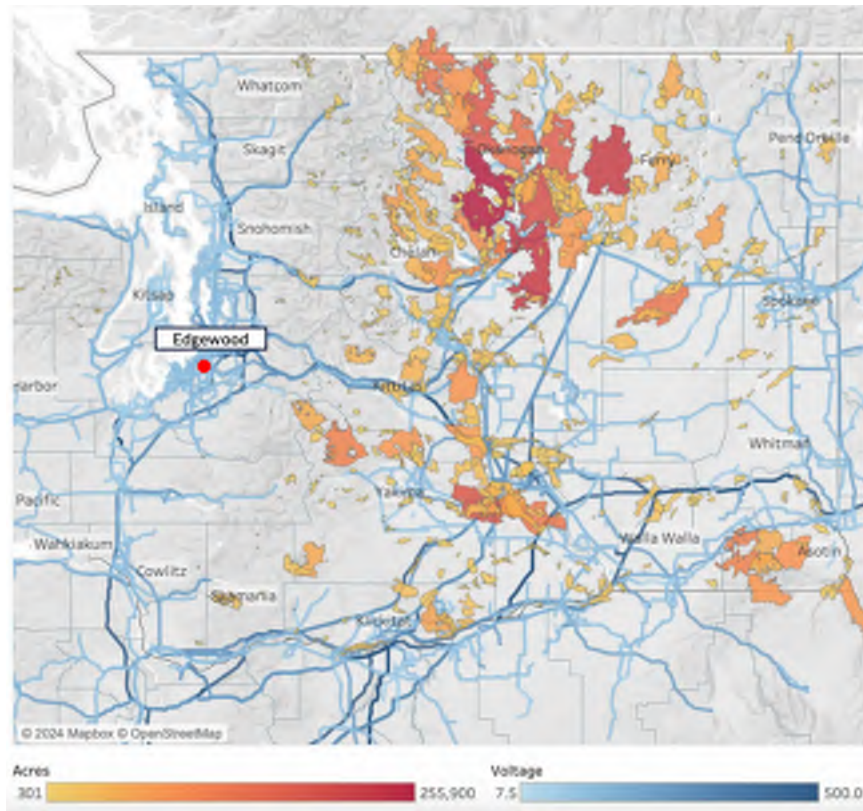
During extreme weather events, such as high winds or wildfire, Puget Sound Energy may implement Public Safety Power Shutoffs to prevent fire ignition. While these shutoffs can occur anywhere within PSE's service area, they are most likely in counties with moderate or high FEMA fire risk ratings (see Figure 24). Although Pierce County is currently classified as having a relatively low FEMA fire risk, major fires in

other regions, such as Eastern Washington, can still lead to widespread power outages across the state. Depending on the severity of the event, outages may last for several days.²¹

As wildfires become more frequent and severe across Washington, the reliability of the power grid is expected to decline, increasing the need for resilient energy systems and emergency preparedness.

Figure 24: Grid Infrastructure Cross-Reference between Historical Wildfires and FEMA Risk Rating.

PNW transmission lines and major fires (300+ acres) between 1973-2023.



Source: University of Washington Climate Risk Lab, https://foster.uw.edu/wp-content/uploads/2024/06/MSBA-2024_CRL_Final-report.pdf

21. Puget Sound Energy. "Public Safety Power Shutoff (PSPS)." <https://www.pse.com/en/pages/Wildfire-prevention/Public-Safety-Power-Shutoff>



Heat Island Effect

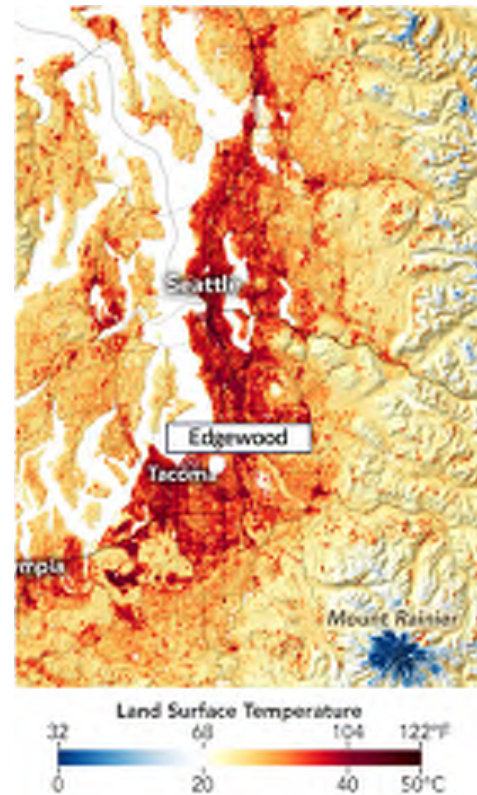
The urban heat island effect occurs when certain neighborhoods within a city experience significantly higher temperatures than others due to a lack of vegetation and an abundance of heat-retaining surfaces like pavement and buildings. Areas with less tree canopy and more impervious surfaces can be several degrees warmer than greener, more shaded neighborhoods nearby. These temperature variances are typically 1–7°F hotter during the day and 2–5°F hotter at night.²²

This effect is intensified during extreme heat events and is expected to worsen as average temperatures rise due to climate change. Prolonged and elevated temperatures increase demand for air conditioning, placing added stress on the electrical grid and driving up energy use. Higher surface temperatures also accelerate the deterioration of infrastructure, including roads and bridges, leading to increased maintenance costs for both households and local governments.

Importantly, the heat island effect does not impact all communities equally. Neighborhoods with fewer trees, limited green space, and more paved surfaces, often in low-income areas, are more exposed to excessive heat. This exacerbates existing health and economic disparities, as these residents are more likely to experience heat-related illness and face higher energy bills, with fewer resources available to cope with rising costs and health risks.

Addressing the urban heat island effect through strategies such as increased tree canopy, green infrastructure, and reflective building materials can help reduce heat exposure and promote greater equity in climate resilience.

Figure 25: Land Surface Temperatures on June 25, 2021, during the Heat Dome.



Source: Climate Hubs – U.S. Department of Agriculture. “Urban Heat Islands in the Northwest.” <https://www.climatehubs.usda.gov/hubs/northwest/topic/urban-heat-islands-northwest#:~:text=Weather%20and%20geography,Credit:%20Environmental%20Protection%20Agency>

22. Climate Hubs – U.S. Department of Agriculture. “Urban Heat Islands in the Northwest.” <https://www.climatehubs.usda.gov/hubs/northwest/topic/urban-heat-islands-northwest#:~:text=Weather%20and%20geography,Credit:%20Environmental%20Protection%20Agency>

Economic Impacts



Overview

Edgewood's economy is primarily supported by the construction, education, finance, insurance, and real estate sectors. As climate change intensifies, these industries will face both risks and opportunities that may affect long-term economic stability.

Construction may see increased demand due to the need for repairs following extreme weather events such as floods or wildfires. However, high temperatures and declining air quality could impact worker safety and reduce productivity, while rising costs for building materials may slow new development. These pressures could place additional financial burdens on both developers and residents.

The finance, insurance, and real estate sectors may appear less directly impacted by climate change, but shifts in the insurance industry suggest growing exposure. Across the country, insurance carriers are reevaluating their coverage models, with some scaling back or exiting high-risk markets altogether.

In Edgewood, this could result in higher premiums or limited access to homeowners and business insurance. These trends are especially concerning for vulnerable groups, such as low-income residents, who are less likely to carry adequate insurance and may lack the financial resources to recover from climate-related property damage.

Attracting new businesses may also become more difficult if climate risks are not adequately addressed. Companies that prioritize risk management may scrutinize how Edgewood prepares for and responds to climate hazards, particularly regarding infrastructure and supply chain reliability.

While Edgewood continues to experience steady growth in population and development, this momentum may mask underlying risks. Without proactive planning and investment in resilience, extreme weather could lead to costly damage, slow recovery efforts, and widen economic disparities across the community.



Industrial Development
South of Edgewood

Economic Impacts



Economic Impact Facts

- Since 2010 Edgewood has grown by 40% and is currently known as the second fastest growing city in the Puget Sound Region.²³
- The median household income in Edgewood is \$114,342 compared to the state average of \$94,605.²⁴
- In March of 2025, the median home value in Edgewood was \$715,000 compared to the state average of \$560,000.²⁵
- Most Edgewood residents leave Edgewood city limits for work, commuting to Seattle, Tacoma, and other locations in the region. Only 1.7% of employed residents remain in Edgewood for work or work remotely.²⁶
- In 2022 Edgewood housed 1,867 jobs, growing by over 50% from 2010.²⁷
- Within the next 20 years it is anticipated that finance, insurance, and real estate, construction, and education will continue to grow and be the largest economic sectors.

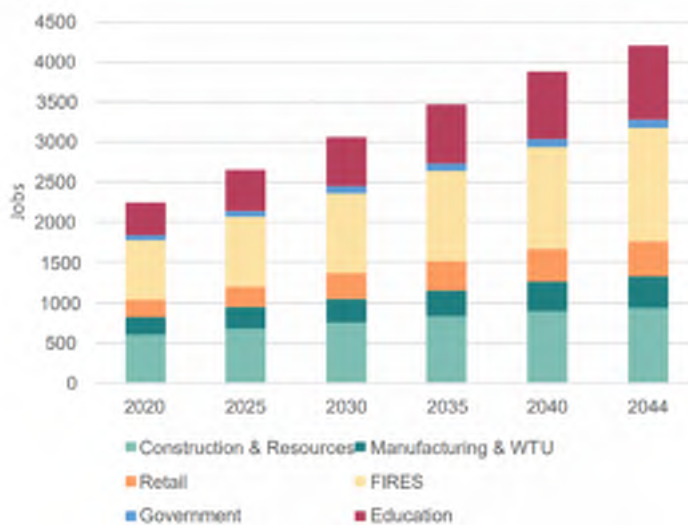


Figure 26: Demographic Information for the City of Edgewood.



Source: U.S. Census Bureau, "Edgewood City, Washington Profile," https://data.census.gov/profile/Edgewood_city,_Washington?g=160XX00US5320645. Accessed March 2025

Figure 27: Growth Projection by Sector Employment



Source: City of Edgewood Comprehensive Plan. <https://cityofedgewood.org/DocumentCenter/View/3040/DRAFT-Comprehensive-Plan-11-22-2024?bidId=>.

23. Edgewood Washington, "Economic Development", <https://wa-edgewood.civicplus.com/329/Economic-Development>

24. U.S. Census Bureau, "Edgewood City, Washington Profile," https://data.census.gov/profile/Edgewood_city,_Washington?g=160XX00US5320645, accessed on March 25, 2025.

25. "Edgewood, WA Housing Market," Redfin.com, accessed May 7, 2025, <https://www.redfin.com/city/5334/WA/Edgewood/housing-market>.

26. City of Edgewood Comprehensive Plan. <https://cityofedgewood.org/DocumentCenter/View/3040/DRAFT-Comprehensive-Plan-11-22-2024?bidId=>

27. See Above

Economic Impacts



Key Climate Impacts

- Extreme heat and increased wildfire smoke may decrease productivity of outdoor workers potentially increasing costs for employers.
- Insurance premiums are likely to rise due to increased risk of climate hazards at the local and national levels.
- Housing shortages may be exacerbated as people move to Edgewood from places made less desirable by climate change.
- Hotter summer temperatures are likely to increase use of electricity for cooling, resulting in increased costs for households and businesses.
- Global supply chains are likely to be disrupted with increasing extreme weather events around the world.



Economic Impacts



Industry Impacts – Construction

There are both opportunities and risks for the construction industry under a changing climate. Retrofitting and rebuilding after extreme events creates economic opportunity in this sector. However, as high heat and smoke events become more common, summertime work hours may be limited for outdoor workers to ensure safe working conditions and to comply with Washington State law. Washington State Department of Labor & Industries requires frequent

breaks and access to water and shade for outdoor workers to ensure safer working conditions in high temperatures.

Extreme heat and increased precipitation intensity may increase the rate at which materials degrade and increase the need for retrofitting existing infrastructure. Increased maintenance may be required on both new and existing buildings and roads.

Table 2: Washington State Department of Labor & Industries Outdoor Heat Exposure Rules

$\geq 90^{\circ}\text{F}$	$\geq 100^{\circ}\text{F}$
10-minute of paid rest period every two hours	15-minutes of paid rest every hour

Source: Washington State Department of Labor & Industries. "Permanent Changes to Outdoor Heat Exposure Rules". <https://lni.wa.gov/forms-publications/F417-300-000.pdf>

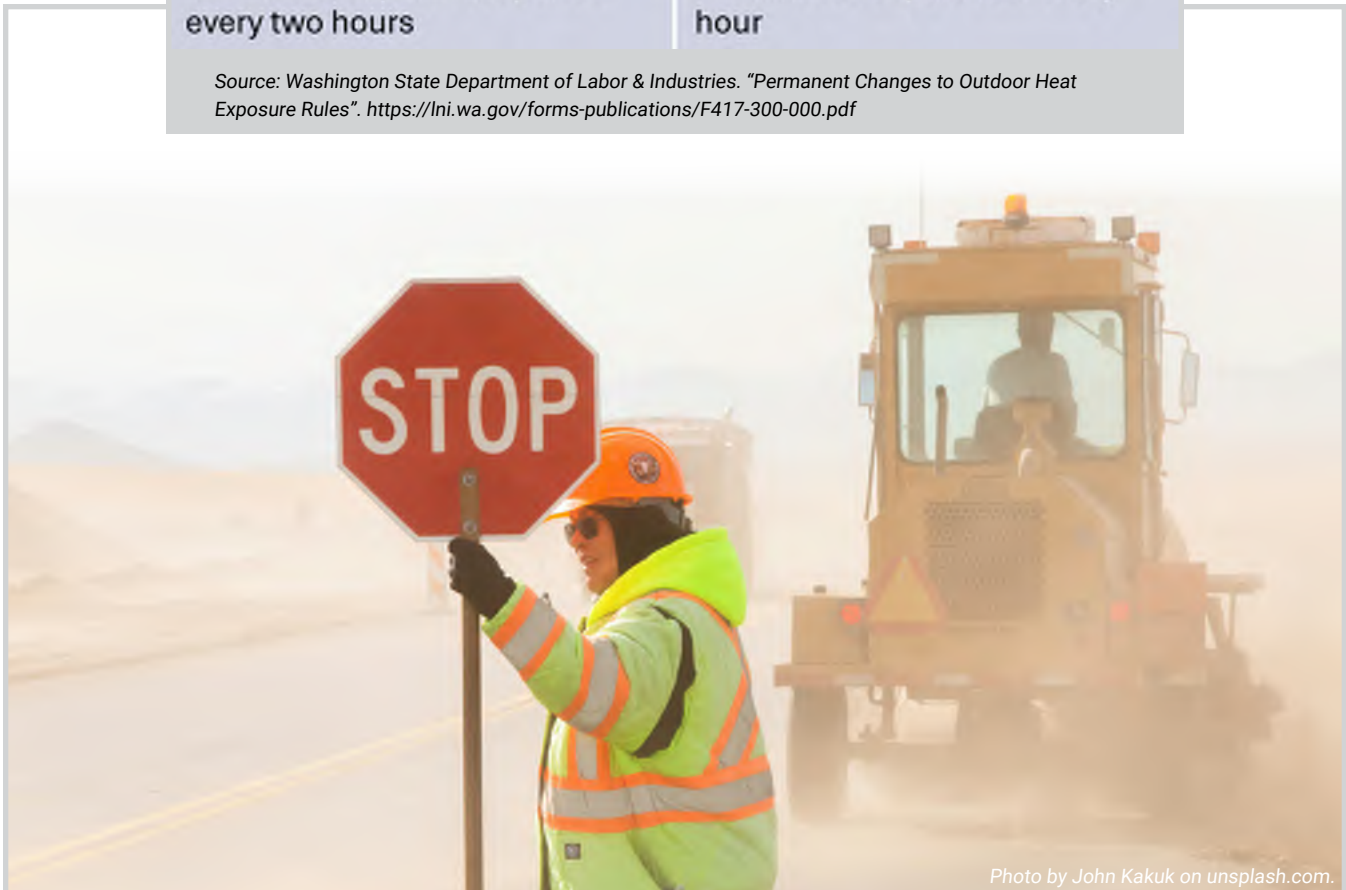


Photo by John Kakuk on unsplash.com.

