SPECIAL MEETING NOTICE/AGENDA OF THE

SPOKANE CLIMATE RESILIENCE AND SUSTAINABILITY BOARD

MEETING OF Thursday, May 22, 2025
3:15 P.M. – CITY HALL LILAC ROOM AND MICROSOFT TEAMS

The Spokane Climate Resilience and Sustainability Board will be holding a Special Meeting at 3:15 p.m. on Thursday, May 22, 2025, online via Microsoft Teams or in person in the Lilac Room in City Hall, 808 W. Spokane Falls Blvd, Spokane, WA. The purpose of the meeting is to consider and discuss items on the attached agenda.

The special meeting will be open to the public. The meeting can be attended in-person or virtually via the Teams link on page 2 of the agenda. Written public comment will be accepted at eracrsb@spokanecity.org up to one hour prior to the start of the meeting. Verbal testimony may also be accepted during the meeting.

SEE ATTACHED AGENDA

Spencer Gardner
Planning Services Director

AMERICANS WITH DISABILITIES ACT (ADA) INFORMATION: The City of Spokane is committed to providing equal access to its facilities, programs and services for persons with disabilities. Individuals requesting reasonable accommodations or further information may call, write, or email Risk Management at 509.625.6221, 808 W. Spokane Falls Blvd, Spokane, WA, 99201; or mlowmaster@spokanecity.org. Persons who are deaf or hard of hearing may contact Risk Management through the Washington Relay Service at 7-1-1. Please contact us forty-eight (48) hours before the meeting date.

Special Meeting Notice CRSB 5.22.25

Final Audit Report 2025-04-21

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Climate Resilience and Sustainability Board Agenda

Special Meeting
Thursday, May 22, 2025
3:15 PM
Hybrid - City Hall Lilac Room / Microsoft Teams

Virtual Meeting Link - See Below for Information

TIMES GIVEN ARE AN ESTIMATE AND ARE SUBJECT TO CHANGE

Public Comment Period:

3 minutes each | Citizens are invited to address the Climate Resilience and Sustainability Board on any topic not on the agenda.

Board Briefing Session:

3:15 – 3:20	1. Roll Call 2. Approve 5/8/2025 meeting minutes 3. Chair Report 4. Secretary Report 5. Approval of current agenda	Planning Staff All Brian Henning Jon Snyder All

Workshops:

3:20 – 4:45	1. Climate Planning Technical Update #3 – Final CRVA	BERK Consulting & Maren Murphy
4:45 – 5:00	2. *Community Change Grant Resolution	Jon Snyder

Adjournment: The next regularly scheduled CRSB meeting will be held Thursday, June 12, 2025.

* Items denoted with an asterisk may include final action taken by the Board. Written public comments will be accepted at eracrsb@spokanecity.org on these items up to one hour prior to the start of the meeting. Verbal testimony may also be accepted during the meeting.

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Climate Resilience and Sustainability Board Meeting Information

Thursday, May 22, 2025

The Climate Resilience and Sustainability Board will be held in a hybrid format. Members of the public are welcome to attend online using the following information.

Meeting ID: 281 422 115 938 Passcode: ZB9he2RX	**Microsoft Teams** **Join on your computer, mobile app or room device** **Join the meeting now** Meeting ID: 281 422 115 938 Passcode: ZB9he2RX Download Teams | Join on the web **Join with a video conferencing device** cityofspokane@m.webex.com Video Conference ID: 119 394 019 7 Alternate VTC instructions **Or call in (audio only)** +1 323-618-1887,,286265197# United States, Los Angeles Phone Conference ID: 286 265 197# Find a local number

Please note that public comments will be taken during the meeting, but the public is encouraged to continue to submit their comments or questions in writing to: eracrsb@spokanecity.org. Written public comments will be accepted on these items up to one hour prior to the start of the meeting.

The audio proceedings of the Climate Resilience and Sustainability Board meetings will be recorded and are available online.

Climate Resilience and Sustainability Board

Upcoming Agenda Items
(All items are subject to change)

June 12, 2025 Climate Resilience and Sustainability Board (180 minutes available) Hybrid		
Workshop		
Time	**Item**	**Presenter**
2:00-2:15	Agenda review	
2:15-		
May/June	**Special Meeting possible: 3-hour tour of Public Works Facilities (Waste to Energy, Water Reclamation, Water) – date/time TBD**	
Hearing Items		

July 10, 2025 Climate Resilience and Sustainability Board (180 minutes available) Hybrid		
Workshop		
Time	**Item**	**Presenter**
2:00-2:15	Briefing Session	
2:15-		
Hearing Items		

August 14, 2025 Climate Resilience and Sustainability Board (180 minutes available) Hybrid		
Workshop		
Time	**Item**	**Presenter**
2:00-2:15	Briefing Session	
2:15-3:45	Climate Planning – Phase 2 Kick-off & Public Engagement	Maren Murphy
Hearing Items		

Climate Resilience and Sustainability Board – Meeting Minutes Draft

Thursday, May 8, 2025
City Council Briefing Center
Meeting called to order at 2:00 PM by Brian Henning

Public Comment: Citizens are invited to address the Climate Resilience and Sustainability Board on any topic not on the agenda. 3 Minutes each.

- *None*

Attendance:

- Board Members Present: Brian Henning, Kathryn Alexander, Ryan Arnold, Kerry Brooks, Claire Cooney, Kevin Fagan, Larry Luton, Bob Lutz, Lea Molina, Kit Parker, Hala Zahalqa
- Board Members Not Present: Amanda Parrish, Happy Avery, Elyse Hochstadt
- *Quorum Present*: Yes
- Staff Members Present: Jon Snyder, Tirrell Black, Emily King, Adam McDaniel, Marlene Feist, Sarah Sirott, KayCee Downey, Maren Murphy, Nicole White, Adam McDaniel, Kelly Thomas, Kirstin Davis, Logan Callen, Marcia Davis, Sarah Nuss

Minutes: Minutes from 4/10/2025 approved unanimously.

Briefing Session:

- **Chair Report** – Brian Henning
  - Brian started off by welcoming our two new board members, Claire Cooney and Ryan Arnold. He gave the members a moment to introduce themselves.
    - Claire is going into her senior year at Gonzaga, majoring in Environmental Studies and minors in Biology and Sustainable Business. She also works at the Climate Institute. She is looking forward to being the youth member on the board.
    - Ryan is the Regional Business Manager at Avista covering the Spokane territory. His background is in sustainability. He started in energy efficiency in low-income housing about 20 years ago. He has an MBA in Sustainable Business and has taught at Gonzaga. He has worked in sustainability off and on throughout his life. He is excited to be joining the board.
  - Brian discussed the formation of the Sustainability Action Workgroup. Three people volunteered for the workgroup, and all were appointed. Larry Luton, Kathryn Alexander, and Kevin Fagan will be serving on the workgroup, along with Amanda Parrish and Brian as ex-officio members, and staffed by Jon Snyder. The workgroup has their first meeting scheduled for later this month. Everyone is welcome to bring anything directly to the board for consideration, this just brings another venue for doing additional work, especially for something that might require additional research or collaboration.
  - Brian also wanted to talk about where things are with respect to the climate crisis. Scientists tell us that we need to stay under one and half degrees of additional warming. We are about at that now, which is pretty scary since that was supposed to be the limit. The Paris Climate agreement sets its upper target at two degrees, which is the most we think we could withstand. We are currently on a trajectory of three degrees of warming. Physics, chemistry, and biology don't care who is in office or what budget challenges we have. We have to figure out ways we can move forward the best we can within the means that we have which is one of our goals as a group, both in long term planning as well as immediate actions we can pursue on behalf of our community. Today we will be receiving an update from the Gonzaga Climate Institute, but Brian wanted to bring up that multiple local agencies are partners on an EPA

Community Change Grant that was awarded last December. It has been having challenges and most recently last Friday, we received official notice that it is to be terminated. We are evaluating what options we have for pursuing protection of this. Brian suspects that even if people in this community don't choose to pursue legal action, he thinks others across the country will do so. He has optimism that many of these will be successful and hopes that ours will be as well. The type of work being done with the grant is to improve public facilities such as libraries and community centers, help some of our most vulnerable communities, and a re-granting opportunity to be able to allow the community to identify projects that it thinks should be pursued. He encouraged people to apply, as the time allowed for the work to be done won't be extended. When the funds are made available, we'll want to move as quickly as we can. We are also going to pursue other sources of funding for those applications.

- **Secretary Report -** Jon Snyder
    - Jon brought up that there had been some discussion of doing a tour of city facilities during a meeting. June, July, or August would be good a time for us to do that. There are a few different areas we could go to. There is a CSO tank within a 5-minute walk of City Hall. The water facility where we get our water - we have a well next to our hydropower facility is also interesting. We can look at some things that are crucially important to the city and sustainability. Jon wanted to put that out there, a decision hasn't been made yet, but that could be tailored according to interests of the board. People can send their thoughts to Jon and Brian.

<u>Current Agenda</u>: The current agenda was approved with the addition of an item at the end of the agenda to discuss a possible resolution related to the EPA Community Change Grant to consider developing and if approved, sending to City Council.

<u>Informational, Discussion and/or Action Items:</u>

- 2025 State Legislature Sustainability Bills and Budget Items Recap
    - Presentation provided by: Jon Snyder and Marlene Feist
    - Questions asked and answered.
    - Discussion ensued.
        - Documents provided during the meeting are attached to the end of the minutes.

- 2025 Federal Legislative and Budget Update
    - Presentation provided by: Jon Snyder, Adam McDaniel, & Brian Kristjansson
    - Questions asked and answered.
    - Discussion ensued.

- Climate Resilience Project Overview
    - Presentation provided by: Dante Jester & Mary Condon
    - Questions asked and answered.
    - Discussion ensued.

- Sustainability Action Plan Continuing Discussion
    - Presentation provided by: Jon Snyder
    - Questions asked and answered.
    - Discussion ensued.

- Discussion of Resolution Regarding EPA Community Change Grant
    - Presentation provided by: Brian Henning
    - Questions asked and answered.
    - Discussion ensued.

  Motion

- *I [Kerry Brooks] move to encourage the Mayor to coordinate with Gonzaga in determining appropriate legal and/or other action in support of the EPA Community Change Grant. Seconded by Kathryn Alexander.*

Deliberation ensued.

  - *Kerry Brooks offered a friendly amendment to say "encourage the Mayor to coordinate with Gonzaga in determining appropriate legal and/or other action in support of the EPA Community Change Grant and report out at the special meeting of May 22nd."*

Motion passes unanimously 11-0-0.

Meeting Adjourned at 4:25 PM.

A special meeting of the Climate Resilience and Sustainability Board will be held virtually on May 22, 2025. The next regularly scheduled Climate Resilience and Sustainability Board Meeting is on Thursday, June 12, 2025.

2025-27 Omnibus Operating Budget
Conference Proposal
Department of Health
Environmental Public Health
(Dollars in Thousands)

	2025-27		4-Yr Total
	NGF-O	Total Budget	NGF-O
2023-25 Estimated Expenditures	**26,403**	**217,715**	**54,518**
2025-27 Maintenance Level	**24,612**	**144,848**	**49,733**
Difference from 2023-25	-1,791	-72,867	-4,785
% Change from 2023-25	-6.8%	-33.5%	-17.4%
Policy Other Changes:			
1. Child Asthma SeaTac	0	300	0
2. Climate Change Response Strategy	0	382	0
3. Climate Hlth Adaption Initiative	0	-504	0
4. Climate Impact Worker Safety	0	-6,000	0
5. Climate Plus Grants for Schools	0	-430	0
6. Dedicated Water Fund Swap	-3,335	0	-3,335
7. Division Reductions - EPH	-2,228	-2,228	-4,490
8. Drinking Water Dedicated Funds	0	2,724	0
9. Environmental Justice Council Staff	0	750	0
10. EV Site Evaluation	-80	-80	-161
11. HEAL Capacity Grant	0	4,000	0
12. Implementing HEAL Act	0	1,124	0
13. Private Detention Inspection	317	317	636
Policy -- Other Total	**-5,326**	**355**	**-7,350**
Total Policy Changes	**-5,326**	**355**	**-7,350**
2025-27 Policy Level	**19,286**	**145,203**	**42,383**
Difference from 2023-25	-7,117	-72,512	-12,135
% Change from 2023-25	-27.0%	-33.3%	-44.8%

Comments:

1. **Child Asthma SeaTac**

   One-time funding is provided to address asthma rates in King County among children residing within 10 miles of the Seattle-Tacoma airport. (Climate Commitment Account-State) (One-Time)

2. **Climate Change Response Strategy**

   Funding is provided for 1 FTE to focus on extreme heat and wildfire smoke as part of the state's Integrated Climate Response Strategy, and to assist with coordination of the interagency work group created in Chapter 169, Laws of 2023 (E2SHB 1170). (Climate Commitment Account-State) (Ongoing)

NGF-O = GF-S + ELT + OpPath + Wkfrc Educ Invest + Fair Start for Kids

3. **Climate Hlth Adaption Initiative**

   Funding is reduced for the Climate Health Adaptation Initiative (CHAI), which connects localities with federal and state resources for climate action plans. (Climate Commitment Account-State) (Ongoing)

4. **Climate Impact Worker Safety**

   Funding for the climate impact workforce is reduced. This program can use funding to provide pass-through grants to community-based organizations for workplace health and safety for certain workers affected by climate impacts. (Climate Commitment Account-State) (Ongoing)

5. **Climate Plus Grants for Schools**

   Funding for grants to small school districts updating their HVAC systems using Small District Modernization Grants is removed. (Climate Commitment Account-State) (Ongoing)

6. **Dedicated Water Fund Swap**

   Funding from General Fund-State is reduced and replaced with the Safe Drinking Water Account for eligible expenses. (General Fund-State; Safe Drinking Water Account-State) (One-Time)

7. **Division Reductions - EPH**

   Funding for the Environmental Public Health (EPH) division is reduced. (General Fund-State) (Ongoing)

8. **Drinking Water Dedicated Funds**

   Expenditure authority is provided for maintenance of drinking water systems, to certify water system operators, implement the federal Safe Drinking Water Act, and to administer safe drinking water loans. (Safe Drinking Water Account-State; Drinking Water Assistance Account-Federal; Waterworks Operator Certification-State; other accounts) (One-Time)

9. **Environmental Justice Council Staff**

   Funding is provided for translation services and staff for the Environmental Justice Council. The operations manager will research issues, engage communities and Tribes around environmental justice priorities; and oversee council strategy, policy, and operations. (Climate Commitment Account-State) (Ongoing)

10. **EV Site Evaluation**

    Funding for community engagement for electric vehicle site review is removed. (General Fund-State) (Ongoing)

11. **HEAL Capacity Grant**

    Funding is provided to continue availability of grants to overburdened communities and vulnerable populations to provide guidance to the seven state agencies identified in the Healthy Environment for All (HEAL) Act. (Climate Commitment Account-State) (One-Time)

12. **Implementing HEAL Act**

    Funding is provided to transition the Washington Environmental Health Disparities Map developed under the HEAL Act to a new platform, and to maintain the map. (Climate Commitment Account-State) (Ongoing)

NGF-O = GF-S + ELT + OpPath + Wkfrc Educ Invest + Fair Start for Kids

BRIEFING PAPER: Climate Risk and Vulnerability Assessment Draft Discussion
City of Spokane
Climate Resilience and Sustainability Board
5/22/2025

Note to presenters: The CRSB is interested in having workshops with about 2/3 presenter time and 1/3 of a workshop reserved for questions and discussion.