Economic Impacts



“

Damage to supply chain networks caused by climate change reverberates through people's livelihoods and investments in ways that threaten quality of life and security, often in lasting and inequitable ways. Coordinated efforts can mediate impacts and help communities and companies adapt to these large, interconnected, and recurring risks. However, the pace, scale, and scope of efforts that have been undertaken to transform supply chains are not yet sufficient to meet either current or expected disruptions and costs.

”

- Fifth National Climate Assessment

U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023.F4>

Economic Impacts



Industry Impacts – Finance, Insurance, and Real Estate

The finance, insurance, and real estate industries are increasingly exposed to the effects of climate change, with hazards such as flooding and wildfire influencing property values, mortgage lending, and insurance availability. While Edgewood currently benefits from a relatively mild climate, this could make the city more attractive to people relocating from areas facing more severe climate risks, such as hurricanes, sea level rise, and prolonged drought. An influx of new residents may increase demand for housing, potentially exacerbating shortages and driving up costs in Edgewood and surrounding communities.

Nationwide, insurance carriers are reevaluating their exposure to climate risks. Premiums are rising in high-risk areas, and some insurers have begun limiting or withdrawing coverage altogether. Although Edgewood may not face the most severe climate threats, residents could still be affected by broader trends in the insurance market, especially if state- or region-wide risks increase. In the future, homeowners in areas of Edgewood vulnerable to flooding or wildfire may find it more difficult to secure affordable coverage, which could reduce the marketability and long-term value of those properties.

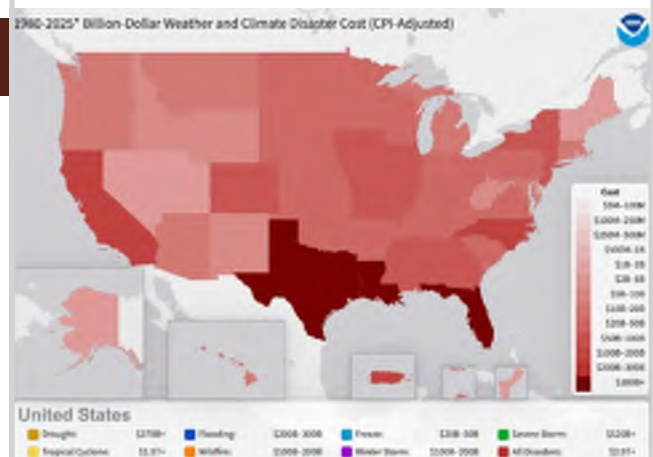
These dynamics suggest that climate change will influence the real estate sector not only through direct environmental impacts, but also through financial and policy shifts. Understanding and anticipating these changes will be important for maintaining a stable and resilient housing market.

Figure 28: States Where Homeowners Insurance Was Unprofitable



Source: Flavelle, Christopher, and Mira Rojanasakul. "As Insurers around the U.S. Bleed Cash from Climate Shocks, Homeowners Lose." WLRN. WLRN, May 27, 2024. <https://www.wlrn.org/business/2024-05-27/as-insurers-around-the-u-s-bleed-cash-from-climate-shocks-homeowners-lose>

Figure 29: U.S. Billion-Dollar Weather & Climate Disasters



Economic Impacts

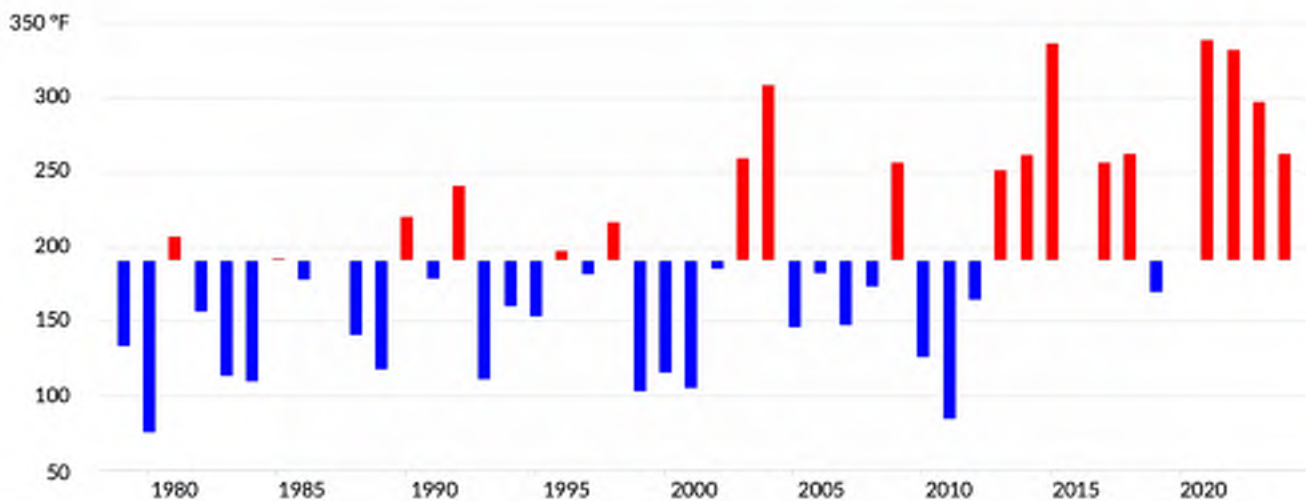


Household Impact – Cooling Degree Days

Cooling Degree Days (CDD) is a metric used to estimate the demand for energy needed to cool indoor spaces. CDD is calculated by measuring how many degrees the average daily temperature exceeds a baseline of 65°F. For example, if the average temperature on a given day is 80°F, that day would count as 15 cooling degree days.

The total CDD over the course of a year reflects the overall need for air conditioning. As temperatures rise and extreme heat becomes more frequent, the CDD increases. A higher CDD indicates greater energy use for cooling, which can lead to higher utility bills for residents. In response to increased heat, households may also need to invest in more robust air conditioning systems or other cooling infrastructure to stay comfortable and safe during hotter months.

Figure 30: Annual Cooling Degree Days in Edgewood, 1979-2024



Source: Climate Toolbox, Historical Climate Tracker tool

Economic Impacts



Household Impact – Flood Risk

Overall, the 30-year flood risk in Edgewood is lower than in surrounding areas. According to First Street, a national nonprofit that uses climate data to evaluate financial risk, the percentage of residential properties at risk of flooding over the next thirty years is 7.3% in Edgewood compared to 48.3% in nearby Puyallup (see Figure 31).

However, there are areas within the city limits that have significantly higher risk than the city overall. For example, homes within the Cherrywood Mobile Manor development have a 63% risk of flooding within the next 30 years (see Figure 32).

Figure 31: Percentage of Residential Properties at Risk of Flooding

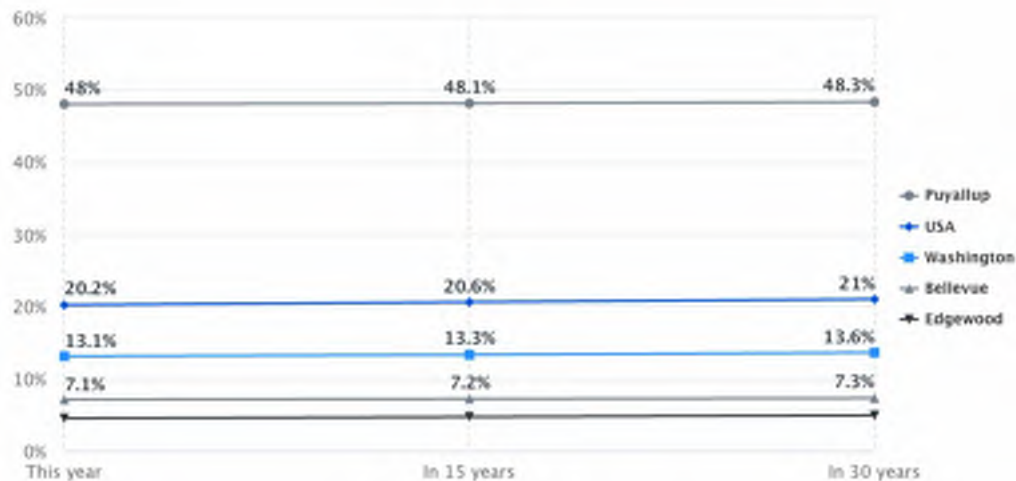
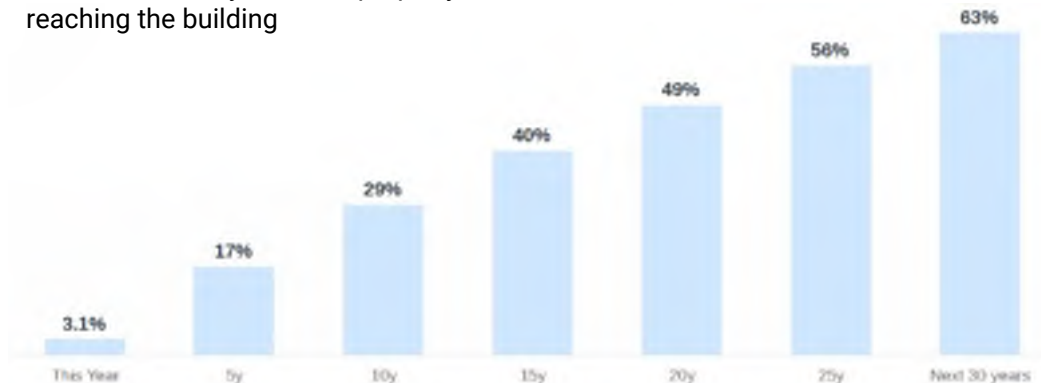


Figure 32: Future flood risk of property located inside Cherrywood Mobile Manor over the next 30 years shown as a percent increase from historic averages. Over the next 30 years, this property has a 63% chance of 1 inch of flood water reaching the building



Figures 31 & 32. First Street Foundation. "First Street Foundation Property Level Flood Risk Statistics V1.3". Zenodo, October 11, 2021. <https://doi.org/10.5281/zenodo.5768332>. Accessed on 4/26/25 Environmental risk data is provided by First Street™. First Street models are designed to approximate risk and not intended to include all possible scenarios.

Economic Impacts



Household Impact – Landslide Risk

Edgewood's topography includes several steep hillsides, particularly along the western and southeastern edges of the city, where erosion and landslide hazards are already present. As climate change leads to more frequent and intense heavy rainfall events throughout the 21st century, these high-risk areas are expected to face an increased likelihood of slope instability and landslides.

For households in or near these areas, the economic implications include potential costs related to property repairs, erosion control, and insurance premiums. Proactive measures, such as land-use planning, stormwater management, and slope stabilization, will be essential to reducing future damage and financial burden for homeowners.

The map highlights areas most susceptible to erosion and landslides, which tend to align with steep gradients and stream-adjacent slopes (see Figure 33). Homes and infrastructure located near these zones may experience greater risk of property damage, increased maintenance costs, or limited access during and after major storm events. These risks can also affect property values and insurability, particularly in neighborhoods where hazard zones intersect with residential development.

Figure 33: Erosion and Landslide Risk Areas in Edgewood



Source: City of Edgewood GIS Web Application, Erosion and Landslide Hazard Area Map. <https://edgewood-wa.maps.arcgis.com>. Accessed May 2025.

At-Risk Communities



Overview

Climate change will worsen existing disparities in Edgewood. While everyone is impacted by climate change, some groups of people and populations are at greater risk. Climate change is often described as a threat multiplier, meaning that climate impacts increase individual risk by adding onto existing disparities.

The at-risk population includes children, seniors, underhoused and low-income individuals and families, and people of color. It also includes groups that may not immediately come to mind as being at-risk groups like outdoor workers, first responders, and farmers. These populations have increased exposure and are likely to be disproportionately impacted.

Edgewood is more affluent than most communities in the State of Washington – residents have higher incomes, more education, and better healthcare coverage on average. As a result, the at-risk community in the city may be smaller and perhaps less visible, but the impacts will be no less significant on individuals and families compared to other communities.

Bankrate reports that nearly 60% of Americans in 2025 do not have enough savings to cover an unexpected \$1,000 emergency expense.²⁸ This could mean that residents may not have sufficient resources to cover property damage from extreme weather or pay the cost of healthcare events resulting from extreme temperatures. It may also mean they have limited resources to pay for cooling during hot summer months.

Support can include increasing shade in public places, providing access to cooling centers, and making citizens aware of available resources. In other cases, support might include providing energy assistance or establishing services directed at underserved and at-risk communities.

An easy first-step is ensuring that people in these communities have input into climate planning.

Table 3: Communities that are Disproportionately Exposed and Disproportionately Impacted by Climate Change

Disproportionately Exposed	Disproportionately Impacted
Children	Children
Outdoor workers	Seniors
Farmers	People with pre-existing health conditions
Low-income	People with disabilities
First Responders	Health Care workers & Emergency Personnel
Underhoused individuals	Low-income
People & communities of color	Non-English speakers
	People & communities of color

28. Bankrate, "Americans Backtrack: Just 41% Say They Could Pay A \$1,000 Emergency Expense From Their Savings" (2025) <https://www.bankrate.com/f/102997/x/1c82ee6b93/january-fsp-press-release-final.pdf>

At-Risk Communities

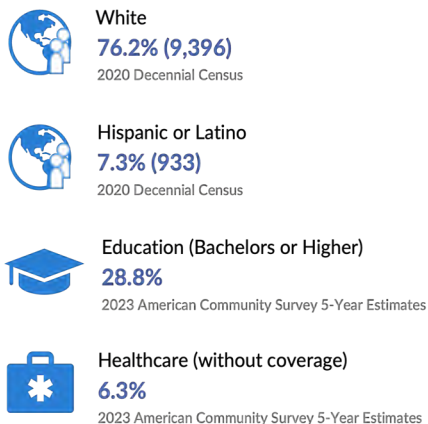


At Risk Communities Facts

- Most of the City's population classifies as white, at about 76%.²⁹ Other racial identities in the City include, Native Hawaiian or Other Pacific Islander; Alaska Native; Asian; and Black or African American.
- In Edgewood 28.8% of the residents have a bachelors degree or higher and 25.3% have a high school degree or equivalent.³⁰ Additionally, 24.3% of households speak a language other than English.³¹
- The poverty rate in Edgewood (4.7%) is lower than the Washington State average (10.3%).³² In Edgewood, 6.3% of the population live without healthcare coverage.³³



Figure 34: Demographics of Edgewood's Residents.



Source. U.S. Census Bureau, "Edgewood City, Washington Profile," https://data.census.gov/profile/Edgewood_city_Washington?g=160XX00US5320645. Accessed March 2025.

Key Climate Impacts

- A high portion of Edgewood residents are exposed to airborne particulates from diesel pollution. Many of those residents are also experiencing additional disparities including income constraints, pre-existing health conditions, and increased flood risk.
- Edgewood ranks high for environmental burden, meaning Edgewood residents are currently exposed to elevated levels of pollution and hazardous waste.
- Asthma rates and cancer diagnoses are prevalent for residents in Edgewood. Increased heat and smoke will further exacerbate existing health disparities.

29. U.S. Census Bureau, "Edgewood City, Washington Profile," https://data.census.gov/profile/Edgewood_city_Washington?g=160XX00US5320645. Accessed March 2025

30. See Above

31. See Above

32. See Above

33. See Above

At-Risk Communities



Proximity to Pollution

The Washington Tracking Network, developed by the Washington State Department of Health, provides publicly accessible data on a wide range of public health indicators. Its mapping tool presents various indices on a scale from 1 to 10, where 1 represents the lowest level of concern (lightest color) and 10 represents the highest (darkest color).

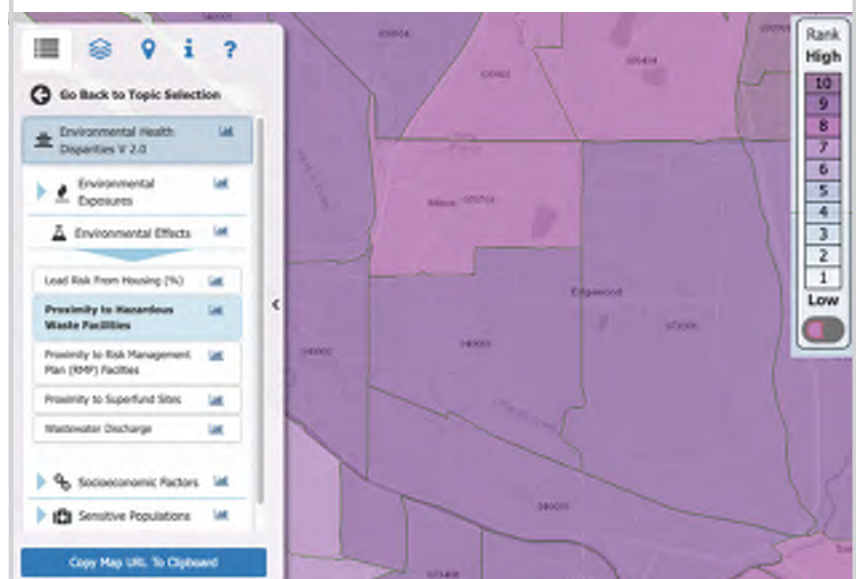
For this report, several key indices were examined, including Environmental Health Disparities, the Social Vulnerability Index, and Health Disparities. Two environmental exposure metrics in particular highlight elevated risks for Edgewood residents.

First, both of Edgewood's census tracts score a 9 out of 10 in proximity to hazardous waste facilities (see Figure 35). This indicates that all residents live near one or more facilities, increasing the potential risk of exposure in the event of a spill, leak, or accident.

Second, exposure to air pollution from vehicle traffic is notably high. The western census tract ranks a 10—placing it among the most heavily impacted areas in the state for traffic-related air pollution. The eastern tract ranks an 8, which also indicates a high level of exposure (see Figure 36 on page 45).

These findings underscore the importance of addressing environmental health risks in Edgewood, particularly for residents living near major roadways or industrial areas. Reducing exposure to pollution and enhancing monitoring in high-risk areas will be essential for improving community health outcomes.

Figure 35: Census Tracts Ranking at 9 in Proximity to Hazardous Waste Facilities

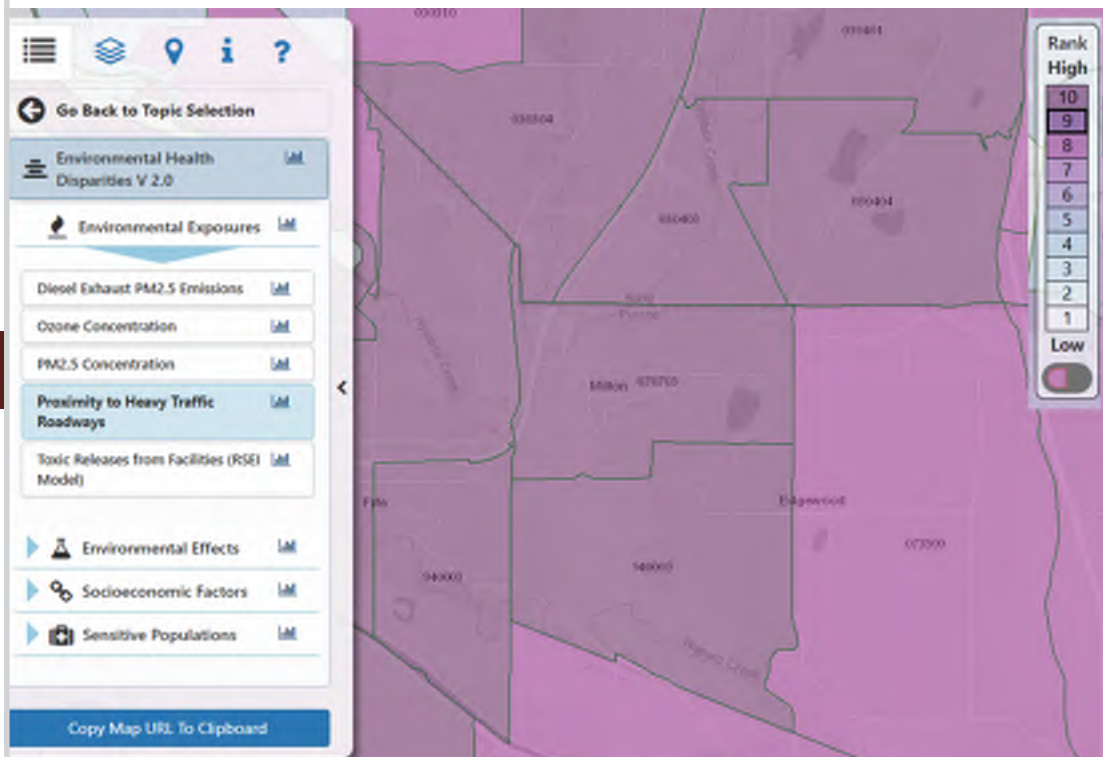


Source: Washington State Department of Health. Washington Environmental Health Disparities Map. <https://fortress.wa.gov/doh/wtnibl/WTNIBL/>. Accessed April 2025.

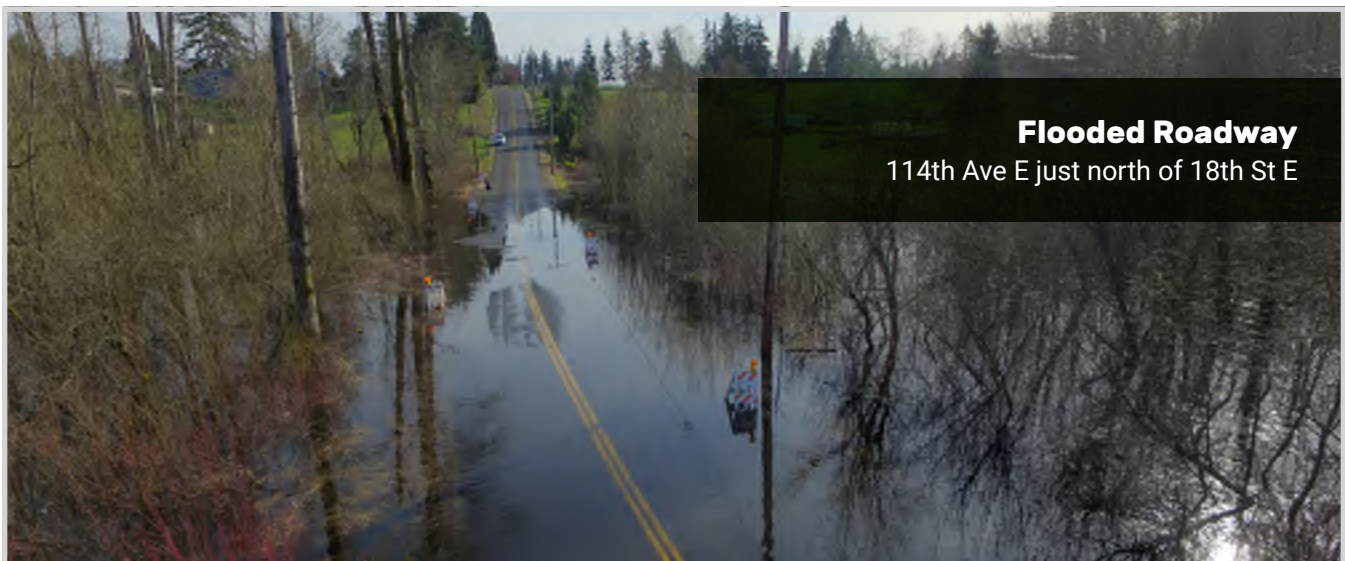
At-Risk Communities



Figure 36: Census Tracts that Rank Highest for Proximity to Heavy Roadway Traffic



Source: Washington State Department of Health. Washington Environmental Health Disparities Map. <https://fortress.wa.gov/doh/wtnibl/WTNIBL/>. Accessed April 2025.



Flooded Roadway
114th Ave E just north of 18th St E

At-Risk Communities

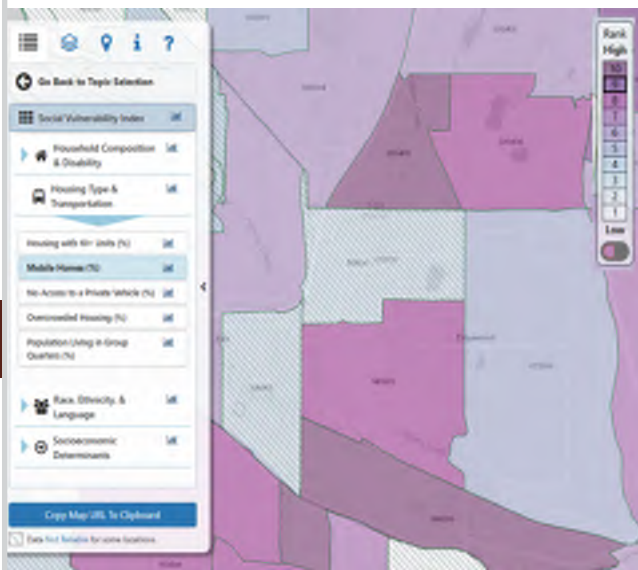


High-risk Housing

People are facing multiple climate and environmental exposures at any given time. Figure 37 shows that the census tract in Western Edgewood has a high percentage of mobile homes. That same census tract is at higher risk of air pollution due to proximity to heavy traffic roadways and includes areas identified by FEMA to be within a 100-year floodplain (see Figure 38).

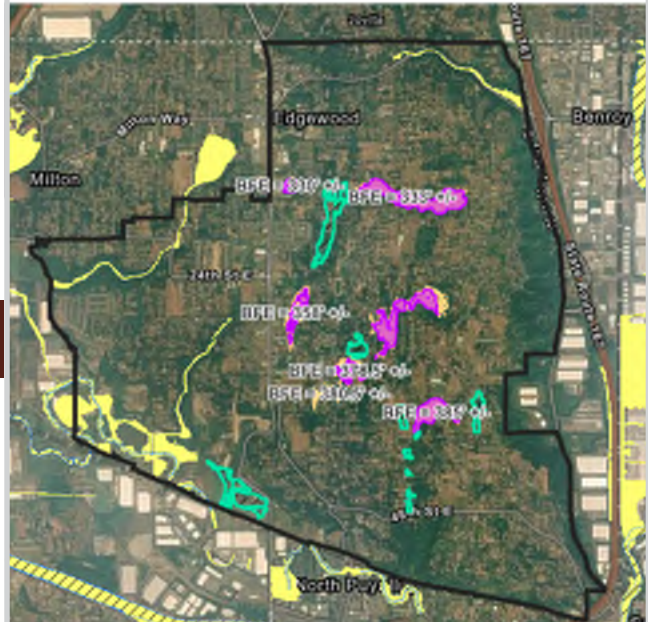
For example, the Cherrywood Manor Mobile Home Park is located in this area with higher exposure to air pollutants and a higher risk of flooding compared to other neighborhoods in Edgewood. This community is facing multiple exposures and may have fewer resources available to mitigate risk.