Subject:
Planning staff, and the consultant team led by BERK, will facilitate a discussion with the CRSB regarding the draft Climate Vulnerability and Risk Assessment (CRVA). The discussion will focus on gathering input on the attached draft CRVA. Review of this document prior to the meeting is recommended since the focus will be on discussion and not a summary of the document's findings. This document provides the framework for evaluating impacts to climate hazards and identifying risks to different sectors, resources, and communities. These results will be used to inform the policy update process for the Comprehensive Plan's new Climate Planning requirements.

Background:
The City of Spokane is developing climate planning under HB 1181 to enhance community resilience, reduce greenhouse gas emissions, and prioritize environmental justice to avoid worsening environmental health disparities. Climate planning is part of the City's general periodic update requirement for the Comprehensive Plan, which is due in 2026. This work is supported by WA Dept. of Commerce climate planning grant which is funded from Washington's Climate Commitment Act. The Climate Resilience and Sustainability Board is serving as the Climate Policy Advisory Team for climate planning element.

Relationship to Plans/Actions:
The City of Spokane is required under the Growth Management Act to have a climate element as part of the Comprehensive Plan. The climate element will be integrated throughout the Comprehensive Plan elements such as housing, transportation, land use, utilities, and natural environment. Integration of climate into the comprehensive plan was also identified in City Council's Sustainability Action Plan.

What input will the CRSB be providing at the meeting?

Purpose: Feedback will identify how the GHG inventory results can be integrated into future work, including engagement opportunities and policy discussions during Phase 2.

Feedback wanted:

- **Did any findings stand out to you for the different sections/sectors?**
- **Is there a particular section/sector that is of high priority?**
- **Are there any community impacts that need additional attention?**
- **Does the CRVA prompt ideas for future policies/strategies in Phase 2?**

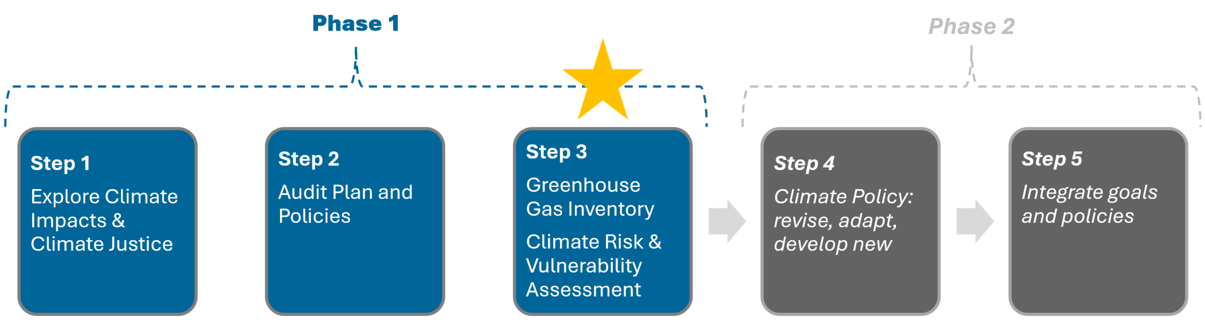
AGENDA

BRIEFING PAPER: Climate Risk and Vulnerability Assessment Draft Discussion
City of Spokane
Climate Resilience and Sustainability Board
5/22/2025

Timeline/ Further Action:

See below for timeline for Phase 1 climate planning. The CRVA is the final technical document to be completed for Phase 1 before moving on to Phase 2. Phase 2 focuses on using the technical reporting and community engagement from Phase 1 to inform climate policy development and integration into Comprehensive Plan updates in 2026.

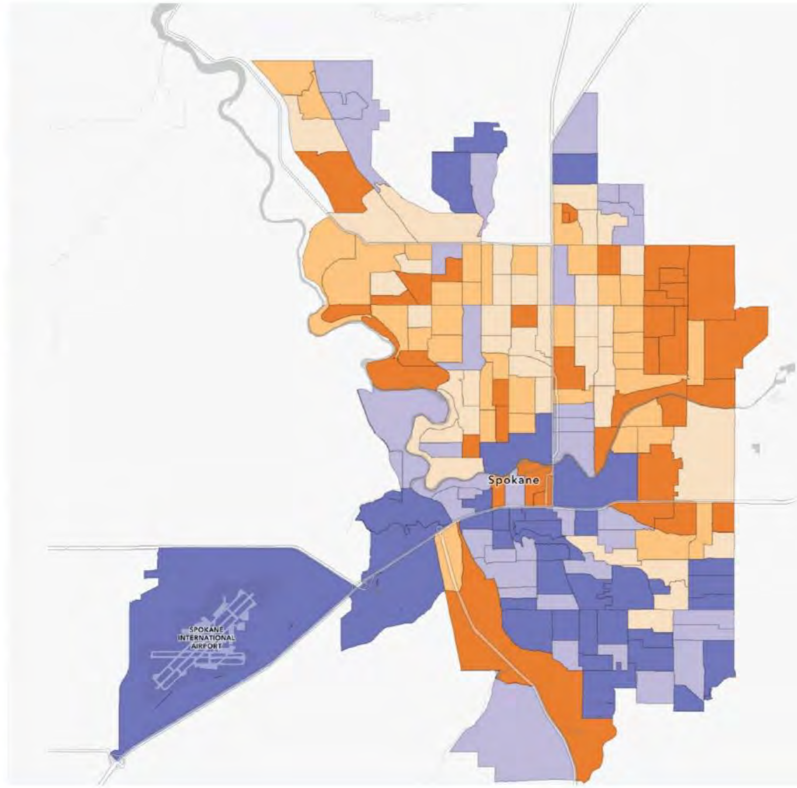
Steps and Pathways to Integrate Climate Sub-Elements into the Comprehensive Plan



Relevant Climate Planning Links:

City of Spokane	
Spokane Climate Planning Project Page	my.spokanecity.org/climate-planning/
Spokane Climate Vulnerability Index	https://storymaps.arcgis.com/collections/f6e4fae1a4eb400bab2c236ce63b75da
Spokane Climate Planning Engage	engage.spokane.gov/hub-page/planning-services
PlanSpokane 2046 Periodic Update	planspokane.org
Spokane Comprehensive Plan	my.spokanecity.org/shapingspokane/comprehensive-plan/
Spokane GHG Reporting	my.spokanecity.org/publicworks/environmental/
Spokane Parks Master Plan	my.spokanecity.org/parksrec/master-plan/

WA Dept. of Commerce	
Commerce Climate Planning Website	www.commerce.wa.gov/growth-management/climate-planning/
Commerce Guidance for Climate Planning	deptofcommerce.box.com/s/fpg3h0lbwln2ctqjg7jg802h54ie19jx
Commerce Climate Policy Explorer	https://experience.arcgis.com/experience/dd012fae9fad4a309b0d89e3c13016e5/page/Basic/



Spokane Climate Risk and Vulnerability Assessment

Review Draft: May 15, 2025

CITY OF SPOKANE

FUNDED BY WASHINGTON'S CLIMATE COMMITMENT ACT

AGENDA

Land Acknowledgement

We acknowledge that we are on the unceded land of the Spokane people. And that these lands were once the major trading center for the Spokanes as they shared this place and welcomed other area tribes through their relations, history, trade, and ceremony. We also want to acknowledge that the land holds the spirit of the place, through its knowledge, culture, and all the original peoples Since Time Immemorial.

As we take a moment to consider the impacts of colonization may we also acknowledge the strengths and resiliency of the Spokanes and their relatives. As we work together making decisions that benefit all, may we do so as one heart, one mind, and one spirit.

We are grateful to be on the shared lands of the Spokane people and ask for the support of their ancestors and all relations. We ask that you recognize these injustices that forever changed the lives of the Spokane people and all their relatives.

We agree to work together to stop all acts of continued injustices towards Native Americans and all our relatives. It is time for reconciliation. We must act upon the truths and take actions that will create restorative justice for all people.

Adopted by Spokane City Council on the 22nd day of March 2021
via Resolution 2021-001

Climate Commitment Act

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

Acknowledgements

[Names will be added with final draft]

Mayor & City Council

City Project Team

Consulting Staff

BERK

Cascadia Consulting Group

Kauffman and Associates

Parametrix

Fehr and Peers

Advisory Bodies

Climate Technical Advisory Committee

Climate Resilience and Sustainability Board

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Glossary

Active Transportation	Active transportation means forms of pedestrian mobility including walking or running or the use of a device such as a wheelchair, bicycle, scooter, or skateboard. Active transportation is an alternative to vehicles such as single-occupancy vehicles, carpooling or rideshare services, and buses.
Adaptation	The process of adjusting to new (climate) conditions in order to reduce risks to valued assets and harm. (US Climate Toolkit Glossary)
Adaptive Capacity	The ability of a person, asset, or system to adjust to a hazard, take advantage of new opportunities, or cope with change. (US Climate Toolkit Glossary)
Assets	People, resources, ecosystems, infrastructure, and the services they provide. Assets are the tangible and intangible things people or communities value.
Carbon Footprint	A carbon footprint is the total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions. An individual or family, company, country, or other grouping can have its own carbon footprint.
Carbon Sequestration	Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide (CO_2). Biologic carbon sequestration refers to storage of atmospheric carbon in vegetation, soils, woody products, and aquatic environments. Geologic carbon sequestration is the process of storing CO_2 in underground geologic formations.
Climate	Climate is the usual weather of a place over a longer period – the typical seasons, yearly highs and lows of temperatures, average rainfall, etc. Weather is the changes we see and feel outside from day to day.
Climate Impact(s)	Effects on natural and human systems that result from hazards. Evaluating potential climate impacts is a critical step in assessing vulnerability.
Climate Justice	Climate justice focuses on addressing the unequal, compounding, and disproportionate impacts of climate change to benefit the health and safety of those who face the greatest risk to climate impacts, addressing historical injustices, and supporting resilience against the changing climate. Climate justice is also about safeguarding the rights, lands, and cultural heritage of Indigenous communities as they face the impacts of climate

	change and emphasizes the need for policies recognizing and respecting the traditional knowledge and practices of Native peoples. (City of Spokane, Washington Department of Health)
Climate Resilience	The ongoing process of anticipating, preparing for, and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities. See RCW 70A.65.010 (16).
Climate Risk and Vulnerability Assessment (CRVA)	A framework for data analysis to identify the likelihood of future climate hazards and their potential impacts and vulnerabilities for cities and their communities, including exposure, sensitivity, and adaptive capacity that contribute to overall climate risk.
Climate Stressor	A condition, event, or trend related to climate variability and change that can exacerbate hazards. Essentially, it is a climate related variable that can cause additional difficulties.
Co-Benefits	The additional benefits of policies that are implemented with a primary goal. For instance, co-benefits of reducing greenhouse gas emissions include cleaner air, the creation of green jobs, improved public health from active travel, and the support of biodiversity. Also referred to as "multiple benefits."
Community Trip Reduction (CTR)	The intent of CTR is to reduce automobile-related air pollution, traffic congestion, and energy use through employer-based programs that encourage the use of alternatives to the single occupant vehicle traveling during peak traffic periods for the commute trip.
Defensible Space	Defensible space is the area around a building in which vegetation, debris, and other types of combustible fuels have been treated, cleared, or reduced to slow the spread of fire to and from the building.
Ecosystem Services	Ecosystem services are the benefits that humans receive from the environment. These benefits are far reaching, including the support of our food and water, security, health, and economic systems.
Embodied Carbon	Embodied carbon refers to the greenhouse gas emissions arising from the manufacturing, transportation, installation, maintenance, and disposal of building materials.
Environmental Equity	When achieved, no single group or community faces disadvantages in dealing with environmental hazards, disasters, or pollution. Environmental equity is considered a basic human right.

Environmental Justice	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice includes addressing disproportionate environmental and health impacts in all laws, rules, and policies with environmental impacts by prioritizing vulnerable populations and overburdened communities and the equitable distribution of resources and benefits. See RCW 36.70A.030 (16)
Equity	Everyone can reach their highest level of health and potential for a successful life, regardless of their background and identity.
Exposure	The presence of people, assets, and ecosystems in places where they could be adversely affected by hazards. (US Climate Toolkit Glossary)
Extreme Heat	Extreme heat is defined as summertime temperatures that are much hotter and/or humid than average. Increased temperatures can cause uncomfortable or dangerous conditions in areas not equipped for the heat, such as locations with limited air conditioning.
Frontline Community	Frontline community members are people who experience the first and worst consequences of climate change. Such residents' health and livelihoods are often highly vulnerable to and disproportionately impacted by climate-exacerbated hazards and economic disruptions.
Greenhouse Gas (GHG)	Includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and any other gas or gases designated by the department of Ecology by rule under RCW 70A.45.010. See RCW 36.70A.030 (21). Greenhouse gases trap some of the Earth's outgoing energy, retaining heat in the atmosphere.
Hazard	An event or condition that may cause injury, illness, or death to people and/or damage to assets.
Hazard Mitigation	Any sustainable action that reduces or eliminates long-term risk to people and property from future disasters.
House Bill (HB) 1181	An act of the Washington State Legislature, passed in the 2023 Regular Session, relating to improving the state's climate response through updates to the state's planning framework.
Indicator	A sign that shows what something is like or how a situation is changing. A climate indicator can be a datapoint showing change or impacts over a period of time.