Figure 37: Census Tracts with the Highest Proportions of Mobile Homes



Source: Washington State Department of Health. Washington Environmental Health Disparities Map. <https://fortress.wa.gov/doh/wtnibl/WTNIBL/>. Accessed April 2025.

Figure 38: FEMA 100-year Floodplains in Edgewood (also see Figure 21 on page 28)



Source: City of Edgewood GIS Web Application, FEMA 100-year Floodplain. <https://edgewood-wa.maps.arcgis.com>. Accessed April 2025.

At-Risk Communities



Pre-existing Health Conditions

The U.S. Centers for Disease Control (CDC) defines highly burdened census tracts as those that rank at or above the 75th percentile for the overall Environmental Justice Index (EJI). The EJI is a combination of the percentile ranks for environmental burden, social vulnerability, and health vulnerability metrics for a given census tract. Though none of the three census tracts in the City of Edgewood qualify as highly burdened for the overall EJI, each tract qualifies as highly burdened for at least one health metric. All three census tracts rank above the 75th percentile for prevalence of asthma rates amongst residents (see red cells in Table 4). One census tract also ranks above the 75th percentile for prevalence of cancer diagnoses.

Figure 39: Locations of the U.S. Census Tracts in Edgewood

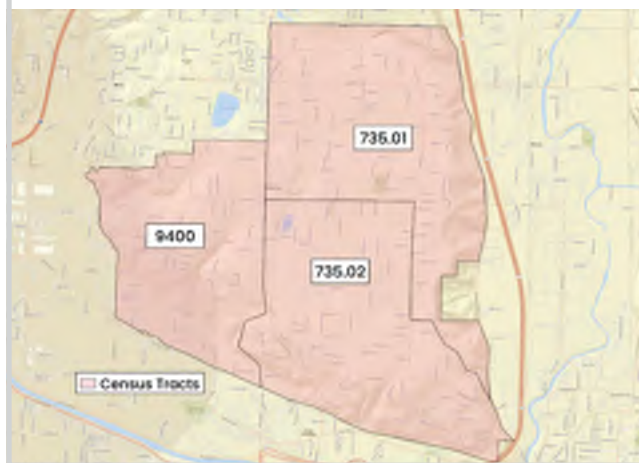


Table 4: CDC EJI and Health Indicator Data for the Census Tracts in Edgewood, WA. Red cells are those with high prevalence of a given indicator.

Census Tract #	Location	Population	Overall EJI Percentile	Asthma Rate Percentile	Chronic Heart Disease Percentile	Cancer Percentile	Diabetes Percentile	Mental Health Percentile
735.01	NE Edgewood	4,639	49 th	87 th	25 th	79 th	20 th	52 nd
735.02	S Edgewood	4,514	56 th	87 th	35 th	56 th	17 th	61 st
9400	W of Meridian Ave	3,684	54 th	77 th	31 st	62 nd	24 th	45 th

Source: EJI Explorer. <https://www.atsdr.cdc.gov/place-health/php/eji/eji-explorer.html>

People with preexisting health conditions are often disproportionately impacted by climate hazards. In Edgewood, poor air quality is already a persistent issue due to tailpipe emissions from nearby I-5, SR-161, and SR-167, as well as industrial pollution from the Puyallup River Valley and the Port of Tacoma. These constant sources of air pollution contribute to elevated rates of respiratory illness. As wildfire smoke events become more frequent and intense, they are likely to compound these existing air quality challenges, further aggravating respiratory conditions and increasing the risk of hospitalization for individuals with cardiovascular disease or diabetes. For residents who face barriers to medical treatment or emergency care, these overlapping exposures may significantly raise the risk of severe health outcomes or mortality.

Conclusions & Recommendations



Conclusion & Recommendations

Conclusion

The effects of climate change in Edgewood are already unfolding and are expected to intensify over the coming decades, reshaping the city's health, environment, infrastructure, and economy. Rising temperatures, increased wildfire smoke, and shifting precipitation patterns pose significant risks to public health—especially for vulnerable populations such as children, seniors, and individuals with pre-existing conditions. The city's infrastructure, including transportation routes, power systems, and emergency services, faces increasing strain from more frequent extreme weather events and heightened flood risk. At the same time, water resources and natural ecosystems are under pressure from prolonged droughts, declining snowpack, and reduced soil moisture, affecting both environmental quality and biodiversity.

Edgewood's economy is not insulated from these impacts. Both businesses and households will face growing financial burdens due to rising insurance premiums, higher energy costs, and potential supply chain disruptions. These economic stressors will disproportionately affect residents with limited financial resilience, compounding existing social and economic inequities. Additionally, climate-driven migration may place added pressure on already limited housing stock and social services.

This report highlights the urgent need for proactive planning, equity-centered adaptation strategies, and regional collaboration. Strengthening emergency response systems, protecting vital natural resources, and investing in climate-resilient infrastructure are essential steps to safeguard Edgewood's future. By anticipating challenges and prioritizing the needs of vulnerable communities, Edgewood can not only reduce risks but also build a more resilient and thriving community in the face of a changing climate.



Conclusion & Recommendations

Recommendations

The authors of this report recommend the following considerations as the City moves forward with their climate planning efforts.



Health & Wellbeing

- **Strengthen Emergency Response:** The City should work with regional partners to ensure there are policies and practices in place to support residents during extreme heat and wildfire events.
- **Prepare First Responders:** First responders should expect an increase in calls during heat and smoke events. The City might want to work with local law enforcement, fire fighters, and other first responders to ensure they are properly equipped for future demands.
- **Build Awareness:** Local government and health agencies should create and implement awareness campaigns, so the public knows how to remain safe during future heat and smoke events.
- **Prioritize Cooling:** The City should safeguard existing tree canopy and other shading infrastructure while also investing in future cooling strategies. Priority should be given to historically underserved areas of the city.
- **Address Existing Pollution:** As climate change is expected to exacerbate existing air quality issues, the City can mitigate some risk by adopting policies and practices that support reducing existing air pollutants from transportation and industrial processes.



Water Resources & Ecosystems

- **Protect Groundwater:** Additional research is needed to better understand how climate change will impact aquifer recharge because current reports are outdated and use population projections that are too low. Local agencies and water purveyors should develop a plan for addressing flooding while also ensuring aquifer recharge with the understanding that critical aquifer recharge areas may see increased flooding with climate change.
- **Promote Water Conservation:** The ways in which climate change impacts water systems are complex. Warmer temperatures and increased drought are likely to increase water demand. As demand for water increases so does the likelihood that the community will need to make tough decisions on how to prioritize water resources. The City may want to work with regional partners to examine existing water conservation and drought response and make necessary updates to policies.
- **Partner with Regional Tribes:** Tribes across Washington state are providing leadership and resources aimed at protecting wildlife. The City of Edgewood could consider supporting regional tribal efforts for salmon and fish conservation.
- **Mitigate Flood Areas:** Decisions will need to be made on how to manage flooding to mitigate damage to property and transportation routes while also ensuring water is not diverted from aquifer recharge zones.

Conclusion & Recommendations

Recommendations (cont.)

The authors of this report recommend the following considerations as the City moves forward with their climate planning efforts.



Infrastructure

- **Identify Flood Areas:** Identify residential, commercial, and public infrastructure and assets that are most at-risk of flooding and create programs to mitigate loss and risk.
- **Evaluate Transportation:** Additional research is needed to determine if increased flooding across the county will shut down transportation routes and impact emergency management and supply routes.
- **Wildland Urban Interface (WUI):** Though the risk is greater in drier parts of the state, homes, businesses, and other infrastructure in the WUI are subject to increasing fire risk. The City should investigate adopting policies and programs designed to mitigate loss of lives and property during fires.
- **Build Awareness:** The City should explore ways to prepare residents for the impacts of increased storms including how to mitigate property damage from fire, flooding, and wind.



Economic Impacts

- **Identify High Risk Properties & Businesses:** Additional analysis is needed to fully understand which properties are most at-risk of flooding and wildfire.
- **Consider Climate in Future Development:** As Edgewood continues to create policies addressing housing and commercial needs, it will be important to consider future climate projections when making development decisions.
- **Recognize Existing Economic Disparities:** Climate change will make existing socio-economic disparities worse. For example, residents in the Cherrywood Mobile Manor development already experience increased levels of particulate matter from high traffic corridors and other airborne pollutants from nearby industrial facilities. The rate of asthma in this census tract is elevated (see Table 4 on page 47). They are also at an increased risk of flooding compared to other areas within Edgewood. If low-income is a factor, people living in this area will have fewer resources to rebuild property or address health-related impacts.



At-Risk Communities





- **Engage At-Risk Communities:** It is extremely important for the City to engage people who are already experiencing disparities to participate in the climate planning project. The City can invite people with diverse experiences to sit on their climate advisory team and collaborate with community-based organizations to better understand the impacts and co-create solutions.
- **Prioritize Action:** Climate impacts vary throughout the city; some areas of Edgewood and some groups of people will suffer greater impact than others. The City should use this information to prioritize those residents expected to experience the greatest impact from climate change.

Appendices



Appendix A: Climate Data Summaries

Summary of Edgewood Temperatures

Measure	Scenario	Historical	2010 - 2039	2040 - 2069	2070 - 2099
 Average Annual Temperature³⁴	RCP4.5	52°F	54.1°F	56°F	56.9°F
	RCP8.5	52°F	54.5°F	57.3°F	60.5°F
Average temperatures will likely increase annually, up from a historical average of 52°F.					
 Max Winter Temperature³⁵	RCP4.5	47.5°F	49.4°F	51.4°F	52.2°F
	RCP8.5	47.5°F	49.9°F	52.2°F	55.6°F
The average maximum daytime temperatures in winter will likely increase, from a historical average of 47.5°F. This has implications for precipitation and winter recreation.					
 Max Summer Temperature³⁶	RCP4.5	75.2°F	78°F	80.2°F	81.3°F
	RCP8.5	75.2°F	78.3°F	82.2°F	85.8°F
The average maximum daytime temperatures in summer are projected to increase in both RCP scenarios. An increase of 10°F (RCP8.5) by the end of the century will impact all aspects of the community.					
 High Heat Days³⁷	RCP4.5	--	+ 0.4 day	+1 day	+1.7 days
	RCP8.5	--	+0.4 day	+2.3 days	+8.9 days
The number of days with maximum daytime temperatures above 100°F are expected to increase. High heat days impact highly sensitive groups and make outdoor work more dangerous.					

34. Source: Climate Toolbox

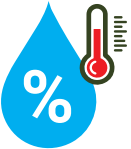
35. Source: Climate Toolbox


36. Source: Climate Toolbox

37. Source: Climate Toolbox

Appendix A: Climate Data Summaries

Summary of Edgewood Temperatures

Measure	Scenario	Historical	2010 - 2039	2040 - 2069	2070 - 2099
 Heat Index ³⁸	RCP4.5	2 days	5.1 days	11.4 days	15.4 days
	RCP8.5	2 days	6.3 days	17.7 days	38.3 days
The average number of days in a year with a maximum heat index greater than 90°F in a 30-year period compared to the 1980-2009 average. This increase will impact public health.					




Measure	Scenario	Historical	2020 - 2049	2050 - 2079	2070 - 2099
 Cooling Degree Days ³⁹	RCP4.5	Not Available	163 DD	284 DD	319 DD
	RCP8.5	Not Available	193 DD	549 DD	780 DD
Cooling degree days are the annual number of degree-days above an average daily temperature of 65°F. An increase in cooling degree days is an indicator of the protentional for higher cooling demand for buildings in the summer.					

38. Source: Climate Toolbox

39. Source: Climate Mapping for a Resilient Washington

Appendix A: Climate Data Summaries

Summary of Edgewood Precipitation & Drought

Measure	Scenario	Historical	2010 - 2039	2040 - 2069	2070 - 2099
 Precipitation⁴⁰	RCP4.5	40.8"	41.7"	42.5"	42.7"
	RCP8.5	40.8"	41.4"	42.6"	44.3"
Precipitation is projected to increase slightly. Winters are projected to be slightly wetter, but summers are projected to be increasingly dry, which can strain water availability.					
 Extreme Precipitation⁴¹	RCP4.5	--	not available	not available	not available
	RCP8.5	--	not available	+17%	+24%
The potential for heavy rains associated with a 25-year storm are projected to increase modestly. There could be cascading effects from a widespread increase in extreme storms.					
 Drought⁴²	RCP4.5	--	not available	not available	not available
	RCP8.5	--	not available	+27%	+39%
Projections are for increased drought in summer months due to evaporative losses from temperature increases. In recent years Washington has experienced prolonged drought.					




40. Source: Climate Toolbox

41. Source: Climate Mapping for a Resilient Washington

42. Source: Climate Mapping for a Resilient Washington

Appendix A: Climate Data Summaries

Summary of Edgewood Wildfire Risk

Measure	Scenario	Historical	2010 - 2039	2040 - 2069	2070 - 2099
 Annual "high" fire danger days ⁴³	RCP4.5	73 days	78.9 days	81.3 days	not available
	RCP8.5	73 days	81.6 days	87.4 days	not available
Days of high fire danger are projected to increase by 8 to 14 days by the end of the century. Other areas in the region may have increased fire danger, which will increase the risk of smoke.					
 # change in "high" fire danger days ⁴⁴	RCP4.5	--	+5 days	+8 days	not available
	RCP8.5	--	+8 days	+11 days	not available
This measure shows the change in the number of days of high fire danger days by the end of the century.					
Measure	Scenario	Historical	2020 - 2049	2040 - 2069	2070 - 2099
 Likelihood of wildfire ⁴⁵	RCP4.5	--	+3%	+23%	+33%
	RCP8.5	--	+7%	+37%	+3%
The likelihood of wildfire is projected to increase 50% or more by mid-century over the historic average. Increases in Pierce County and Edgewood are low compared to other parts of Washington.					

43. Source: Climate Toolbox

44. Source: Climate Mapping for a Resilient Washington

45. Source: Climate Mapping for a Resilient Washington

Appendix B: Climate Tool Summaries

Tool Overview – Climate Toolbox

<https://climatetoolbox.org/>

Purpose

The Climate Toolbox is a collection of tools that provide summaries of climate and hydrology data on maps and graphs so there is no need to download or process the data yourself to obtain the important information the data contain. The tools provide maps of climate metrics providing a regional view of past and real-time conditions, forecasts and projections. There are graphs and dashboards of location-specific climate information illustrating past and real-time conditions, forecasts and projections. The tools make it easy for an individual or community to access climate data for their area.

The projected models utilized are from phase 5 of the Coupled Model Intercomparison Project (CMIP5) from the Intergovernmental Panel on Climate Change (IPCC), and these represent the best science for climate modelling. The future climate data used here are future projections from 20 climate models and 2 scenarios (RCP4.5 and 8.5) which were downscaled to a ~4-km resolution over the contiguous US using the MACAv2 statistical method with the gridMET training dataset.

Source

The Climate Toolbox was created by University of California Merced. It was funded by the NOAA Climate Program Office, the Climate Impacts Research Consortium (NOAA RISA), the USGS NW and North Central Climate Adaptation Science Centers, the National Integrated Drought Information System and the USDA NW Climate Hub.

Details

Future Climate Model Outputs

The future climate data used here are future projections from 20 climate models and 2 scenarios (RCP4.5 and 8.5) which were downscaled to a ~4-km resolution over the contiguous US using the MACAv2 statistical method with the gridMET training dataset.

Future Climate Scenarios

The CMIP5 models ran future projections utilizing future scenarios in terms of Representative Concentration Pathways (RCPs). The “High Emissions Scenario (RCP8.5)” represents a future pathway similar to a business-as-usual continuation of our emissions back in 2010. The “Low Emissions Scenario (RCP4.5)” represents a future of curtailing greenhouse gas emissions through greenhouse gas mitigation efforts.

Statistical Downscaling

The CMIP5 model outputs were statistically downscaled using the Multivariate Adaptive Constructed Analogs (MACA, Abatzoglou and Brown, 2012) method version 2 using the gridMET (Abatzoglou, 2012) training dataset. This method removes biases and increases the resolution of the model outputs.

Future Hydrology & Streamflow Projection Data

The Variable Infiltration Capacity (VIC) hydrology model was forced with the downscaled climate projections to produce gridded hydrology outputs over the Northwest US. These gridded outputs were routed into streams to produce non-regulated natural streamflow projections (i.e., without reservoirs and irrigation withdrawals).

Tools used for this report

Future Time Series

Hegewisch, K.C., Abatzoglou, J.T., ‘Future Time Series’ Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Future Boxplots

Hegewisch, K.C. and Abatzoglou, J.T., ‘Future Boxplots’ web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Climate Mapper

Hegewisch, K.C. and J.T. Abatzoglou, ‘Climate Mapper’ web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Historic Drought Stripes

Hegewisch, K.C. and Abatzoglou, J.T., ‘Historical Drought Stripes’ web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Future Streamflows

Hegewisch, K.C., Abatzoglou, J.T., and Chegwidan, O., ‘Future Streamflows’ web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Future Tribal Climate Tool

Krosby, M., Hegewisch, K.C., Norheim, R., Mauger, G., Yazzie, K., H. Morgan. 2018. “Tribal Climate Tool” web tool. Climate Impacts Group (<https://cig.uw.edu/resources/tribal-vulnerability-assessment-resources/>) and Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Historical Climate Tracker

Hegewisch, K.C. and Abatzoglou, J.T., ‘Historical Climate Tracker’ web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Appendix B: Climate Tool Summaries

Tool Overview – Climate Mapping for a Resilient Washington

<https://data.cig.uw.edu/climatemapping/>

Purpose

The Climate Mapping for a Resilient Washington web tool provides state agencies, local governments and communities in Washington State with data and information on the expected changes in the climate and related natural hazards. Information is intended to inform assessment and planning for climate resilience. You can use this web tool to customize information for hazard and sector-specific climate impacts with multiple future scenarios and time periods as appropriate for planning applications in your area.

Source

The Climate Mapping for a Resilient Washington tool was created by the Climate Impacts Group at the University of Washington.

Details

Future Climate Scenarios

The future climate data are from global climate models from the Coupled Model Intercomparison Project. Most of the climate data are from CMIP Phase 5 (CMIP5; Taylor et al., 2012) while the stream temperature data is from Phase 3 (CMIP3 ; Meehl et al., 2007).

Climate Downscaling

The raw global climate model outputs have a spatial resolution of about 100-km by 100-km. These data are “downscaled” to finer resolutions using two methods: statistical downscaling from Multivariate Adaptive Constructed Analog (MACA) (Abatzoglou and Brown, 2012), and dynamical downscaling using the Weather Research and Forecasting model (Salathé et al., 2010 and Dulière, Salathé et al., 2013),

Hydrology, Wildfire and Stream Temperature Projections

Hydrology data is generated using the Variable Infiltration Capacity (VIC) and Precipitation Runoff Modeling System (Liang et al., 1994; Regan et al., 2018). Wildfire modeling uses the dynamic vegetation model MC2 (Bachelet, 2015). Stream temperature modeling uses the NorWeST stream temperature model (Isaak et al., 2017).

Tools used for this report

Precipitation & Heavy Precipitation

Salathé, E.P., Leung, L.R., Qian, Y., Zhang, Y. 2010. Regional climate model projections for the State of Washington. Climatic Change 102(1-2): 51-75. <https://doi.org/10.1007/s10584-010-9849-y> accessed April 2025

Snowpack

Chegwidden, O. S., B. Nijssen, D. E. Rupp, P. W. Mote, 2017: Hydrologic Response of the Columbia River System to Climate Change [Data set]. Zenodo. doi:10.5281/zenodo.854763. accessed April 2025

Climate Mapper

Hegewisch, K.C. and J.T. Abatzoglou, 'Climate Mapper' web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Historic Drought Stripes

Hegewisch, K.C. and Abatzoglou, J.T.. 'Historical Drought Stripes' web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Future Streamflows

Hegewisch, K.C., Abatzoglou, J.T., and Chegwidden, O., 'Future Streamflows' web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Future Tribal Climate Tool

Krosby, M., Hegewisch, K.C., Norheim, R., Mauger, G., Yazzie, K., H. Morgan. 2018. "Tribal Climate Tool" web tool. Climate Impacts Group (<https://cig.uw.edu/resources/tribal-vulnerability-assessment-resources/>) and Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Historical Climate Tracker

Hegewisch, K.C. and Abatzoglou, J.T.. 'Historical Climate Tracker' web tool. Climate Toolbox (<https://climatetoolbox.org/>) accessed April 2025

Appendix C: Equity Analysis



Objectives

The City of Edgewood, Washington is undertaking an update to their comprehensive plan. As part of this scope of work, Measure Meant, in partnership with Lotus Engineering and Sustainability, is leading the Climate Action component as mandated by House Bill 1181 which now requires cities and counties to incorporate climate mitigation and resilience policies into their comprehensive plan updates. In service of engagement and research initiatives as part of the Climate Action component, the consultant team has conducted an Equity Analysis of the City. This document summarizes research from agencies at the State, Federal, and local level. Research will be focused on environmental justice, social vulnerability, and economic metrics to help paint a picture of what the City of Edgewood looks like in 2025. The purpose of the Equity Analysis is four-fold:

1. Ensure Edgewood's climate planning prioritizes those most at-risk of climate impacts
2. Help create targeted, tailored communications for the planning process.
3. Inform the focus of the Plan's climate vulnerability and risk assessment.
4. Inform equitable policy recommendations.

Washington State's Equity Statement:

The Washington State Office of Equity envisions everyone in Washington having full access to the opportunities and resources they need to flourish and achieve their full potential.

The work of the office must:

- Be guided by the following principles of equity:
 - Equity requires developing, strengthening, and supporting policies and procedures that distribute and prioritize resources to those who have been historically and currently marginalized, including tribes;
 - Equity requires the elimination of systemic barriers that have been deeply entrenched in systems of inequality and oppression; and
 - Equity achieves procedural and outcome fairness, promoting dignity, honor, and respect for all people;
- Complement and not supplant the work of the statutory commissions.

The original occupants of the City of Edgewood include members of many tribes, including, but not limited to, the Puyallup Tribe of Indians and Muckleshoot Indian Tribe. Members of these tribes still reside in the area now known as Edgewood today. In fact, the far eastern edge of the Puyallup Off-Reservation Trust Land overlaps with the far western part of the City's boundary. This area was colonized in the mid- to late 1800s and officially became a city in 1996.⁴⁶ Edgewood is located in far north-central Pierce County, in the west central part of Washington state, just east of the City of Tacoma. This area is relatively new in terms of development, which creates unique economic, environmental, and social challenges.

Land Acknowledgement:⁴⁷

ʔukʷədiid čəʔ ʔuhigwəd txʷəl tiitʔ ʔa čəʔ ʔal tə swatxʷixʷtxwəd ʔə tiitʔ puyaləpabš. ʔa ti dxʷʔa ti swatxʷixʷtxwəd ʔə tiitʔ puyaləpabš ʔəstəʔatʰlii tulʰal tudiʔ tuhaʔkʷ. didiʔtʔ ʔa həlgwəʔ ʔal ti sləxiil. dxʷəstəʔatʰliis həlgwəʔ ɡwəl ʰuyayus həlgwəʔ ɡwəl ʰuʰaʰxwəd həlgwəʔ tiitʔ bədədəʔs ɡwəl tiʰdxʷ həlgwəʔ tiitʔ ʔiisəds həlgwəʔ ɡwəl ʰuʔalalus həlgwəʔ ɡwəl ʰutxwəlšucidəb. ʰwəla...b ʔə tiitʔ tuyəlʰyəlabs.

We gratefully honor and acknowledge that we rest on the traditional lands of the Puyallup People. The Puyallup people have lived on this land since the beginning of time. They are still here today. They live, work, raise their children, take care of their community, practice their traditional ways and speak the Twulshootseed language – just as their ancestors did.

The area now known as Edgewood was colonized in the mid- to late 1800s and officially became a city in 1996.⁴⁸ Edgewood is located in far north-central Pierce County, in the west central part of Washington state, just east of the City of Tacoma.

This area is relatively new in terms of development, which creates unique economic, environmental, and social challenges. Since 2000, Edgewood has had an annual growth rate of 1.8% far exceed Pierce County 1.3% growth.⁴⁹

The following sources were used to compile this analysis:

- US Census American Community Survey
- Climate and Economic Justice Screening Tool
- Environmental Justice Screening and Mapping Tool
- The Washington Tracking Network from Washington State Department of Health

46. See: <https://web.archive.org/web/20091029134930/http://www.cityofedgewood.org/CITY.HTM>

47. City of Edgewood Comprehensive Plan

48. Ibid

49. City of Edgewood Comprehensive Plan, Housing Chapter

Appendix C: Equity Analysis

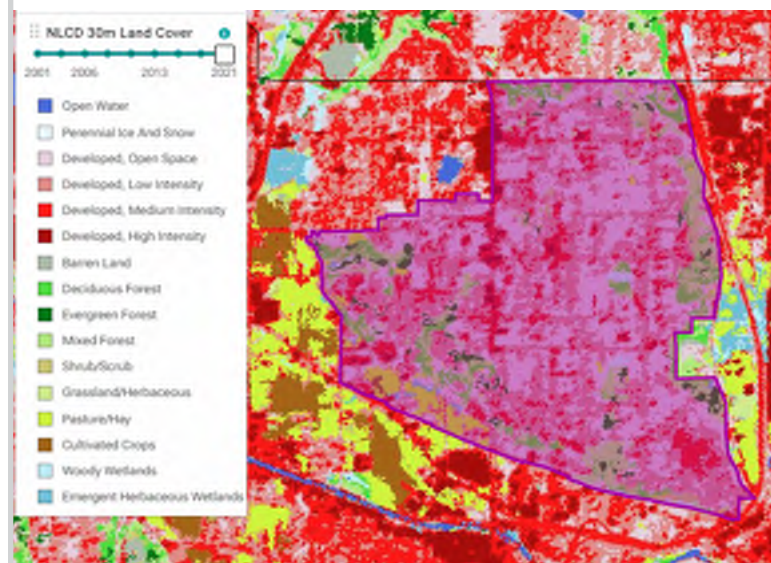


Community Overview

Geography

The City of Edgewood is located in west-central Washington. Edgewood is bordered by several small suburbs of the City of Tacoma, including Milton and Fife to the West, Lakeland South to the North, Puyallup to the South, and Lake Tapps to the East. The City's climate is classified as temperate with warm, dry summers.⁵⁰ Edgewood is found at the top of the North Hill, an elevated area to the north of the City of Puyallup.⁵¹ Edgewood is currently a "bedroom" or commuter community and has a higher proportion of green spaces to developed land than other suburbs in the area (see Figure 40).

Figure 40: Land cover map of the City of Edgewood.



Demographic Makeup

Per the 2023 American Community Survey 1-Year Estimates, the resident population of Edgewood was 12,683 in 2023. Educational attainment varies throughout Edgewood. It is estimated that 28.8% of residents have a Bachelor's degree or higher, and 25.2% of the population has a high school or equivalent degree.⁵²

50. See: <https://www.arcgis.com/apps/instant/atlas/index.html?appid=0cd1cdee853c413a84bfe4b9a6931f0d&webmap=9966020554ae4b468c5ca9b62739e2a2>.

51. See: <https://movetotacoma.com/whats-it-like-living-in-edgewood-washington/>.

52. See: https://data.census.gov/profile/Edgewood_city,_Washington?g=160XX00US5320645.

Appendix C: Equity Analysis



Racial and Ethnic Makeup

Per the US Census, the majority of the population in the City of Edgewood considers themselves to be not of Hispanic or Latino origin (72%). Racial identities in the City include American Indian and Alaska Native; Asian; Black or African American; and Native Hawaiian or Other Pacific Islander. The vast majority of the city's population classifies as white (76%). "Other" includes racial identities outside of those already listed. Since 2012, persons of color have increased 11%.⁵³ See Table 5 for more information.

Table 5: Racial and ethnic identity populations and percents in Edgewood.⁵⁴

Racial/Ethnic Identity	Population	% of Total Population
American Indian and Alaska Native	91	0.7%
Asian	807	6.4%
Black or African American	306	2.4%
Hispanic or Latino	933	7.4%
Native Hawaiian or Other Pacific Islander	91	0.7%
Not Hispanic or Latino	9,173	72.3%
Other	334	2.6%
White	9,396	76.2%

Economic Makeup

The median household income in Edgewood is \$114,342 per 2023 ACS data, which is considerably higher than the state median household income of \$94,605.⁵⁵ Edgewood is currently a bedroom community, where residents live and commute to work outside of the city. The city has few commercial properties and is working to incentivize commercial development by expediting permitting and targeted fee reduction.⁵⁶ The city is currently working to implement its plan for developing a Town Center.