Magnitude	The measure of consequences — for example, high, medium, or low — for an asset that is impacted by a climate hazard.
Multimodal	Multimodal transportation includes public transportation, rail and waterways, bicycles, and walking or use of mobility aids. Multimodal access supports the needs of all users regardless of their choice of transportation. It means more connections and more choices.
Municipal Separate Storm Sewer (MS4):	System of conveyances owned/operated by a municipality, designed to collect and transport stormwater, that is not connected to a wastewater treatment facility, to include roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, and storm drains.
Net-Zero	Refers to achieving a balance between the amount of greenhouse gases going into the atmosphere and the amount that is removed from the atmosphere.
Overburdened Community	A geographic area where vulnerable populations face multiple environmental harms and health impacts, and frequently includes lower-income residents. See RCW 36.70A.030 (29) and 19.405.020.
Per Capita Vehicle Miles Traveled (VMT)	This means the number of miles traveled using cars and light trucks in a calendar year divided by the number of residents. The calculation of this value excludes vehicle miles driven conveying freight.
Probability	The likelihood of hazard events occurring, determined from the historic frequency of events.
Risk	The potential for negative consequences where something of value is at stake. In the context of the assessment of climate impacts, the term risk is often used to refer to the potential for adverse consequences of a climate-related hazard. Risk can be assessed by multiplying the probability of a hazard by the magnitude of the negative consequence or loss.
Sector	Topic of consideration identified by the Washington Department of Commerce for analysis of climate impacts (i.e. water resources, transportation, buildings, agriculture, zoning and development, ecosystem, etc.)
Sensitivity	The degree to which a system, population, or resource is or might be affected by hazards.
State Environmental Policy Act (SEPA)	The SEPA process identifies and analyzes environmental impacts associated with governmental decisions, related to issuing

	permits, constructing public facilities, or adopting regulations and plans.
Urban Growth Area (UGA)	As required under RCW 36.70A.040, Spokane is located within an urban growth area. The UGA creates a boundary within which urban growth is encouraged and outside of which growth can occur only if it is not urban in nature. The UGA attempts to control urban sprawl and encourage infill development near existing infrastructure and services.
Vulnerability	The propensity or predisposition of assets to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity. (US Climate Toolkit Glossary)
Vulnerable Populations	Groups that are more likely to be at higher risk for poor health outcomes in response to environmental harms, due to: adverse socioeconomic factors such as unemployment, high housing and transportation costs relative to income, limited access to nutritious food and adequate health care, linguistic isolation, and other factors that negatively affect health outcomes and increase vulnerability to the effects of environmental harms; and, sensitivity factors, such as low birth weight and higher rates of hospitalization. Vulnerable populations include but are not limited to racial and ethnic minorities; low-income populations; and, populations disproportionately impacted by environmental harms. See RCW 36.70A.030 (47).
Wildland-Urban Interface (WUI)	Wildland-urban interface means the geographical area where structures and other human development meets or intermingles with wildland vegetative fuels, leading to increased fire risk.

Executive Summary

Overview

A changing climate and climate-extreme events—including heat, wildfires, smoke from wildfires, flooding, and drought—are already affecting Spokane and are projected to worsen under a variety of climate scenarios. Communities in Spokane may experience climate impacts in many ways, such as disruptions to the local economy and daily routines, or impacts to physical and mental health, ultimately stressing infrastructure systems, affecting community wellbeing, and harming local ecosystems. Climate change also does not impact everyone equally, and who faces the greatest risk depends on their level of exposure to climate impacts and their capacity to respond and adapt. Being on the frontlines of worsening climate and environmental threats creates or exacerbates social, economic, and health issues.

To address climate risks and build local resilience, the City of Spokane is embarking on a transformative journey to support the community in the face of growing climate hazards. As part of this effort, the City will undertake a major update to the Comprehensive Plan, a foundational document guiding the city's growth and development. This update, mandated by the Washington State Growth Management Act and due in 2026, presents a unique opportunity to integrate climate considerations into every aspect of the City of Spokane's future. The update will also address the newly required Climate Element under HB 1181. The results from this climate risk and vulnerability assessment (CRVA) and an additional report on the greenhouse gas (GHG) inventory are supporting the climate planning work.

The CRVA and the Climate Element for the City's Comprehensive Plan is an opportunity for **Spokane to take further action to foster climate resilience**, prioritize environmental justice to avoid worsening environmental health disparities, and build on community priorities and respond to new state requirements.

Climate justice focuses on addressing the unequal impacts of climate change by prioritizing the health and safety of those who face the greatest risk from climate events (Washington Department of Health, Front and Centered, 2024)

Climate vulnerability is how susceptible to the adverse impacts of climate hazards a community or resource may be. Vulnerability is determined by understanding the exposure and sensitivity of a community or resource, as well as how adaptable that community or resource may be to respond to hazards.

Climate resilience is the process of preparing and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities.

Vulnerable populations are groups that are more likely to be at higher risk for poor health outcomes in response to environmental harms, due to: adverse socioeconomic factors. **Overburdened communities** refers to a geographic area where vulnerable populations face multiple environmental harms and health impacts and frequently includes lower-income residents.

AGENDA

People-Centered Approach

The project team implemented a range of public engagement activities to capture diverse experiences and prioritized engaging vulnerable populations and overburdened communities – frontline communities that are impacted first and worst by climate hazards. Reflecting lived experiences contributes to identifying additional climate risks not captured by data and document analysis, ground truths results, and aids in prioritizing climate risks according to community values.

Staff and Community Leaders

- 40+ City staff participated on the City of Spokane Internal Climate Technical Advisory Committee
- Tribal Engagement Workgroup with members from three area Tribes and representatives from organizations serving urban Indigenous and Native community members
- Climate Resilience and Sustainability Board engagement serving as the Climate Policy Advisory Team (CPAT)
- City Council, Boards, Commissions and Committees

Public Engagement

- 1,500+ responses to the Community Climate Planning Survey
- Earth Day community-wide workshop
- 3 focus groups: youth (18 years or younger), those in Northeast Spokane communities, and climate justice communities.
- Out in the community tabling events includinged the Expo '74 50th anniversary celebration, 2024 Fall Leaf Festival, 2025 Spring Riverfront Market, and multiple Earth Day related events.
- Met directly with multiple organizations and groups representing communities directly impacted by climate planning.

Climate Hazards & Impacts

Spokane is already experiencing climate impacts and extreme weather events, including rising temperatures, wildfires, smoke, and drought. These changes affect our health, infrastructure, and natural resources.

Rising Temperatures & Extreme Heat: Average summertime temperatures are projected to increase by 11°F by 2099. This increase can harm public health, damage infrastructure, threaten water quality, and disrupt fish and wildlife habitat.

Wildfires: There will be more days with high wildfire risk due to rising temperatures and anticipated drought. Wildfires can harm property, wildlife, and public safety.

Smoke: Regional and local wildfires will result in an increased frequency and intensity of wildfire smoke. Wildfire smoke worsens air quality and can make health problems like asthma worse. High levels of smoke can also lead to cancelled events and outdoor activities. Extended smoke events can contribute to anxiety and depression.

Heavy Precipitation: By 2099, annual precipitation could increase by 10% with more of that precipitation occurring during winter months, and less rainfall during summer months.

Flooding: By 2099, winter water flow in streams could increase by 84%, leading to more flooding, landslides, and erosion for communities near the river. Flooding and landslides can damage homes, businesses, roads, and other infrastructure.

Drought & Reduced Snowpack: By 2099, summer rainfall is projected to decrease by 14%, which will make drought conditions worse. Snowpack, which is important for water supply, could drop by 75%, reducing water availability and harming fish and wildlife habitats and winter recreation.

Our Impacted Community Members

Climate hazards affect everyone, but some people are at greater risk. See below for examples of how some communities and people may be at greater risk.

Children and Caregivers: Are at higher risk for heat stroke and long-term health impacts.

Houseless Residents: Are highly vulnerable to heat, air pollution, floods, and storms.

Outdoor Workers: Are more exposed to heat and smoke, affecting their health and job stability.

Low-Income Households: Have fewer resources to deal with climate risks.

Pregnant People: Pregnant women and their fetuses are more sensitive to heat and smoke which can result in heat stroke, low birth weight, and other health impacts.

Older Adults and Residents with Disabilities: May struggle to access emergency services or evacuate during fire and flood events.

Native American and Tribal Communities: Face health issues and loss of traditional cultural resources and food sources.

Communities in Wildland Urban Interface: Face additional health and property risks due to wildfires.

Communities of Color: Experience higher exposure to pollution and more intense heat in neighborhoods with less tree canopy and lower quality infrastructure.

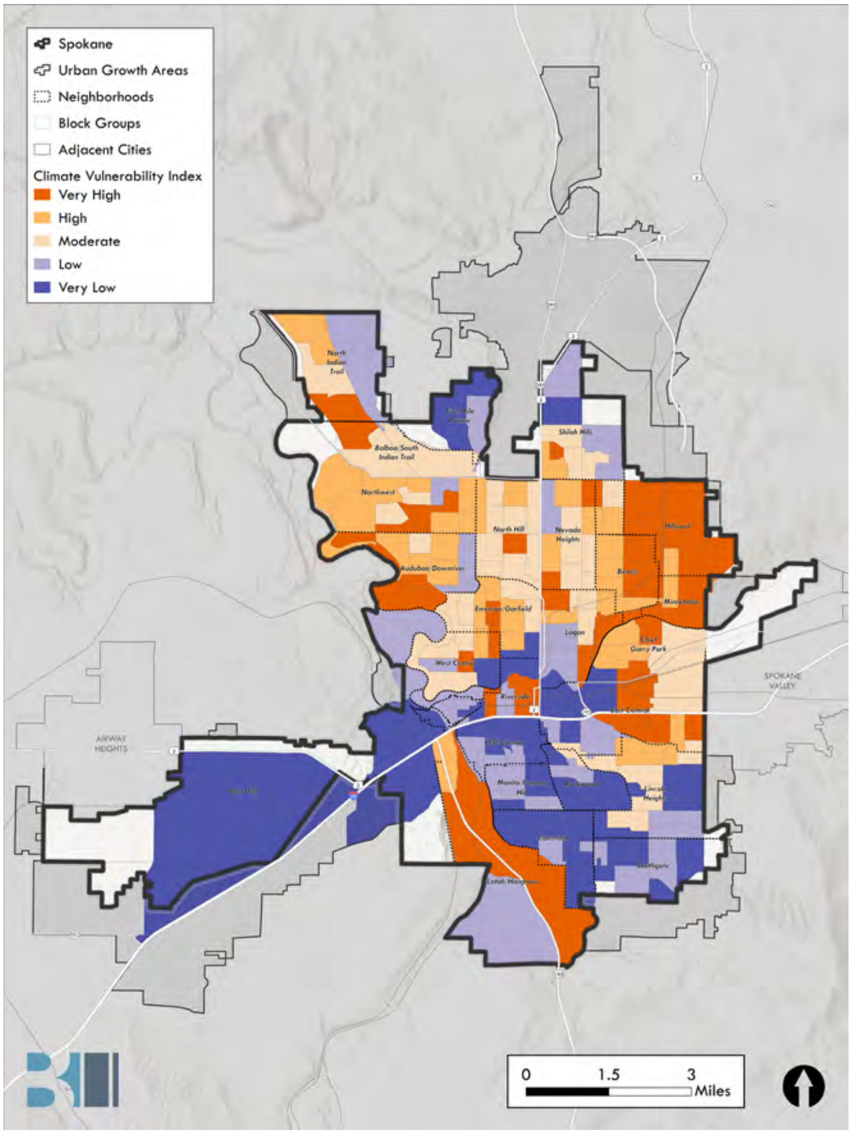
People with Chronic Health Conditions: Experience higher asthma and heart disease risks during heat and smoke events.

Spokane Spatial Data Approach

The City of Spokane created a Climate Vulnerability Index mapping tool to better understand which areas, people, and resources are most at risk from climate impacts like extreme heat and wildfire smoke. This tool looks at over 30 factors, such as exposure to climate hazards and the ability to adapt:

- **Exposure**—built environment conditions, including land surface temperature, wildfire risk, PM 2.5 exposure
- **Sensitivity**—demographic and health data including age and health conditions like asthma and heart disease
- **Adaptive Capacity**—ability to respond to hazards based on socioeconomic factors including housing costs, housing conditions, poverty, and tree canopy

This map shows that some parts of Spokane, like in Northeast Spokane and along the I-90 corridor, have higher vulnerability than the City average. This higher vulnerability comes from several factors, including lower tree canopy, higher urban heat and lower-income relative to other parts of the City. Meanwhile, many areas south of I-90 and on the northernmost ends of Spokane have lower vulnerability. This can help inform future prioritization of the City's resilience actions.



Want to learn more or add specific comments to the map?

Scan the QR code or visit bit.ly/Spokane-CV-Index to explore the Climate Vulnerability Index on your own device!