The poverty rate in Edgewood is 4.7%, far below the Washington state average of 10.3%. Additionally, housing values in Edgewood are very high. Housing values above \$500,000 make up 76.4% of the housing stock in Edgewood, and housing values above \$300,000 total 94.8% of houses in the city.⁵⁷ Currently, the average home value in Edgewood is \$430,600.⁵⁸

53. City of Edgewood Comprehensive Plan

54. See: https://data.census.gov/profile/Edgewood_city,_Washington?g=160XX00US5320645.

55. Ibid.

56. See: <https://wa-edgewood.civicplus.com/329/Economic-Development>.

57. See: https://data.census.gov/profile/Edgewood_city,_Washington?g=160XX00US5320645.

58. See: <https://wa-edgewood.civicplus.com/329/Economic-Development>.

Appendix C: Equity Analysis



Community Data Analysis

Environmental Data

The Climate and Economic Justice Screening Tool (CEJST) uses datasets to evaluate communities for potential environmental, economic, and health burdens. If a Census Tract meets thresholds for at least one environmental and one economic indicator, the tract is considered “Disadvantaged.” Table 6 below notes the one tract in Edgewood that is deemed Partially Disadvantaged as well as which indicators exceeded the threshold.

Table 6: CEJST Disadvantaged Census Tracts in Edgewood, WA.

Disadvantaged Census Tract	Population	Area	CEJST Indicator
53053940009	3,141	West of Meridian St	Partial overlap with Federally Recognized Tribal Land (55% of land area), 99 th percentile in expected population loss from climate change and natural hazards.

The Environmental Justice Screening Tool (EJScreen) estimates a Census Block Group’s exposure to various environmental and air quality metrics. In Edgewood, the environmental burden indicator metric that has several block groups in the 90th percentile and above compared to all other Block Groups in the US is the exposure to diesel particulate matter pollution. Particulate matter are microscopic air pollutants that can harm human health. For this metric, particulate matter comes from the combustion of diesel in engines. See Figure 41 on page 64 which shows the Census Block Groups that rank in the highest percentiles for exposure to diesel particulate matter.

One other significant metric in the EJScreen tool is proximity to US EPA-designated Risk Management Plan facilities. These facilities are required to have risk plans due to the potential for chemical accidents. One block group in the southern part of Edgewood falls in the 90th percentile for proximity to these facilities. See Figure 42 on page 64.

Appendix C: Equity Analysis



Figure 41: Census Block Groups with High Exposure to Diesel Particulate Matter Emissions. Orange/darker blocks rank in the 90th percentile and above.

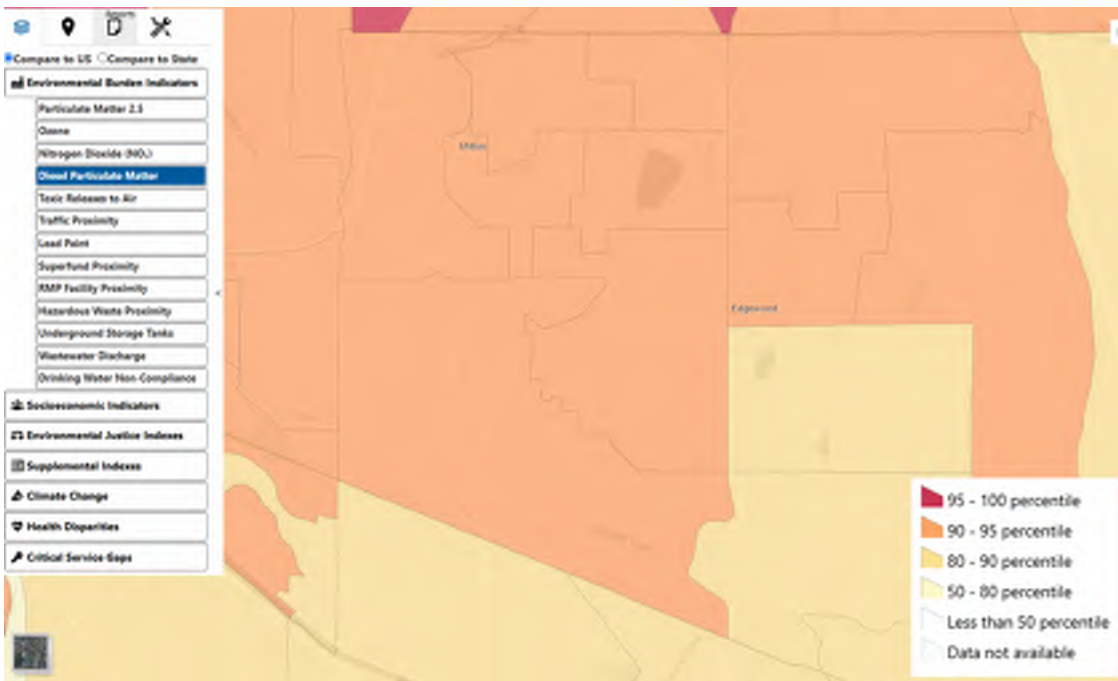
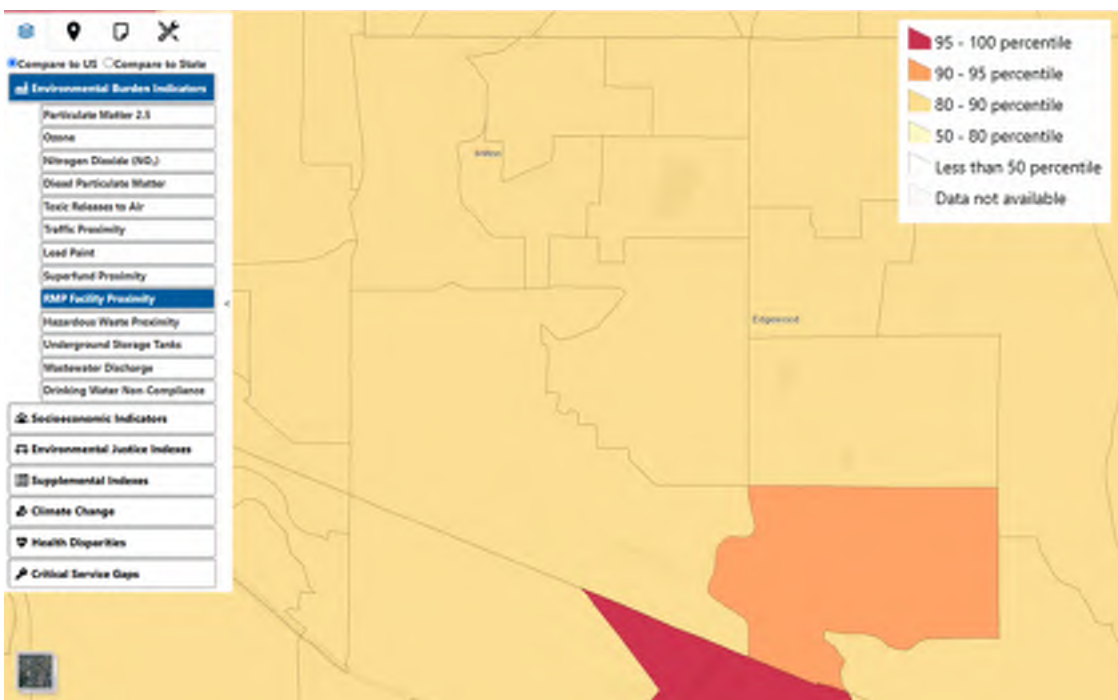


Figure 42: Census Block Groups with close proximity to US EPA-designated Risk Management Plan facilities. Orange/darker blocks rank in the 90th percentile and above (closest proximity to facilities).



Appendix C: Equity Analysis

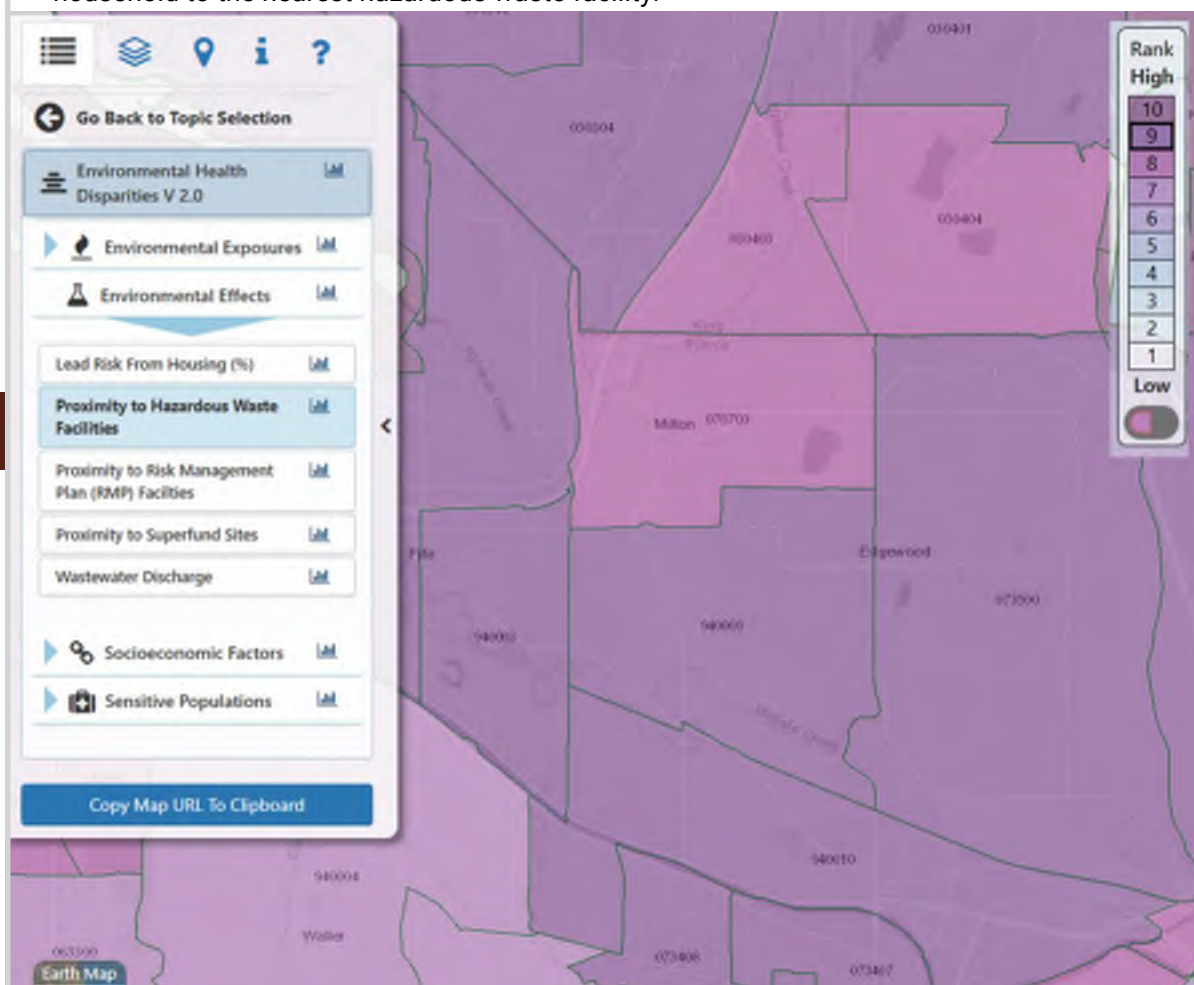


Social Vulnerability and Other Environmental Metrics

The Washington Tracking Network is a publicly available resource for public health related data developed by the Washington State Department of Health. Metrics and indices in the mapping tool are measured on a scale of 1-10, 1 being the low end of the metric (lighter colors) and 10 being the highest (darkest colors). Several sections of this mapping tool were analyzed for this Equity Analysis, including Environmental Health Disparities, Social Vulnerability Index, and Health Disparities.

When analyzing the Environmental Health Disparity metrics, two metrics stand out. The first metric is proximity to hazardous waste facilities (see Figure 43). Both census tracts in Edgewood rank a 9 in the scoring of this metric, meaning that all of the City is located close to one or more hazardous waste facilities and are at risk of the negative impacts of a spill or accident at these facilities. The other metric is proximity to heavy traffic roadways. One census tract ranks a 10 for this metric, meaning it is the most exposed to air pollution from vehicles and trucks (see Figure 44 on page 66).

Figure 43: Census tracts ranking at 9 in proximity to hazardous waste facilities (darkest polygons). This means these polygons have short distances for the average household to the nearest hazardous waste facility.

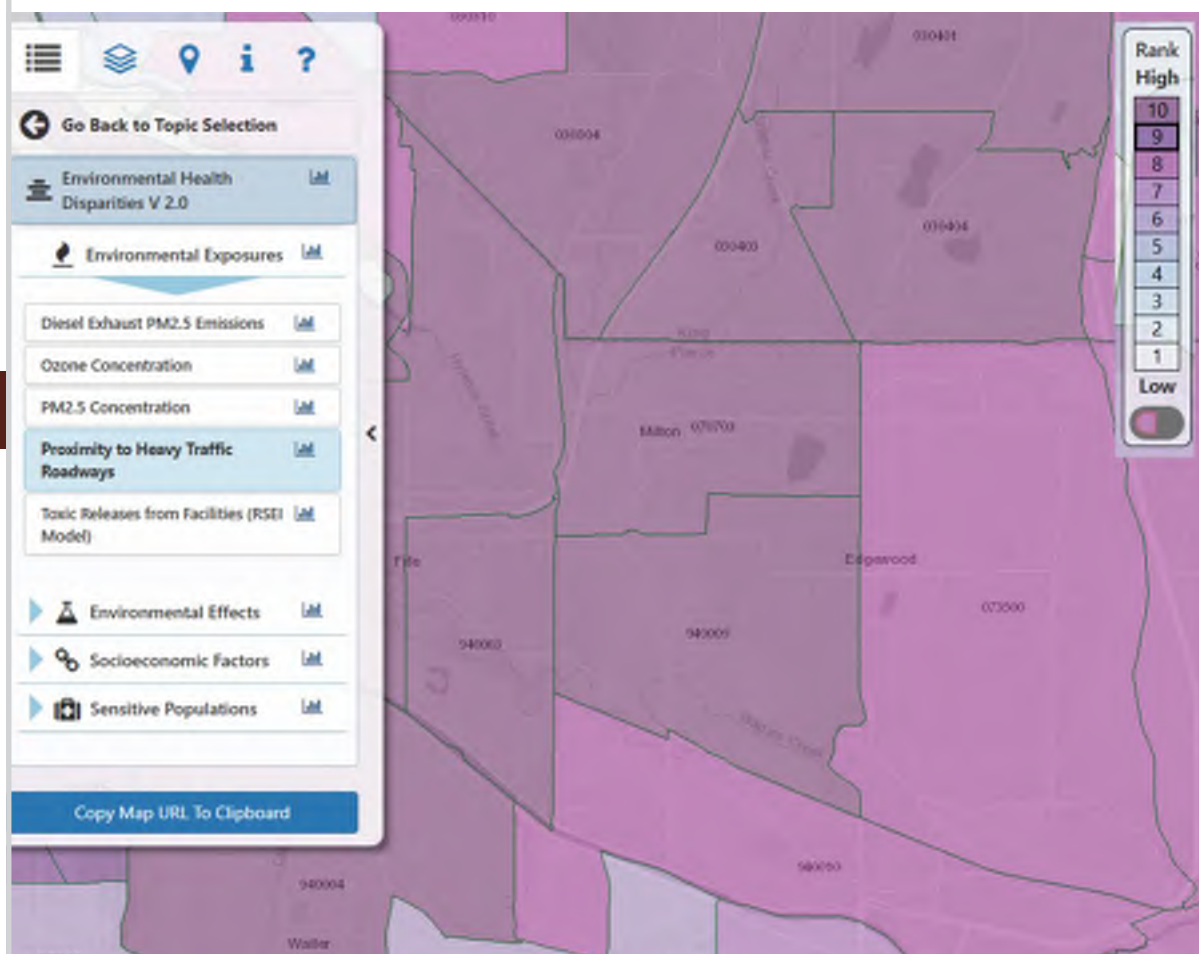


Appendix C: Equity Analysis



In analyzing the Social Vulnerability Index metrics, we found one metric of note for the City. One census tract ranked high for the proportion of occupied housing units as mobile homes (see Figure 45 on page 67). This census tract also overlaps with the Puyallup Off-Reservation Trust Lands.