AGENDA

Climate Risks and Vulnerability Findings

Human Well-Being and Emergency Management

What's included

- Public Health
- Social Services
- Emergency Management

Key takeaways

- Extreme heat will cause **increased rates of illnesses and injuries**. Wildfire smoke, increased pollen production, and shifts in geographic ranges of disease vectors are also likely to cause increases in some illnesses.
- **Medical care and emergency management systems** could become more difficult to access due to weather related disruptions, particularly flooding and wildfires yet these climate impacts may cause surges in need for their services.
- **Social services**, **including libraries** and **schools**, are relatively exposed to high ground temperatures and flooding. This may limit their ability to provide services and to serve as gathering places in an emergency.
- **Correctional facilities** face climate risks, both to the facilities and the people institutionalized there. Extreme heat and regional wildfires pose the largest health risks to incarcerated people.
- Several primary **evacuation routes** and **major arterials** overlap with flood hazard zones and the wildland-urban interface (WUI), increasing risks to emergency services.

Who is most at risk?

- Elderly residents, young children and pregnant people
- Individuals with disabilities, mental illnesses and/or chronic health conditions
- Residents who are cost-burdened and/or experiencing food insecurity
- Incarcerated people
- Unhoused people

Cultural and Natural Resources

What's included

- Cultural Resources
- Food Systems
- Parks, Trails, and Open Spaces
- Urban Forests

Key takeaways

- **Extreme heat**, **wildfire smoke**, **flooding**, **extreme precipitation**, and **drought** are accelerating the degradation of traditional foods, medicinal plants, salmon populations, and culturally significant landscapes.
- Indigenous cultural practices are deeply tied to specific land-based traditions and are therefore **threatened by environmental changes**.
- Cultural gatherings have already been affected by **air quality**, **diminished berry and root harvests, and damage to sacred sites.**
- Climate disruptions are likely to **deepen food insecurity** in Spokane.
- Heat events are likely to **increase demand for indoor facilities**, **water features**, **water access**, and **shade in parks**.
- **Heat and smoke** make parks and outdoor areas **less safe** for visitors, staff, and natural resources workers.
- Flooding and wildfire could damage some parks assets directly.
- Discrepancies in urban forest cover already result in **large differences in localized temperatures** in summer.
- Urban forests can be weakened by **drought and rising temperatures**.

Who is most at risk?

- Tribal Elders and youth
- Urban Native populations
- Cultural practitioners and traditional plant gatherers
- Tribal service providers
- Agricultural workers
- Outdoor resource workers
- Communities in areas with low tree canopy cover

Infrastructure

What's included

- Energy
- Transportation
- Waste
- Water and Wastewater Infrastructure
- Stormwater

Key takeaways

- Higher summer temperatures and wildfire risk have already resulted in more **frequent power outages** and **strain to energy infrastructure**.
- Lower streamflows in the Spokane and Clark Fork Rivers could **impact hydropower generation capacity**.
- Debris from storms and ice or snow buildup can cause **damage to powerlines**.
- Higher demand for energy in summer and winter is expected as the climate changes, which could **increase energy costs** and **impacts people's ability to cool and heat homes and buildings in affordable and safe ways**.
- Extreme heat can make active transportation like walking, biking, and rolling **less safe** and **damage roads**, **bridges**, and **rail infrastructure**. Wildfire can also have **impacts on transportation** in certain parts of the city.
- Extreme precipitation can impact **driving safety** and **lead to flooding** that affects a range of transportation infrastructure and the ability for people to **safely evacuate during events**.
- The Spokane International Airport is affected by climate events like **flooding**, **heat** and **smoke leading to flight disruptions**.
- Climate disruptions are likely to occur to **waste** and **recycling operations**.
- Water and wastewater infrastructure could be impacted by **flooding**, **wildfire heat**, and **storms** as well as **power outages**.
- Increased precipitation could strain the City's **stormwater infrastructure**, increasing risks to **flooding** and **combined sewer overflow** into the Spokane River.

Who is most at risk?

- Residents and businesses in areas with lower quality and less resilient infrastructure
- Low-income residents
- Individuals with health conditions
- Residents in aging housing
- Residents who rely on electricity for health or medical devices
- People without a vehicle and/or limited access to public transportation
- Areas with lots of impervious surfaces

Ecosystems and Water Resources

What's included

- Critical Areas
- Water Supply

Key takeaways

- **Wetlands** citywide are likely to be impacted by **summer drought** and **winter precipitation and flooding**, impacting **water quantity**, **quality**, **biodiversity**, and **ecosystem services**.
- **Invasive species** could have more opportunities to proliferate due to changes in local conditions.
- **Wildlife and habitat** could be stressed from extreme precipitation and changes to water regimes and seasonal changes could make finding food more difficult.
- **Landslides** could become more likely due to extreme precipitation, particularly after fire.
- **Groundwater** supplies could be impacted by **warmer temperatures**, **drought**, and **reduced snowpack**, affecting City operations and broader community impacts.

Who is most at risk?

- People living near flood zones
- Low-income residents
- Areas without drainage infrastructure

Community Design, Land Use, and Economic Development

What's included

- Buildings/Major Facilities
- Businesses
- Neighborhoods
- Housing

Key takeaways

- Extreme heat, flooding, and wildfires could **damage buildings**.
- Greater demand for electricity during extreme heat raises the **risk of power failures**.
- **Older buildings** are less equipped with ventilation and air conditioning and are more **dangerous during extreme heat** and **smoke events**.
- Some major facilities are located near the Spokane River and are susceptible to **flood hazards**.
- **Businesses** could be impacted by **increasing costs**, **infrastructure** and **supply chain disruption**, and **worker health impacts**.
- Some **industrial areas** in Spokane may be particularly susceptible to **flooding**.
- **Recreation and tourism industries** could be particularly impacted by **landscape degradation**, **heat**, and other changes.
- Increased pressure on **household costs** could lead to health impacts for **lower income households** and **greater displacement risk**.

Who is most at risk?

- Residents of older housing stock
- Areas with a lack of greenspace and trees
- Areas with more impervious surfaces
- Outdoor workers
- Households with lower incomes
- Communities and areas facing displacement risk
- Residents and businesses in flood hazard areas and wildfire hazard areas

Introduction

The City of Spokane is currently undergoing an effort to plan for climate resilience that enables environmentally equitable and just outcomes. As part of this effort, the City of Spokane will undertake a major update to the Comprehensive Plan, a foundational document guiding the city's growth and development. This update, mandated by the Washington State Growth Management Act (GMA) and due in 2026, presents a unique opportunity to integrate climate considerations into every aspect of the City of Spokane's future, addressing the newly required Climate Element ([HB 1181]) and recognizing that climate affects all aspects of planning. This climate risk and vulnerability assessment (CRVA) along with a greenhouse gas (GHG) inventory are supporting the climate planning work.

Heat Dome, 2021

The unprecedented 2021 heat dome event, a severe heat wave that brought record-breaking temperatures to Spokane and the Pacific Northwest and which is partially attributed to a changing climate, was associated with hundreds of premature deaths across Washington state, including 19 recorded heat-related deaths across Spokane County, the majority distributed unequally within the City of Spokane boundaries (Gonzaga Institute for Climate, Water & Environment, 2024).

A changing climate and climate-extreme events are already affecting the City of Spokane's residents, businesses, natural ecosystems, and infrastructure. For example, central neighborhoods including Riverside (Downtown), West Central, and East Central, and most neighborhoods north of the Spokane River and east of Division Street experience more intense summer heat from increasing temperatures and low tree canopy, combined with urban heat island effects. Communities on the city's periphery, such as North Indian Trail and Balboa/South Indian Trail, Latah/Hangman, Hillyard, Minnehaha, and others, are adjacent to wildland areas and experience risk from wildfires. The frequency and intensity of both local and regional fires have led to an increase in the number of days of unhealthy air quality throughout Spokane.

These climate impacts have implications, often unequal, for communities in the City of Spokane, including damage and disruptions to the local economy, physical and mental health, infrastructure systems, community well-being, and local ecosystems. For instance, the unprecedented 2021 heat dome event was associated with 19 recorded heat-related deaths across Spokane County, the majority distributed unequally within the City of Spokane boundaries (Gonzaga Institute for Climate, Water & Environment, 2024).

A changing climate does not impact everyone equally, and climate impacts are not experienced by communities and people the same way. Communities' risk and vulnerability depends on their level of exposure to climate impacts, how sensitive they are to those impacts, and their capacity to respond and adapt. For instance, some people may have pre-existing health conditions that make them more sensitive to heat and unhealthy air quality.

Access and availability of resources can affect how a community is able to respond or adapt to climate impacts, and communities with more access to resources are often better equipped.

Communities of color, Tribal and Native American peoples, and communities with lower incomes tend to face the first and worst climate risks. These differences in climate risk are based on how risks are experienced and have roots in historical inequities. Further, climate and environmental threats create or exacerbate social, economic, and health issues (Front and Centered & Washington State Department of Commerce, 2023).

People-Centered Approach

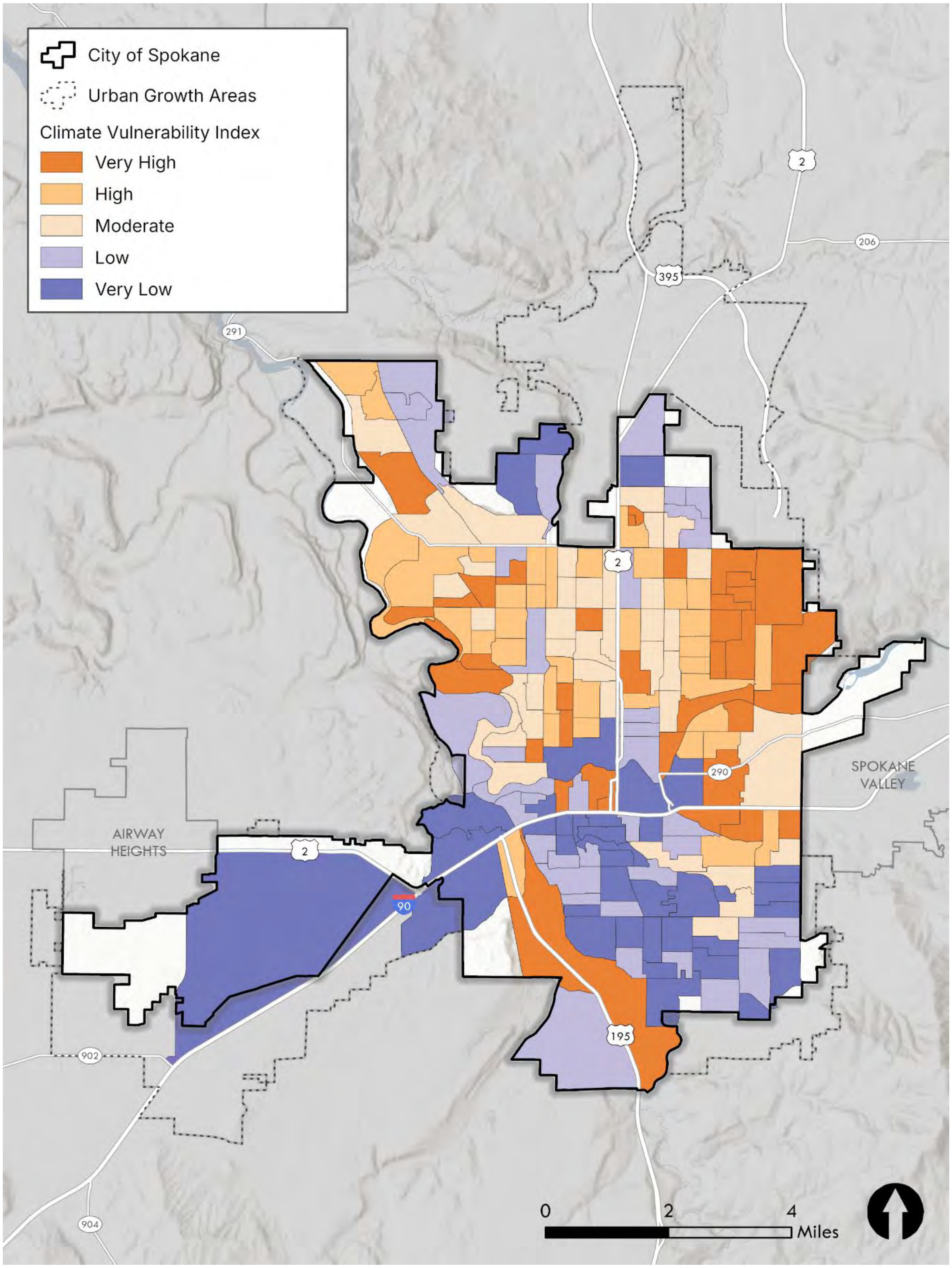
The CRVA integrates diverse perspectives and lived experiences from a wide range of stakeholders and community members, including technical experts, City of Spokane staff, community leaders, and residents. The project team implemented an inclusive engagement strategy designed to elevate the voices of those most vulnerable to climate change, including overburdened communities. This people-centered approach identified climate risks that are not captured through data analysis alone, contextualized and "ground-truthed" findings, and informed prioritization of risks based on real-world community impacts.

Key contributors included the City of Spokane's internal Climate Technical Advisory Committee, the newly formed Climate Resilience and Sustainability Board, and the Tribal Engagement Workgroup. Public engagement efforts featured a citywide community climate survey, an interactive Earth Day workshop, and targeted focus groups with underrepresented populations, such as youth and climate justice communities. Additional outreach occurred at local events and community meetings to ensure broader participation.

Spokane Spatial Data Approach

The project team developed the City of Spokane Climate Vulnerability Index (CVI) and spatial mapping of assets using local, state, and national data and maps. The CVI allows the community and City officials to explore areas more likely to experience extreme heat, extreme precipitation or flooding, or wildfire risk/smoke, and places and communities with health or environmental sensitivities. It includes socioeconomic and environmental factors that influence the ability for the community to adapt to changing climate patterns and increasing hazards. See the **Climate Vulnerability Index** section for further information as well as **Appendix B. Climate Vulnerability Index Methodology**.

Exhibit 1. City of Spokane Climate Vulnerability Index



Sources: See Appendix for CVI Method; BERK, 2025.

Climate Risk Assessment

The CRVA approach incorporated multiple methods and data sources to identify climate risks and vulnerability across the city. The methods were used to identify the spatial distribution of climate risks and vulnerabilities , while centering the lived experiences of City of Spokane community members through a people-centered approach noted above. Document materials are available on the City of Spokane Climate Planning website (my.spokanecity.org/climateplanning). The approach includes:

- **Spokane Climate Justice and Climate Impacts Assessment:** The project team reviewed local, regional, and national climate datasets and core planning documents to identify priority climate hazards and impacts, vulnerable populations, and environmentally overburdened communities. The results are summarized in the City of Spokane Climate Impacts and Climate Justice Memo and were used to inform community engagement and prioritize climate hazards. The climate hazards were used to identify ranges of vulnerabilities..
- **Spokane Climate Policy Audit:** Review of 1,325 policies and code sections across City of Spokane plans and policy documents to identify current state of climate resilience and greenhouse gas emissions policies. The results are summarized in the Spokane Climate Policy Audit Memo and were used to inform risk analysis for the CRVA.
- **Spokane Climate Vulnerability Index (CVI):** The CVI helps identify at a planning-scale the places, people, and infrastructure in the City of Spokane that may be more vulnerable to climate hazards such as heat islands, wildfire risk areas, or smoke. See **Spokane Spatial Data Approach** above for a summary.
- **Risk analysis** across five sectors including:
  - Human well-being and emergency management
  - Cultural and natural resources
  - Infrastructure
  - Ecosystems and water resources
  - Community design, land use, and economic development.

The risk assessment used results from the CVI, community engagement, and review of existing documents, reports, and literature with an emphasis on vulnerable and overburdened communities. Findings are summarized in this document.

Purpose

This CRVA is a detailed assessment of how a changing climate is affecting and will continue to affect community well-being and emergency management, cultural and natural resources, infrastructure, ecosystems and water resources, and community design, land use and economic development. The assessment is designed find focused and shared opportunities for building climate resilience and climate justice across the City of Spokane. This will enable the City to comply with recent state legislation, refine climate projections for long-term planning, and build on its existing vision and goals to incorporate climate resilience and justice.

The Washington State Growth Management Act (GMA) was amended in 2023 under House Bill (HB) 1181, requiring cities and counties to integrate climate mitigation and resilience policies into comprehensive plan updates. The City of Spokane is required to complete both a Resilience Sub-Element and a Greenhouse Gas Emissions Sub-Element for its Comprehensive Plan (Washington State Department of Commerce, Climate Element Planning Guidance, 2023). [1] The required policy changes address climate hazards across several sectors such as housing, transportation, community well-being, land use, and others through a framework consistent with the Commerce's Climate Planning Guidance. [2]

The City of Spokane is the second largest city in Washington state and a state leader in ambitious community planning efforts. This vulnerability assessment is aligned with its the City's motto "In Spokane We All Belong. "

The CRVA uses local and regional assessments, spatial mapping, community engagement, and other resources to:

- Identify **risks and vulnerabilities from a changing climate** that affect the City of Spokane, systematically assessing climate vulnerability by prioritizing climate hazards and addressing climate justice concerns using narrative and spatial analysis.
- Highlight **unequal climate impacts** and how a changing climate disproportionately affects communities of color, Tribal and Indigenous peoples, and populations with

[1] Climate resilience policies are required for all jurisdictions planning under the GMA. GHG emission reduction policies are only required for 11 of the fastest growing counties and cities within them, including the City of Spokane.

[2] Washington State Department of Commerce, in its Intermediate Planning Guidance, provides these definitions:

Vulnerable populations: Groups that are more likely to be at higher risk for poor health outcomes in response to environmental harms, due to: adverse socioeconomic factors such as unemployment, high housing and transportation costs relative to income, limited access to nutritious food and adequate health care, linguistic isolation, and other factors that negatively affect health outcomes and increase vulnerability to the effects of environmental harms; and, sensitivity factors, such as low birth weight and higher rates of hospitalization. Vulnerable populations include but are not limited to: racial and ethnic minorities; low-income populations; and, populations disproportionately impacted by environmental harms.

Overburdened community: Geographic areas where vulnerable populations face combined, multiple environmental harms and health impacts.

lower incomes in the City of Spokane, to focus climate resilience on equitable outcomes.

- Inform the City's Comprehensive Plan (2026-2046) to **develop policies** that guide the City's preparedness and resilience towards evolving climate risks.

The CRVA and the Climate Element for the City's Comprehensive Plan are opportunities for **the City of Spokane to take further action to foster climate resilience,** responding to community priorities and new state requirements.

Sectors

The CRVA is organized around focus areas and sectors defined in Exhibit 2. Focus areas and sectors are parts of the City of Spokane's community, environment, or economy that could be affected by changes in climate. The CRVA project team reviewed city and regional documents, reports, and scientific literature to identify climate risks across five primary focus areas and subsectors. The Spokane Climate Vulnerability Index (CVI) offers spatial information to identify regions of the city that are more at risk from climate change impacts based on where resources and assets are located for the sectors. In addition, CRVA authors met with interdepartmental staff who provided expertise and local knowledge. CRVA authors also considered input from a Tribal Engagement Workgroup and community engagement including results of a survey, focus groups, and workshop to consider the City of Spokane's specific resilience strengths and weaknesses.

Exhibit 23. City of Spokane Climate Risk and Vulnerability Assessment Focus Areas and Sectors

Focus Area	Sectors Included	City of Spokane Departments Consulted
Human Well-being and Emergency Management	▪ Public Health ▪ Social Services ▪ Emergency Management	▪ Communications & Marketing ▪ Emergency Management ▪ Neighborhoods, Housing, and Human Services ▪ Fire Department ▪ Office of Civil Rights, Equity, and Inclusion
Cultural and Natural Resources	▪ Cultural Resources ▪ Food Systems ▪ Parks, Trails, and Open Spaces ▪ Urban Forests	▪ Parks and Recreation ▪ Fire Department ▪ Community and Economic Development ▪ Historic Preservation
Infrastructure	▪ Energy ▪ Transportation ▪ Waste	▪ Integrated Capital Management ▪ Solid Waste

Focus Area	Sectors Included	City of Spokane Departments Consulted
	▪ Water and Wastewater Infrastructure ▪ Stormwater	
Ecosystems and Water Resources	▪ Critical Areas ▪ Water Supply ▪	▪ Integrated Capital Management
Community Design, Land Use, and Economic Development	▪ Buildings/Major Facilities ▪ Businesses ▪ Neighborhoods ▪ Housing	▪ Community and Economic Development ▪ Community Housing & Human Services

Source: See **Climate Risk and Vulnerability Results**.

Climate Justice Context

Climate is fundamentally an issue of equity. Climate impacts hit us wherever we live, work, and play in Washington. Climate pollution threatens our health and the health of future generations — but the impacts are not distributed evenly. Who is at risk is a factor of both who is most exposed, and who has the ability to respond and adapt. Climate justice is an ethical framework that focuses on addressing the unequal impacts of a changing climate by prioritizing the health and safety of climate-vulnerable populations and overburdened communities, who face the greatest risk from climate events (Washington Department of Health, n.d.).

- Vulnerable populations are defined as a group of people that are more likely to be at higher risk for poor health outcomes in response to environmental harms due to socioeconomic, demographic, work, and health sensitivity factors. Vulnerable populations include but are not limited to: racial or ethnic minorities; low-income populations; populations disproportionately impacted by environmental harms; and populations of workers experiencing environmental harms. RCW 70A.02.010 (14)(a)(b).
- Overburdened communities are those within a geographic area where populations face combined, multiple environmental harms and health impacts. Overburdened communities include, but are not limited to, highly impacted communities that are designated as highly impacted by fossil fuel pollution and climate change in Washington as defined in RCW 19.405.020, associated with the Washington Clean

Energy Transformation Act. Environmental harms are defined in RCW 70A.02010(5) and include impacts from climate change and air and water pollution.[3]

Exhibit 4. Definitions of Vulnerable Population and Overburdened Community from Front and Centered

Vulnerable Population	Overburdened Community
Describes a group of people with shared characteristics.	Describes a geographic area where vulnerable populations live, work, play, worship, or recreate.
People at higher risk for poor health outcomes in response to environmental harms caused by an agency action.	Regions where people face combined and/or cumulative environmental hazards.
Identified based on an assessment of an agency action's potential impacts.	Identified based on the location of an agency action and the scope of its impacts.

Source: (Front and Centered, 2024)

The Department of Commerce provides further guidance for climate justice in its Summary Report: Climate Justice in Growth Management, prepared in partnership with Front and Centered. The report details how the Washington Environmental Health Disparities map and other resources outline the potential cumulative environmental and human health harms and benefits of different agency actions. This process guided the CRVA team to identify and prioritize communities for equitable engagement efforts, as well as ways to prevent unintended harmful consequences and deliver community-defined benefits (see Spokane Climate Justice and Climate Impact memo and the Community Engagement Plan).

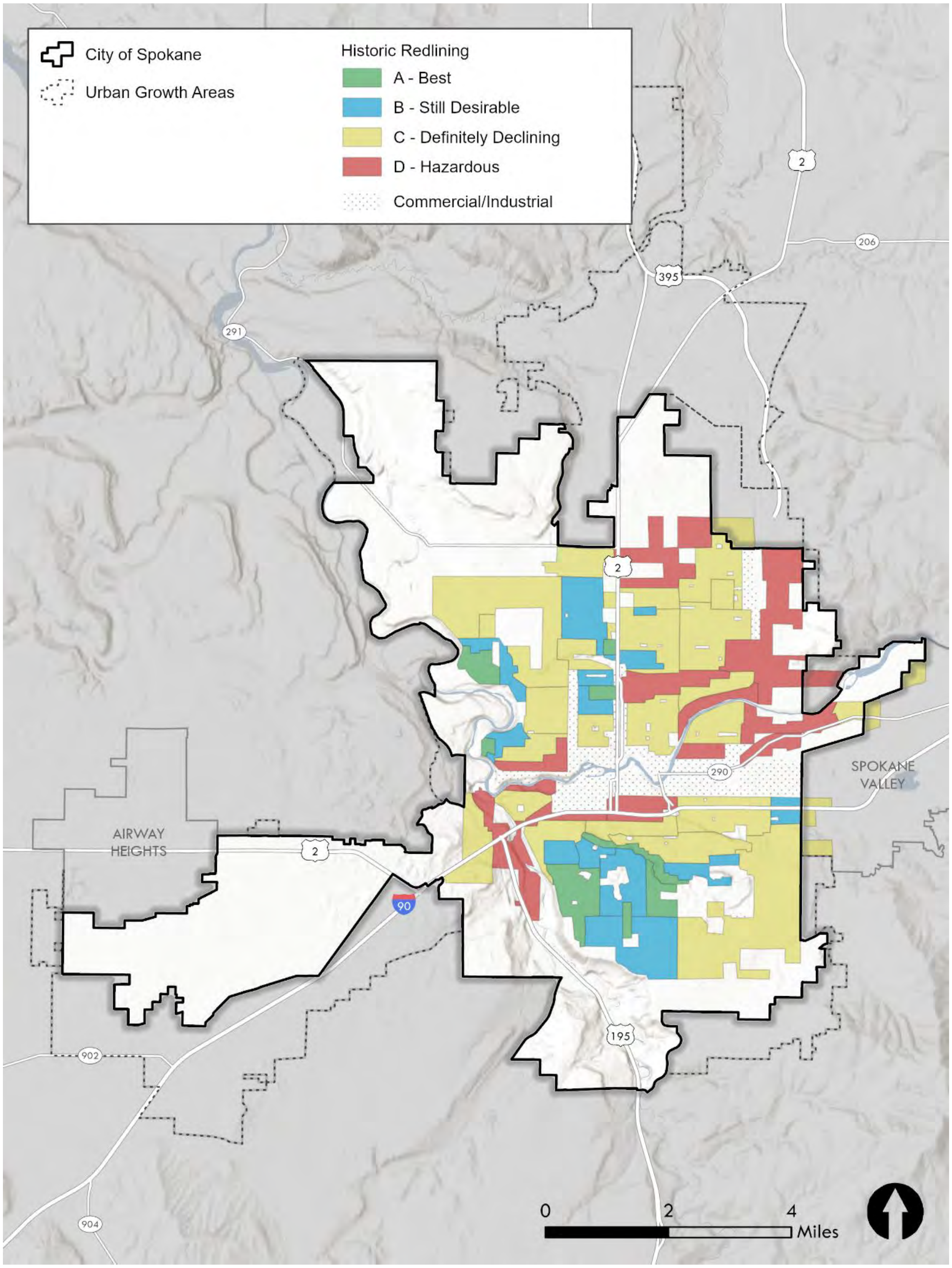
A key climate justice consideration in the City of Spokane is safeguarding the rights, lands, and cultural heritage of Indigenous communities as they face the impacts of a changing climate. The Spokane, Kalispel, and Coeur d'Alene Tribes are key rightsholders in the area

[3] RCW 70A.02.010 (5) "Environmental harm" means the individual or cumulative environmental health impacts and risks to communities caused by historic, current, or projected: (a) Exposure to pollution, conventional or toxic pollutants, environmental hazards, or other contamination in the air, water, and land; (b) Adverse environmental effects, including exposure to contamination, hazardous substances, or pollution that increase the risk of adverse environmental health outcomes or create vulnerabilities to the impacts of climate change; (c) Loss or impairment of ecosystem functions or traditional food resources or loss of access to gather cultural resources or harvest traditional foods; or (d) Health and economic impacts from climate change.

and each have deep ancestral and ongoing connections to the land. Climate justice emphasizes the need for policies that recognize and respect the traditional knowledge and practices of Native peoples. In this context, climate justice requires ensuring Indigenous communities have a say in decisions that affect their territories and livelihoods and addressing historical injustices. Thus, Tribal and Native American justice concerns, particularly regarding sovereign rights, cultural resources, and urban Native Americans, are a priority in this work.