Figure 44: Census tracts that rank the highest (10) for proximity to heavy traffic roadways. This tract in Edgewood is tract #940009.

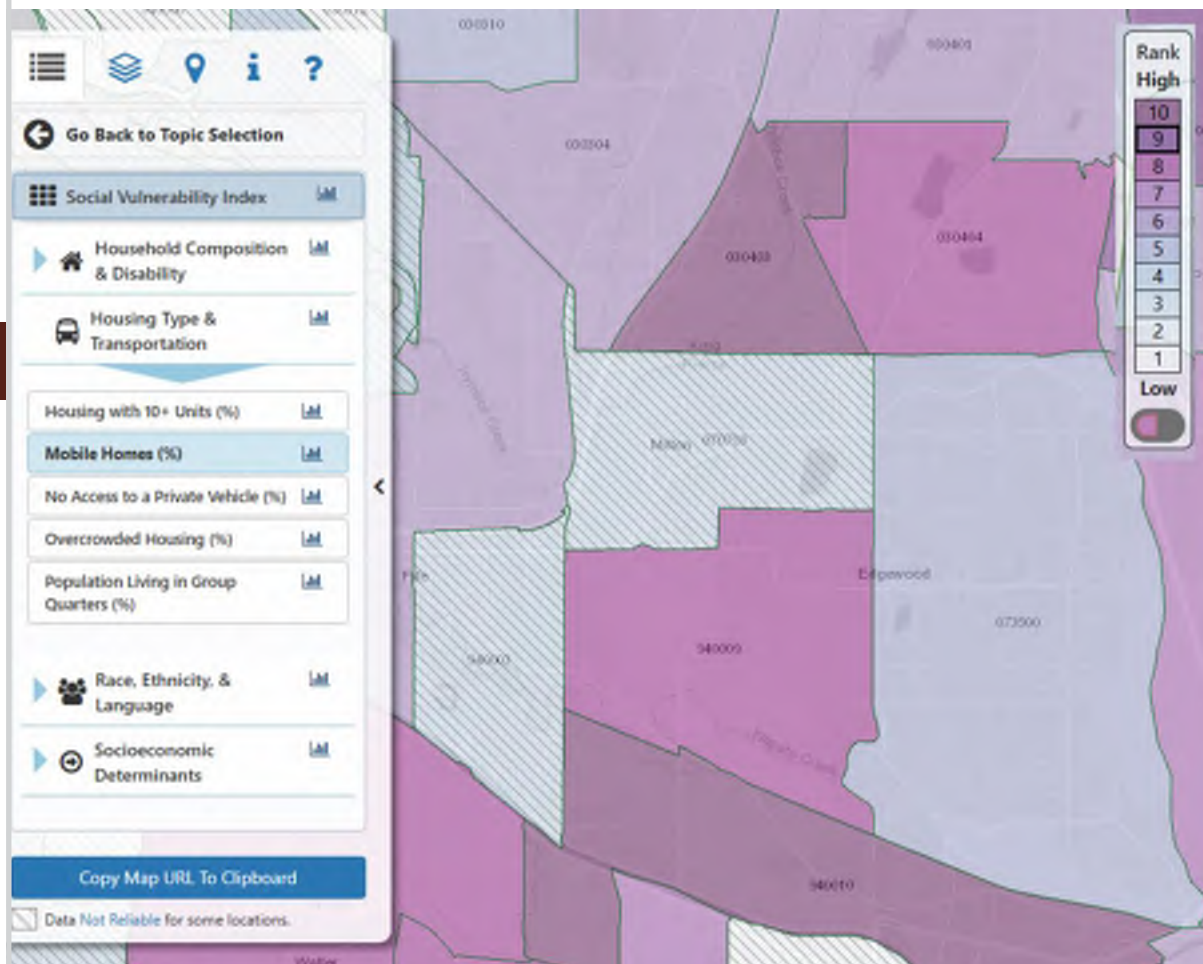


Appendix C: Equity Analysis



Finally, two Health Disparities metrics stood out in the Washington Tracking Network tool for the City of Edgewood. One metric is the instance of mortality rate of cardiovascular disease (see Figure 46 on page 68). The other metric is the proportion of the population ages 19-64 who have no health insurance coverage (see Figure 47 on page 69). The same census tract has high ratings for both of these metrics as well as the Environmental Health Disparity and Social Vulnerability Index metrics.

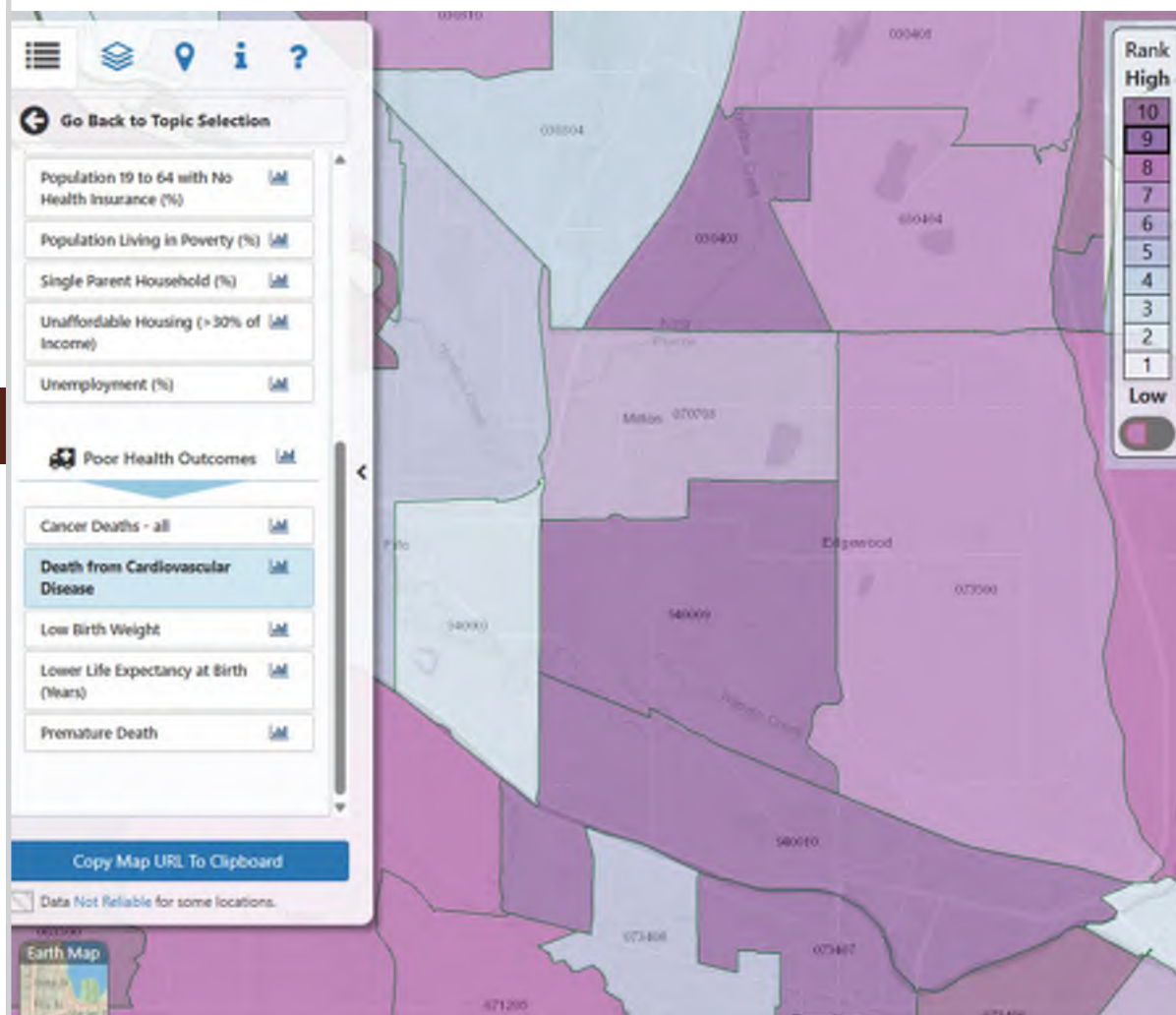
Figure 45: Census tracts with high proportions of mobile homes. This tract in Edgewood is tract #940009, which ranks 8 out of 10 for proportion of housing units as mobile homes.



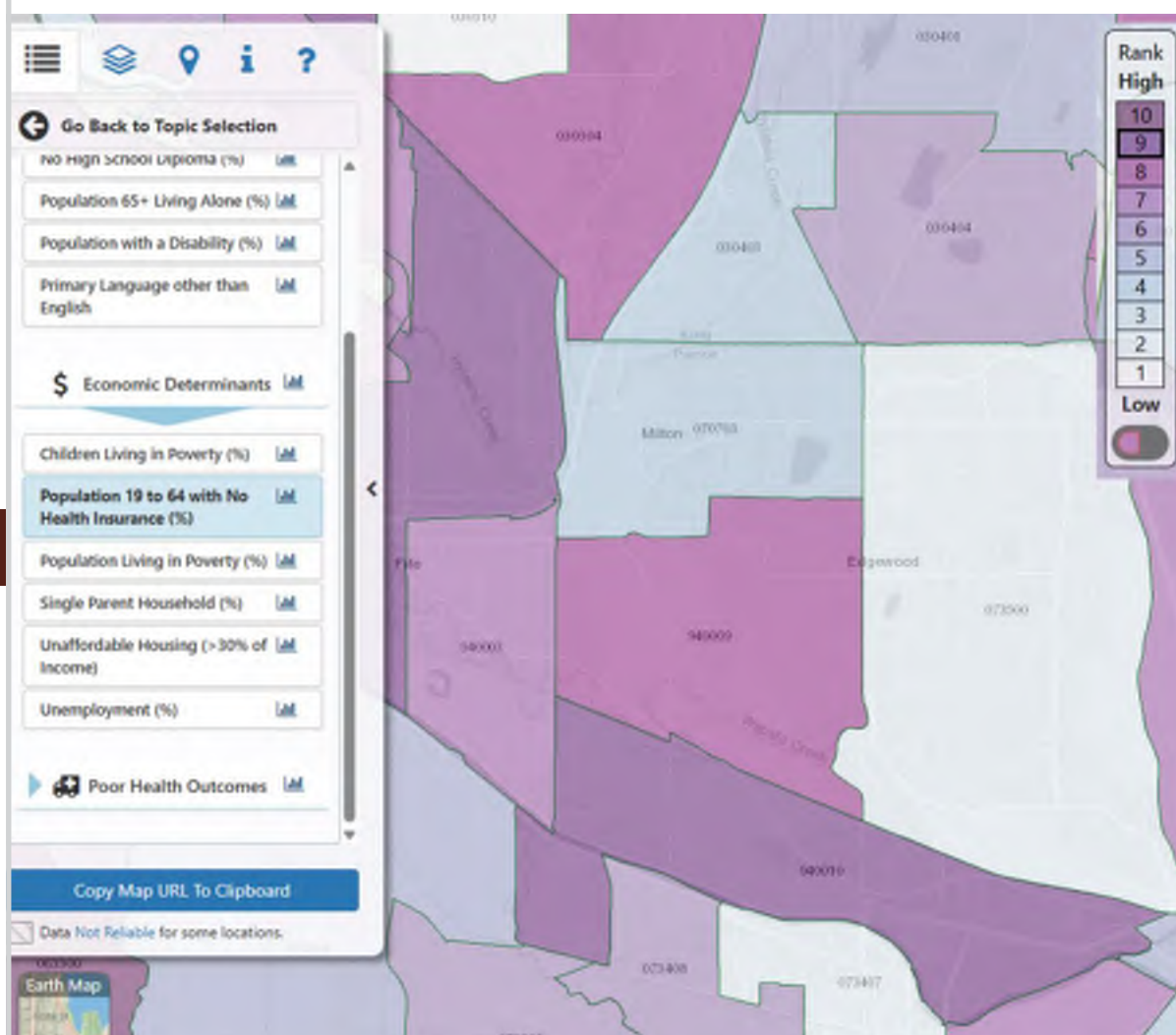
Appendix C: Equity Analysis



Figure 46: Census tracts with high rates of mortality from cardiovascular disease. Tract #940009 ranks a 9 out of 10 for this metric.



Tract #940009 ranks 8 out of 10 for this metric.