In the City of Spokane, key **overburdened communities and vulnerable groups** include Native Americans, Black and Latino residents, residents with low incomes and those experiencing poverty, houseless residents, residents with disabilities, residents with chronic health conditions, youth and older residents, outdoors workers, female-headed households, and people living in areas exposed to environmental harms like air pollution. Such disparities are due to a number of historical and present harms created and reinforced by institutional barriers in the form of policies, procedures, and infrastructure (see Climate Justice and Climate Impacts Memo). For example, persons living in areas redlined from lending in earlier decades of the 20th century still face less tree canopy, more impervious areas, and more exposure to extreme heat.

Exhibit 5. Historic Redlined Areas of Spokane



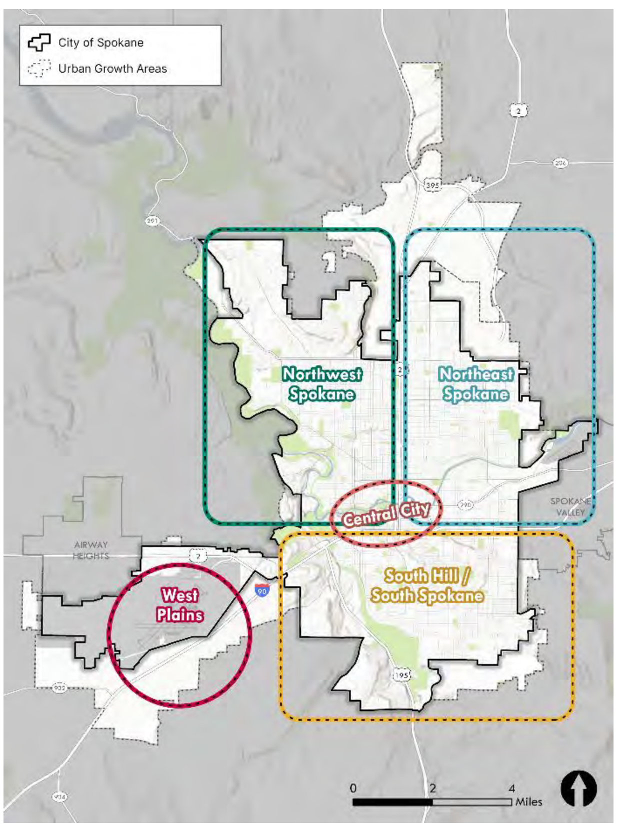
Note: Areas of Spokane were categorized into "grades" – the first grade in green signified the lowest risk for lending, and the fourth grade, indicated in red, signified a "hazardous" risk area for lending.
Source: (Gonzaga Institute for Climate, Water & Environment, 2024); BERK, 2025.

CRVA Methodology

The CRVA leverages research available across city, county, state, federal, and scientific sources to assess how communities and systems across the City of Spokane are vulnerable to a changing climate. The first step in this process was to review the landscape of current and anticipated climate hazards and to identify vulnerable populations and overburdened communities across the City of Spokane. The project team used local, regional, and national climate datasets and core planning documents.

Based on literature on impacts of a changing climate, and community, Tribal, and agency input, the Spokane Climate Vulnerability Index (CVI) presents a planning level tool considering local, state, and national spatial data, to identify the places, people, and infrastructure in the City of Spokane that may be more vulnerable to climate hazards (e.g. heat islands, wildfire risk areas, predisposed to health risks due to heat, smoke, etc.). The data is reported at different scales such as in block groups, neighborhoods, or in broader regions.

Exhibit 6. City of Spokane Regions



Source: City of Spokane, BERK, 2025.

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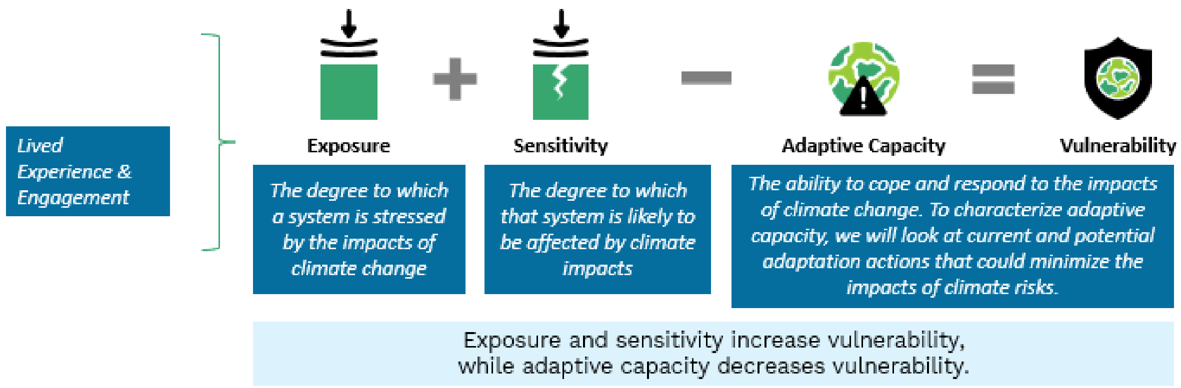
Climate Vulnerability Framework

Climate vulnerability is the degree to which communities, assets, and natural systems will be impacted by a changing climate. It is defined using a framework that has three general components: exposure, sensitivity, and adaptive capacity, that are used to understand how climate risks will affect human, natural, and built systems (Exhibit 7).

- **Exposure** incorporates the frequency and magnitude of climate impact.
- **Sensitivity** emphasizes the degree to which people, the environment, or other systems will be affected by, or respond to, a given climate shock or stress (e.g., extreme heat).
- **Adaptive capacity** is the capacity of individuals, communities, businesses, governments, institutions, or the natural environment to adapt or adjust to a disturbance, reduce long-term damage, take advantage of opportunities, and cope with consequences.

Exhibit 7. Key Components of the Climate Risk and Vulnerability Assessment



Source: (US Climate Resilience Toolkit, 2021)

Climate Vulnerability Index

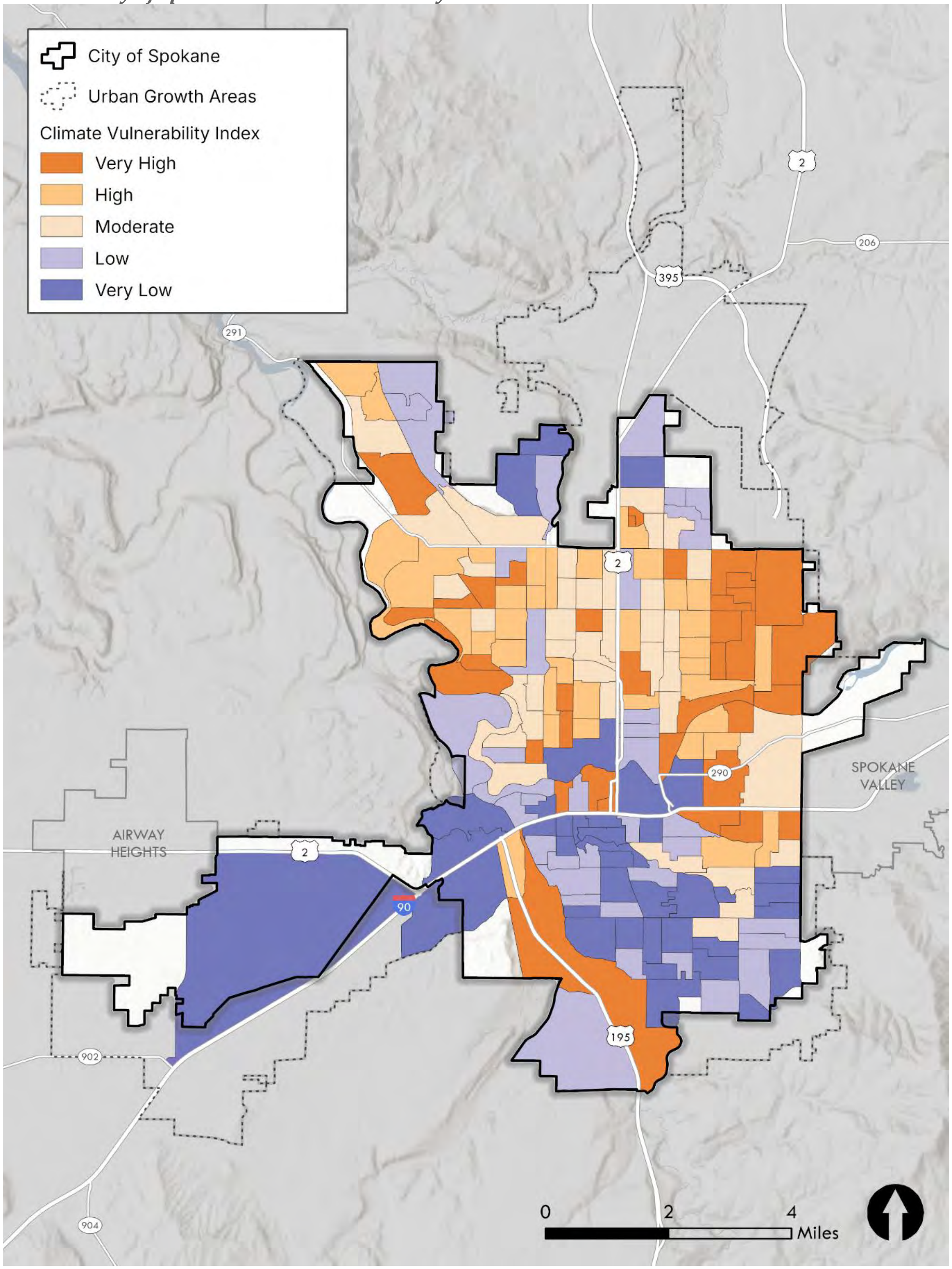
The project team developed the City of Spokane Climate Vulnerability Index (CVI) and spatial mapping of assets to identify climate exposure, sensitivity, and adaptive capacity across human, natural, and built systems.

An index is a calculation used to summarize multiple sets of data into one tool and allows for an "apples-to-apples" comparison of different data. The CVI combines over 30 indicators of climate vulnerability and identifies which census block groups are more or less vulnerable to extreme heat, extreme precipitation, and wildfire/smoke risk ***relative*** to other areas in the City of Spokane. The CVI allows City decision-makers and community members to explore climate exposures, places and communities with health or environmental sensitivities, and socioeconomic and environmental factors that identify the capacity for the Spokane community to adapt to changing climate patterns and increasing hazards.

The CVI also supports a planning-level view of vulnerability that is important for the development of an appropriate policy response. For example, resilience efforts could focus on improving adaptive capacity by adding green infrastructure (trees, stormwater) to provide shade, reduce localized temperatures and reduce and improve stormwater runoff, offering housing weatherization opportunities, adding sidewalks and ADA ramps, and providing additional economic opportunities depending on the social and built environment factors.

The full CVI is shared in Exhibit 8. Generally, areas in the north side of the city have more exposure to climate hazards combined with greater health or environmental sensitivity, and less capacity to adapt to climate impacts due to less socioeconomic resources or less access to transportation, open space, affordable housing, and other factors.

Exhibit 8. City of Spokane Climate Vulnerability Index



Sources: See Appendix for CVI Method; BERK, 2025.

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A list of CVI indicators and assets are provided in Exhibit 9 and Exhibit 10. A more detailed methodology is provided in **Appendix B. Climate Vulnerability Index Methodology**.

Exhibit 9. Climate Vulnerability Indicators

Sub-Category	Indicator
Extreme Heat	Average Land Surface Temperature. Illustrates Urban Heat Islands.
Extreme Precipitation	100-yr Floodplains (potentially include 500-yr Floodplains)
	Change in Chance of Extreme Precipitation
Urban/Wildland Urban Interface	Area within Interface and Intermix areas.
Air Quality	Average Ozone Exposure
	Average PM 2.5 Exposure
Age	Population Under 5 years old
	Population Over 65 years old or Older
Environment	Area within Potential Geologic Hazard
	Area with Steep Slopes
	Coverage by Impaired Waterbodies
Health Conditions (adult population)	High Blood Pressure
	Asthma
	Coronary Heart Disease
	COPD (Chronic obstructive pulmonary disease)
	Diabetes
	Poor Mental Health
	Poor Physical Health
Socioeconomic	Black, Indigenous, and persons of color
	Limited English-Speaking Ability
	People Living Alone
	Population Living in Poverty
	Living Alone – households comprised of householder living alone
	Persons with Disabilities
	Cost-Burdened Households
	Energy Cost Burden
	Median Household Income
	No High School Diploma
	College Degree

Sub-Category	Indicator
	Access to Vehicle – households without access to a vehicle
Transportation	Access to Transit
Housing/Built Environment	Housing Condition – houses built before 1960
	Affordable Housing Inventory
	Impervious Surfaces
	Proximity to City-Owned Facilities that increase adaptive capacity (libraries, community centers, fire stations)
Employment	Unemployment
	Outdoor Professions – jobs likely to be performed outside (NAICS codes 11, 21, and 23)
Health	Adult Population Without Health Insurance
Environment/ Ecologic	Tree Canopy Coverage
	Access to Open Space: within a 10-minute walk of park or open space.

NOTES: NAICS = North American Industry Classification System
Sources: City of Spokane, 2025; BERK, 2025

Climate Projections

The City of Spokane Climate Vulnerability Index uses climate projections in order to understand exposure to increasing climate hazards. These are created by averaging the projected changes from multiple climate models in order to provide an estimate of the future change for the chosen climate stressors.

The projected changes are for the 2050s (2040-2069) as compared to historic 30-year averages (e.g., 1981-2010 average). The climate projections chosen are all based on Representative Concentration Pathway (RCP) 8.5, a global emissions scenario developed for the International Panel on Climate Change (IPCC), which represents a 'business-as-usual' scenario in which emissions continue at their current trajectory.

While there are less extreme scenarios, such as RCP 4.5 which assumes stabilization of impacts by mid-century, the project team used the RCP 8.5 for the Climate Vulnerability Index in order to better understand what the upper range of climate impacts may look like in the City of Spokane if no major adaptation measures are implemented. The use of this scenario helps ensure that adaptation policies address anticipated climate impacts, thereby reducing risks to communities, infrastructure, and natural resources. (Raymond, 2022) (Intergovernmental Panel on Climate Change, 2018)

Exhibit 10. Information and Assets

Spatial Layer
Administrative Boundaries
Block Group Area within city limits; blocks with at least 50% inclusion in city limits in index calculation
Neighborhoods
Population, Race, and Ethnicity
Population Density
Race and Ethnicity Density
Tribal Assets
Locations of Tribal Importance
Tribal Areas of Interest
Public Facilities
Airports
Public Schools
Levees
Environmental Resources
10-Year Wellhead Protection Areas
Aquifer
Hazardous Geology-Landslide Potential
Wetlands
City of Spokane Shoreline Jurisdiction
Washington DNR Watercourses
Washington DNR Waterbodies
Emergency Services and Medical Facilities
Emergency Response & Law Enforcement
Hospitals
Clinics
Energy Facilities
Dams
Electric Substations
Power Plants
Transmission Lines
Easements-Yellowstone Pipeline
Key Community Locations
Parks
Libraries
Places of Worship
Food Access (Grocery Stores and Food Banks)
Restaurants
Commercial & Retail Locations
Entertainment Venues
Transportation Infrastructure
City Streets
Bridges – WSDOT
Bridges – City of Spokane
Sidewalks
Trails
Bike Lanes and Paths
WSDOT Proposed State Highways
WSDOT State Route Climate Vulnerability
Railroad
Utilities
Water Main
Wastewater Treatment Plants
Wastewater Sewer Overflow (CSO)
Sewer Gravity Main
Waste to Energy & Landfills

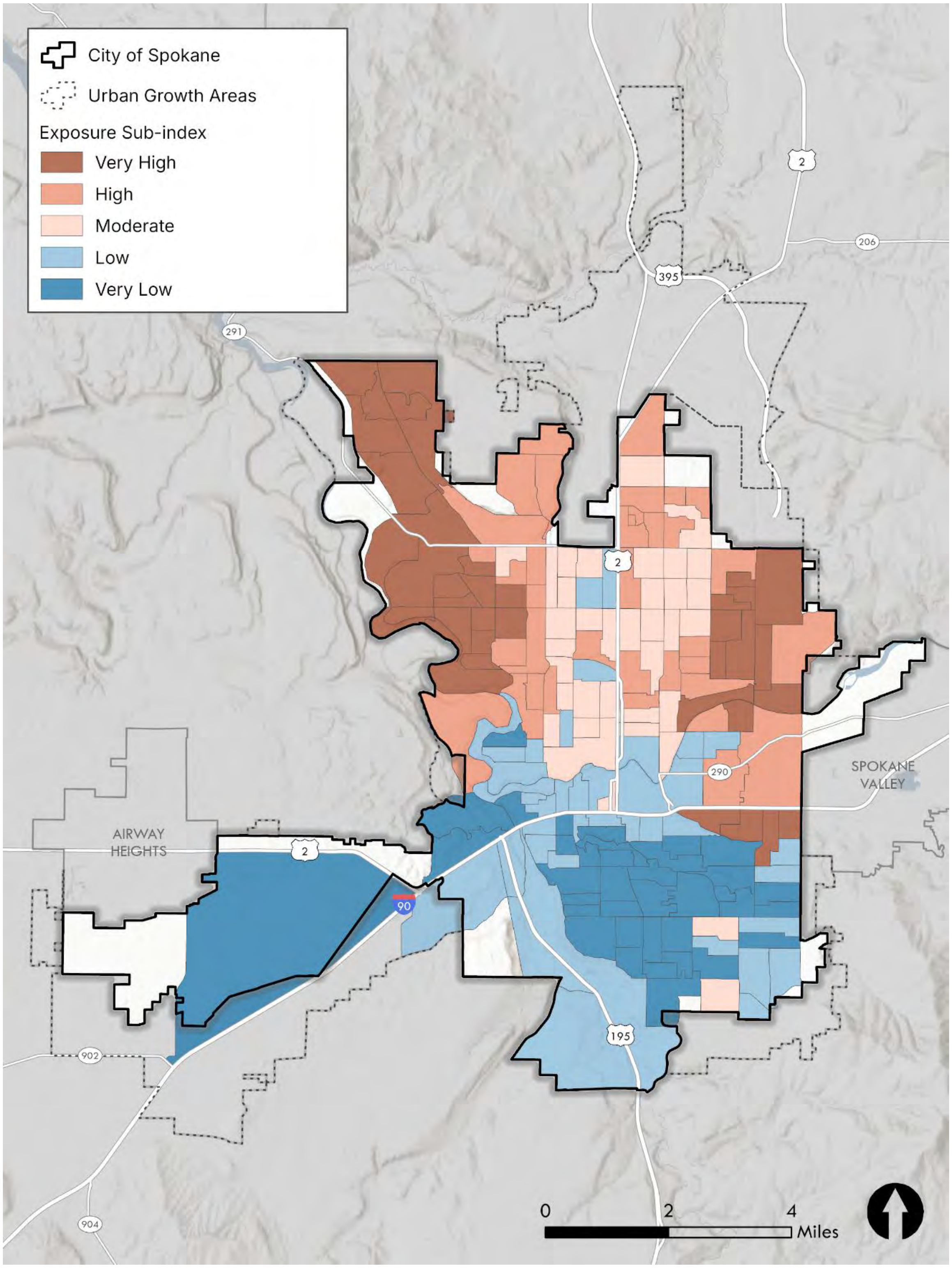
Sources: City of Spokane, 2025; BERK 2025.

Climate Exposure

The Exposure sub-index is comprised of equally weighted indicators for heat, flooding, and fire risk/air quality, considering local conditions. Equal weighting was used to ensure no single issue dominated the scoring to provide a more balanced approach that reduces bias. Regional climate exposures, such as extreme precipitation, could exacerbate the depth and extent of flooding. Extreme heat can exacerbate the health conditions of persons also exposed to air pollution, and extreme heat can be magnified by local environmental conditions (e.g., less trees, more pavement).

Areas in the City of Spokane with greater exposure to climate hazards include Northeast and Northwest Spokane, such as the Bemiss, Hillyard, and East Central neighborhoods and the North Indian Trail, Balboa/South Indian Trail, Northwest, and Audubon/Downriver neighborhoods. See Exhibit 11. This is due to a combination of census blocks having greater exposure to extreme heat, extreme precipitation, and air quality/wildfire.

Exhibit 11. City of Spokane Climate Vulnerability Index: Exposure Sub-index



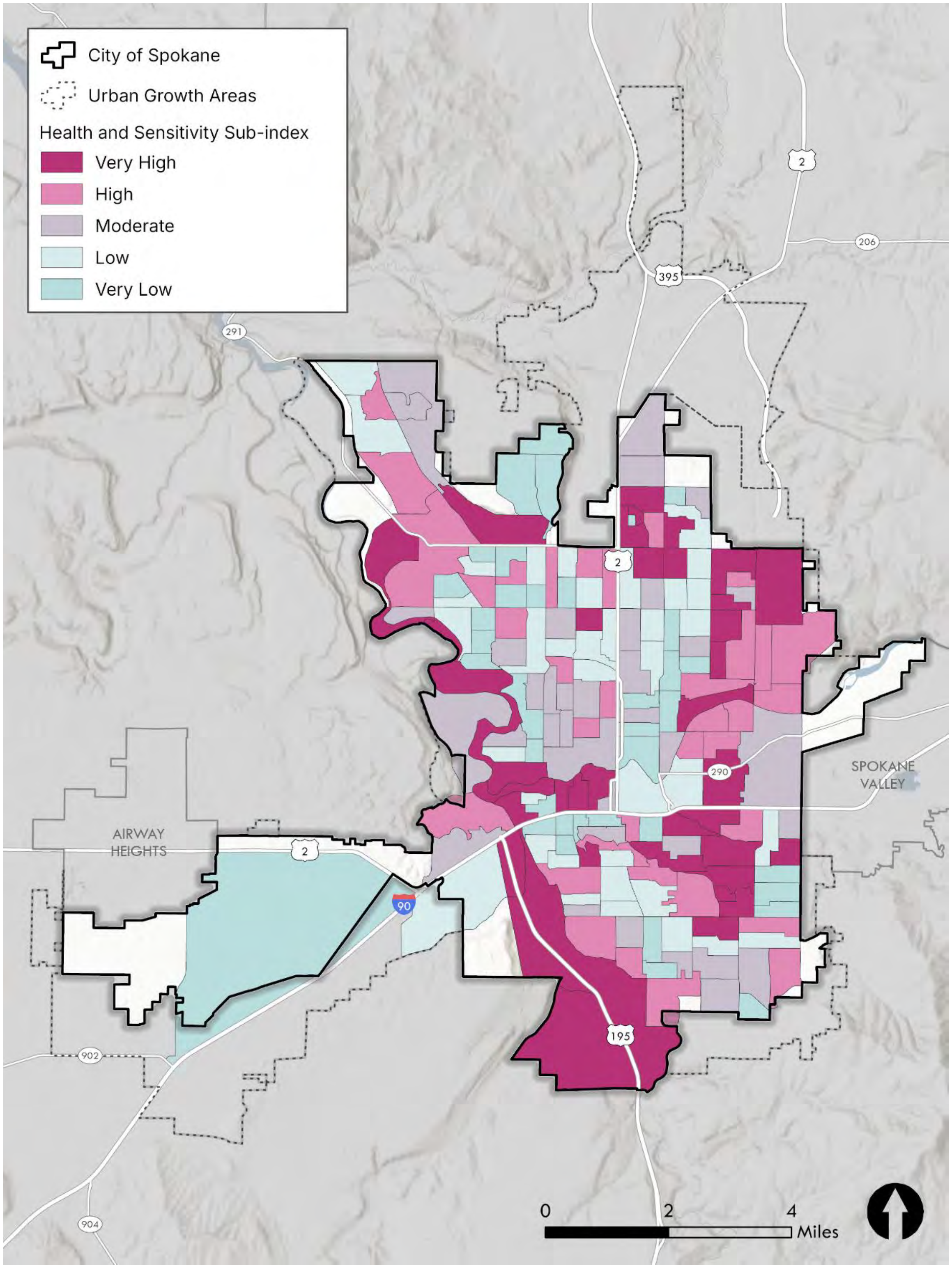
Sources: See Appendix for CVI Method; BERK, 2025.

Health and Sensitivity to Climate Impacts

Sensitivity is the component of the CVI addressing attributes inherent to the population or place that make them predisposed to increased impacts from climate exposure. Equally weighted health and sensitivity indicators are categorized into sub-categories of age, environment, and health conditions. Equal weighting was used to ensure no single issue dominated the scoring to provide a more balanced approach that reduces bias.

Populations (health) or places (low water quality or landslide potential) with more sensitivity to climate impacts are concentrated along the western edge of the city from north to south along the Spokane River and the Latah Valley. Additionally, some Northeast and South Spokane communities, such as Bemiss, Hillyard, East Central, and areas along East 29th Avenue, may have populations with health conditions that predispose them to climate hazard vulnerability. See Exhibit 12.

Exhibit 12. City of Spokane Climate Vulnerability Index: Health and Sensitivity Sub-index



Sources: See Appendix for CVI Method; BERK, 2025.

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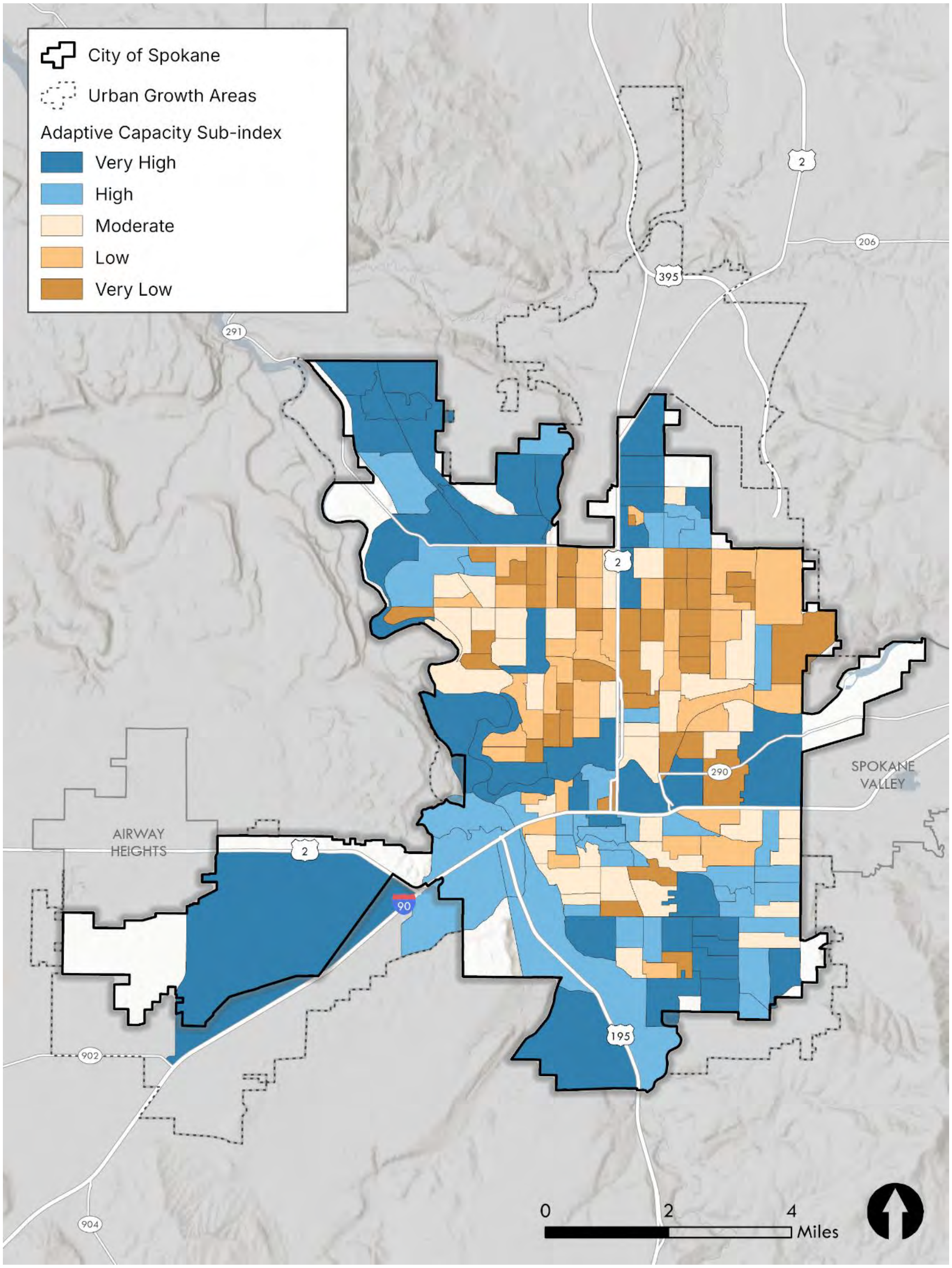
Adaptive Capacity: Resilience to Climate Impacts

Capacity to Adapt to Climate Impacts, or "Adaptive Capacity," relates to a population or environment's capacity to adapt to increased exposure to climate hazards. The equally weighted indicators in the Adaptive Capacity Index Map include socioeconomics (e.g., poverty, disability, health insurance, people living alone, energy costs), transportation (access to vehicle transportation, transit), housing and the built environment (housing conditions, housing costs, impervious areas), employment, and environment factors (e.g., tree canopy, access to open space). Equal weighting was used to ensure no single issue dominated the scoring to provide a more balanced approach that reduces bias.