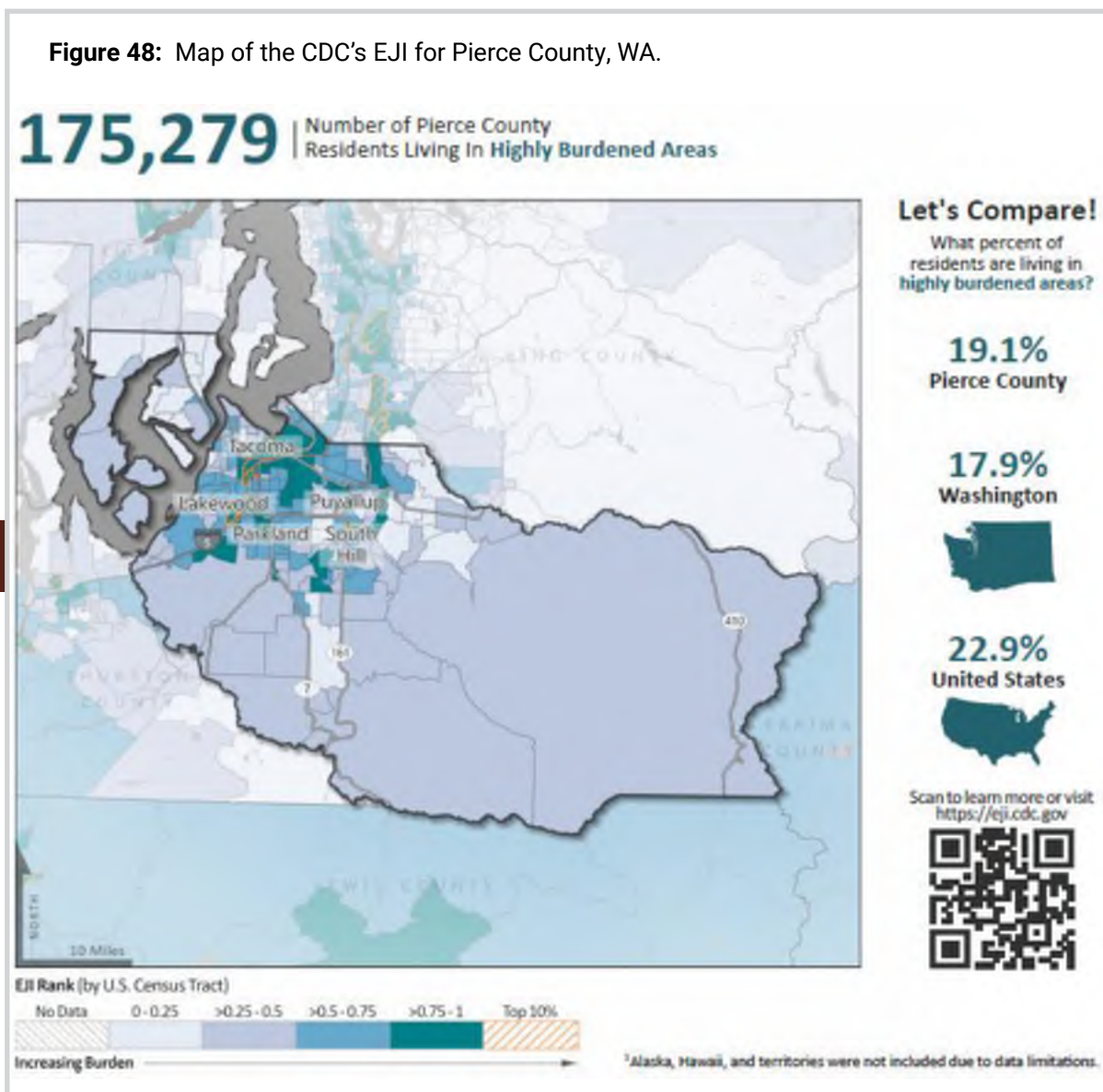


Appendix C: Equity Analysis



The US Center for Disease Control and Prevention (CDC) calculates an index called the Environmental Justice Index (EJI). The EJI “measures the cumulative impacts of environmental injustice in communities across the United States; the ranks are based on the percentile rankings of all tracts in the contiguous US.” A map of the EJI for Census Tracts in Pierce County, WA is depicted below; the CDC EJI creates summary infographics for Counties in the US and provides data for EJI metrics down to the Census Tract level for analysis. The darker colors in Figure 48 represent a higher EJI score, or an increased burden. More than 175,000 residents in Pierce County are living in highly burdened areas, roughly 19% of the County’s population. In comparison, nearly 18% of all Washington state residents are living in highly burdened areas while nearly 23% of US residents are living in highly burdened areas (see Figure 48).

Figure 48: Map of the CDC’s EJI for Pierce County, WA.



Appendix C: Equity Analysis

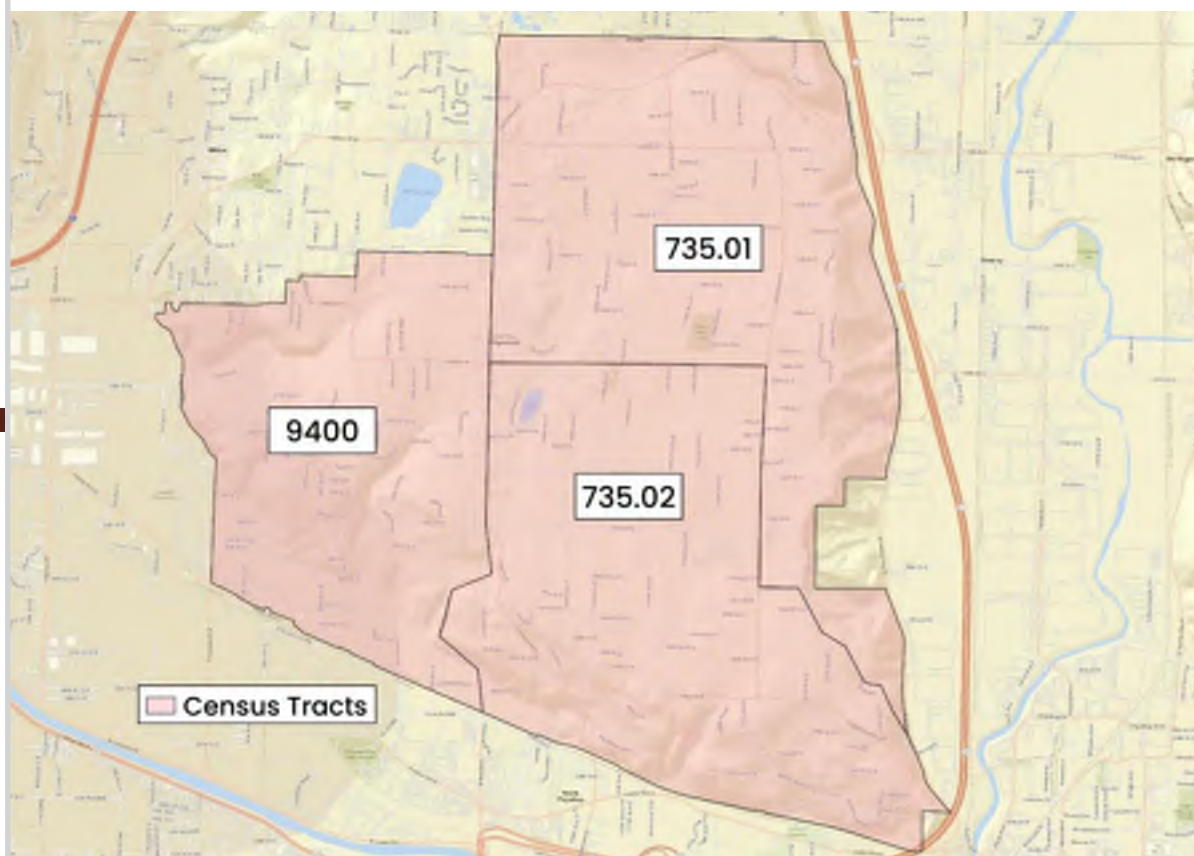


The CDC defines highly burdened census tracts as those that rank at or above the 75th percentile for the overall environmental justice index (EJI). The EJI is a combination of the percentile ranks for environmental burden, social vulnerability, and health vulnerability metrics for a given census tract. Though none of the three census tracts in the City of Edgewood qualify as highly burdened for the overall EJI, each tract qualifies as highly burdened for at least one health metric. All three census tracts rank above the 75th percentile for prevalence of asthma rates amongst residents. One census tract also ranks above the 75th percentile for prevalence of cancer diagnoses. See Table 7 and Figure 49.

Table 7: CDC EJI and Health Indicator Data for the Census Tracts in Edgewood, WA.
Red cells are those with high prevalence of a given indicator.

Census Tract #	Location	Population	Overall EJI Percentile	Asthma Rate Percentile	Chronic Heart Disease Percentile	Cancer Percentile	Diabetes Percentile	Mental Health Percentile
735.01	NE Edgewood	4,639	49 th	87 th	25 th	79 th	20 th	52 nd
735.02	S Edgewood	4,514	56 th	87 th	35 th	56 th	17 th	61 st
9400	W of Meridian Ave	3,684	54 th	77 th	31 st	62 nd	24 th	45 th

Figure 49: Locations of the Census Tracts in Edgewood, WA.



Appendix C: Equity Analysis



Conclusion

This equity analysis provides a snapshot of environmental, social, and health-related conditions in the City of Edgewood as of 2025, offering valuable insight to guide the City's future policy decisions. Although Edgewood is generally characterized by high household incomes, low poverty rates, and a predominantly white population, localized disparities persist across a range of climate-related vulnerabilities.

These findings highlight that even in communities with overall economic advantage, pockets of vulnerability can persist and may be overlooked without intentional analysis. By using equity-focused tools and data, the City can more effectively identify at-risk populations and design policies that are responsive to their needs. This approach ensures that climate resilience strategies not only address environmental risks but also promote social well-being and long-term community health.

Figures & Tables List

Figures

Figure 1: IPCC Representative Concentration Pathways (RCP)	6
Figure 2: Increase in average annual temperatures in Edgewood throughout this century under both GHG emissions scenarios.	10
Figure 3: Days with Heat Index $\geq 90^{\circ}\text{F}$ in Edgewood under RCP4.5.	11
Figure 4: Days with Heat Index $\geq 90^{\circ}\text{F}$ in Edgewood under RCP8.5.	11
Figure 5: Regional "High" Fire Danger Days (Jun-Jul-Aug), RCP8.5, 2040 vs. Historical Simulation 1971-2000.	12
Figure 6: Unplanned hospitalizations due to heat-related illnesses during the 2021 Heat Dome in the Seattle area.	13
Figure 7: Percent Change in April 1st Snowpack in Pierce County, RCP8.5.	14
Figure 8: April 1st Snow Water Equivalent at The Summit at Snoqualmie, RCP8.5.	15
Figure 9: April 1st Snow Water Equivalent at Crystal Mountain Resort, RCP8.5.	15
Figure 10: Changes in the Length of the Growing Season in Edgewood, RCP8.5.	16
Figure 11: Location of Aquifer Recharge Areas in Edgewood.	19
Figure 12: Potholes in Edgewood, Represented by Floodplains and Floodways	19
Figure 13: Standardized Precipitation Index in Edgewood, 1980-2025.	20
Figure 14: April 1st Snow Water Equivalent at Mount Rainier, RCP8.5.	21
Figure 15: Projected Non-Regulated Streamflow for the Carbon River, 2070-2099 (bias-corrected)	22
Figure 16: Projected Non-Regulated Streamflow for the Puyallup River, 2070-2099 (not bias-corrected)	22
Figure 17: Projected August Average Stream Temperature for the Puyallup River, 2070-2099 (moderate emissions)	23
Figure 18: Summer Soil Moisture in Edgewood, RCP8.5.	24
Figure 19: Inventory of Passive Open Spaces in Edgewood.	24
Figure 20: Magnitude of Extreme Precipitation under RCP8.5.	27
Figure 21: Location of city identified floodways, flood hazard areas, and 100-year floodplains	28
Figure 22: Wildland Urban Interface in Edgewood	30
Figure 23: Increase in Annual High Fire Danger Days in Edgewood (RCP8.5)	30
Figure 24: Grid Infrastructure Cross-Reference between Historical Wildfires and FEMA Risk Rating.	31
Figure 25: Land Surface Temperatures on June 25, 2021, during the Heat Dome.	32
Figure 26: Demographic Information for the City of Edgewood.	34
Figure 27: Growth Projection by Sector Employment	34
Figure 28: States Where Homeowners Insurance Was Unprofitable	38
Figure 29: U.S. Billion-Dollar Weather & Climate Disasters	38
Figure 30: Annual Cooling Degree Days in Edgewood, 1979-2024	39
Figure 31: Percentage of Residential Properties at Risk of Flooding	40
Figure 32: Future flood risk of property located inside Cherrywood Mobile Manor over the next 30 years shown as a percent increase from historic averages.	40
Figure 33: Erosion and Landslide Risk Areas in Edgewood.	41
Figure 34: Demographics of Edgewood's Residents.	43
Figure 35: Census Tracts Ranking at 9 in Proximity to Hazardous Waste Facilities.	44
Figure 36: Census Tracts that Rank Highest for Proximity to Heavy Roadway Traffic	45
Figure 37: Census Tracts with the Highest Proportions of Mobile Homes	46
Figure 38: FEMA 100-year Floodplains in Edgewood.	46
Figure 39: Locations of the U.S. Census Tracts in Edgewood.	47
Figure 40: Land cover map of the City of Edgewood.	61
Figure 41: Census Block Groups with High Exposure to Diesel Particulate Matter Emissions.	64
Figure 42: Census Block Groups with close proximity to US EPA-designated Risk Management Plan facilities.	64
Figure 43: Census tracts ranking at 9 in proximity to hazardous waste facilities	65
Figure 44: Census tracts that rank the highest (10) for proximity to heavy traffic roadways.	66
Figure 45: Census tracts with high proportions of mobile homes.	67
Figure 46: Census tracts with high rates of mortality from cardiovascular disease.	68
Figure 47: Census tracts with a high proportion of the population ages 19-64 who do not have health insurance coverage.	69
Figure 48: Map of the CDC's EJI for Pierce County, WA.	70
Figure 49: Locations of the Census Tracts in Edgewood, WA.	71

Tables

Table 1: Future Projections of Precipitation in Edgewood in Inches.	20
Table 2: Washington State Department of Labor & Industries Outdoor Heat Exposure Rules.	36
Table 3: Communities that are Disproportionately Exposed and Disproportionately Impacted by Climate Change.	42
Table 4: CDC EJI and Health Indicator Data for the Census Tracts in Edgewood, WA.	47
Table 5: Racial and ethnic identity populations and percents in Edgewood.	62
Table 6: CEJST Disadvantaged Census Tracts in Edgewood, WA.	63
Table 7: CDC EJI and Health Indicator Data for the Census Tracts in Edgewood, WA.	71