Much of the northern half of the city has low or very low adaptive capacity when all indicators are taken into account, meaning residents in these areas are less likely to be able to adapt and respond to climate impacts than other areas in the city. See Exhibit 13.

Resilience efforts could focus on improving adaptive capacity by adding green infrastructure (trees, low impact stormwater management, drought tolerant plantings) to provide shade and improve stormwater, offering housing weatherization opportunities, adding sidewalks and ADA ramps, and providing additional economic opportunities depending on the social and built environment factors.

Exhibit 13. City of Spokane Climate Vulnerability Index: Adaptive Capacity Sub-index



Sources: See Appendix for CVI Method; BERK, 2025.

Engagement

In addition to technical data and research, the CRVA includes perspectives and stories from technical experts, City staff, community leaders, and community members. The project team implemented a range of activities to capture diverse experiences and prioritized engaging vulnerable populations and overburdened communities. This approach contributes to identifying additional climate risks not captured by data and document analysis, ground truths results, and aids in prioritizing climate risks according to community impacts.

Below we highlight how specific engagement efforts contributed to this CRVA. See a full summary of all the climate planning engagement efforts in **Appendix**

Appendix A. Engagement Summaries.

Staff and Community Leaders

City of Spokane Internal Climate Technical Advisory Committee

We held several listening sessions with the Climate Technical Advisory Committee (CTAC), which is comprised of City staff from various departments. During these listening sessions, we shared early findings from this CRVA and solicited input into exposure and sensitivity of key City assets and locations, as well as measures and actions the City is already taking to address these risks. We followed up the listening sessions with focused conversations with City staff to get further information.

Tribal Engagement Workgroup

We consulted with the Tribal Engagement Workgroup, comprised of members of three area Tribes as well as representatives of organizations serving urban Indigenous and Native community members. We asked about their top concerns, in terms of climate impacts to Tribal and Native community members and to cultural and physical assets. We also asked about strengths and adaptive capacity measures that Tribes and Native leaders are implementing.

Climate Resilience and Sustainability Board

The Climate Resilience and Sustainability Board, which was formed in 2025, serves as the Climate Policy Advisory Team for the City of Spokane. The purpose of the Climate Resilience and Sustainability Board is to provide advice and recommendations to the Mayor, City Council, and community on the actions necessary to achieve the community's sustainability and climate goals consistent with the City's Comprehensive Plan, Sustainability Action Plan, environmental stewardship policies of the City as adopted by the City Council, and within the requirements and parameters set forth in state law.

City Council, Boards, Commissions, and Committees

Throughout the CRVA development process, we provided regular updates and opportunities for participation in the CRVA process by City Council, Plan Commission, Human Rights Commission, and other Boards and Committees.

Public Engagement

Community Climate Planning Survey

We distributed a community-wide survey in Winter 2025, which asked City of Spokane community members about their experience with climate impacts and their ideas for action. Over 1,500 people completed the online survey. The Community Climate Planning Survey focused on the lived experiences of Spokane's community members to gather local understanding, uncover nuances of culture, environment, and social factors influencing behaviors and decisions; highlight personal stories and empower participants by valuing their voices; and reveal hidden needs, challenges, and opportunities that may not be immediately visible through numbers alone. A summary of responses is available online at my.spokanecity.org/climateplanning.

Earth Day Community Workshop

We held a community-wide workshop on Earth Day (April 22nd) 2025. The event was an interactive event, with food and kid-friendly activities. Participants engaged in four different stations and provided input on climate impacts and priorities for action.

Focus Groups

We held three small discussion focus groups in Spring 2025, of 12-15 participants each, to hear from people who are often underrepresented in typical engagement efforts, and who are from groups that are considered more vulnerable to climate impacts. The three focus groups included: youth (18 years or younger), those in Northeast Spokane, and climate justice communities. The focus groups enabled us to hear from community members in more detail than typically possible in surveys and workshops.

Out in the Community

The project team attended various community and organization meetings and events to gather informal community feedback about local climate impacts. Tabling events included the 2024 Fall Leaf Festival, 2025 Spring Riverfront Market, and multiple Earth Day related events.

Climate Hazards and Impacts

Communities across Washington state like Spokane, are already experiencing impacts from a changing climate, including changing precipitation patterns, warming temperatures, extreme weather events, and increased wildfire and smoke events—both locally as well as from wildfires across the region and Western US and Canada. Higher levels of climate pollution in the form of heat-trapping gases, notably carbon emissions, have driven increases in land and ocean temperatures since the Industrial Revolution, leading to various biophysical impacts such as more frequent and intense heatwaves, wildfires, storms, droughts, melting glaciers, sea-level rise, and ocean acidification (IPCC, 2023).

Consistent with the CVI methodology, projections in this section utilize **Representative Concentration Pathway (RCP) 8.5**, which represents a "business-as-usual" scenario, where emissions continue their current trajectory. As the highest emissions scenario, it predicts a global temperature increase of approximately 4.4°C by 2100 compared to pre-industrial levels IPCC, 2023).

The key climate risks in Spokane are summarized in Exhibit 14 below. Notable trends include increasing summer heat, warming winters, decreasing snowpack, increasing stream temperatures, increasing risk of wildfire, and increases in wildfire smoke. Without significant reductions in greenhouse gas (GHG) emissions both regionally and globally, the City is likely to experience the following impacts:

- **Higher annual average temperatures**, with higher temperatures during the summer and winter seasons, and more prolonged and consistent heatwaves.
- **Wildfire and wildfire smoke** with air quality and emergency management risks.
- **Increased stormwater and riverine flooding** from increases in precipitation in winter months.
- **Increased risk of drought**, leading to decreased streamflows during the summer months, and increased water usage.
- **Reduced snowpack**, resulting in less water availability for streams during the late summer months, and less recharge in groundwater.

Exhibit 14. Climate Hazards and Impacts

Climate Impact	Climate indicator(s)	Projected (RCP8.5) or historic change	Timeframe	Data source
Annual Average Temperature	Historic change in annual temperature	Increase of 2°F (1.1°C)	1895-2024	(NOAA National Center for Environmental Information, 2024)
Summer (Jun-Aug) Average Temperature	Projected change in temperature	Increase of 11°F (6.1°C)	Baseline (1951-2005) to 2099	(Hegewisch & Abatzoglou, Future Time Series, n.d.)
Annual Precipitation	Projected % change in total annual rainfall	10% increase	Baseline (1951-2005) to 2099	(Hegewisch & Abatzoglou, Future Time Series, n.d.)
Summer Precipitation (Jun-Aug)	Projected % change in total summer rainfall	14% decrease	Baseline (1951-2005) to 2099	(Hegewisch & Abatzoglou, Future Time Series, n.d.)
2-Year Storm	Projected % change in the magnitude of a 2-year storm	Average, City Blocks 16.7% increase	Baseline (1980-2009) to 2069	(Morgan, H., Mauger, G., Won, J., Gould, D. 2021)
February Streamflow	Projected % change in Feb streamflow along the Spokane River	84% increase	Baseline (1951-2005) to 2070-2099	(Hegewisch, Abatzoglou, & Chegwidden, Future Streamflows, n.d.)
May Streamflow	Projected % change in May streamflow along the Spokane River	60% decrease	Baseline (1951-2005) to 2070-2099	(Hegewisch, Abatzoglou, & Chegwidden, Future Streamflows, n.d.)

Climate Impact	Climate indicator(s)	Projected (RCP8.5) or historic change	Timeframe	Data source
Drought	Projected change in the rate of water drying from soil and plants	Increase of 8.2 inches (208 mm)	Baseline (1951-2005) to 2099	(Hegewisch & Abatzoglou, Future Time Series, n.d.)
Snowpack	Projected likelihood of the April 1 snowpack being below 75%	100%	Baseline (1980-2009) to 2070-2099	(Chegwidden, Nijssen, Rupp, & Mote, 2017)
Wildfire Danger	Projected change in "extreme" fire danger days	Increase of 11 days	Baseline (1971-2000) to 2070-2099	(Hegewisch & Abatzoglou, Future Boxplots, n.d.)
AQI Index	PM2.5 concentrations	Spikes trending in recent years	1999-2024	(EPA, Air Data - Multiyear Tile Plot, 2023)

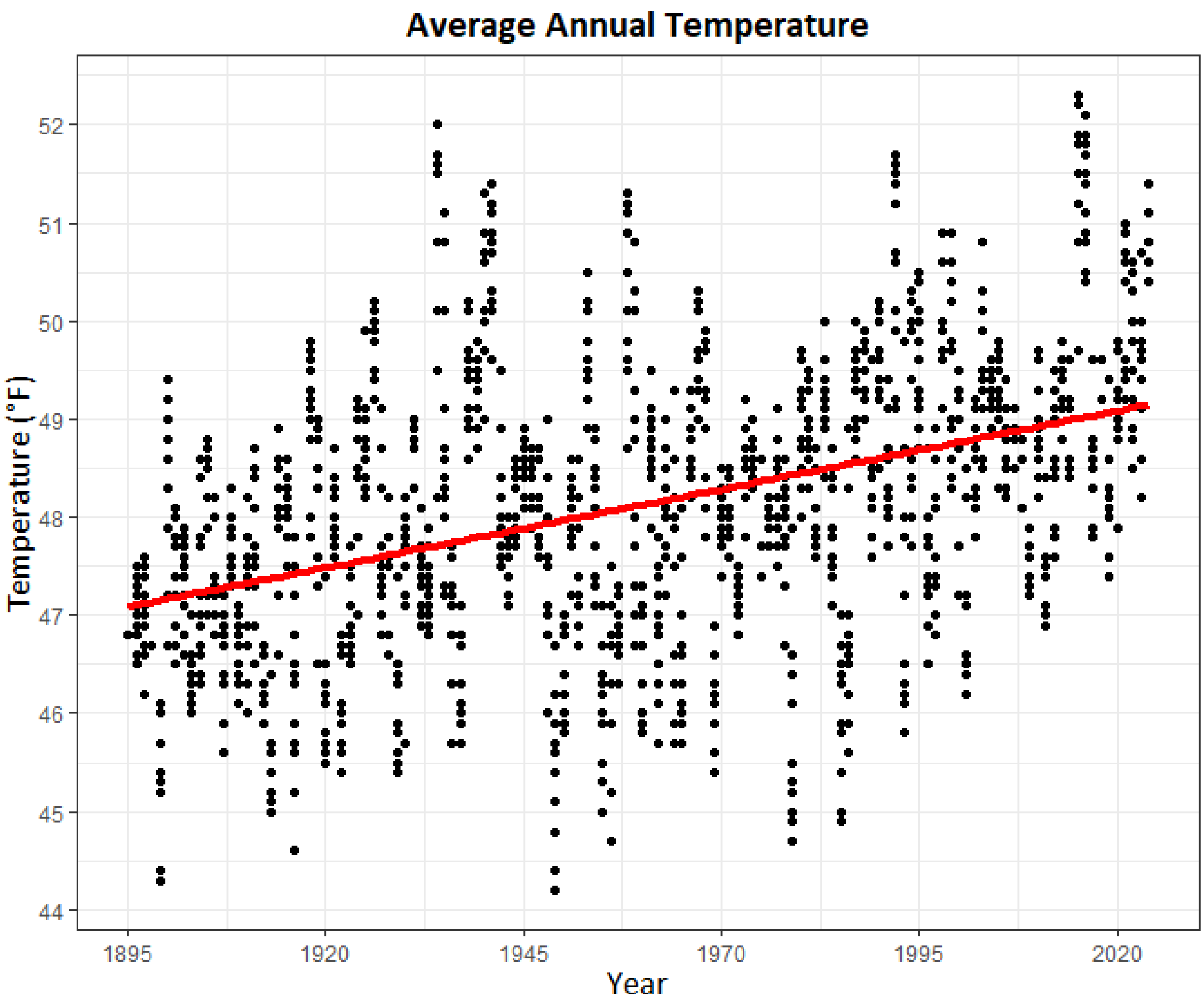
Sources: See Sources Column. Compiled by Cascadia Consulting Group, 2024.

The following sections summarize historical trends and future projections to highlight the current and expected effects of climate change and related hazards on Spokane. Climate vulnerability across community assets and vulnerable community groups is described in **Climate Risk and Vulnerability Results**, including identifying who and what in the city will be exposed and the level of sensitivity to these impacts.

Temperature

From 1895 to 2024, average annual temperatures in the City of Spokane increased by 2°F, as shown in Exhibit 15 (NOAA National Centers for Environmental Information, 2024).

Exhibit 15. Average monthly temperature between 1899 and 2024 in Spokane, WA.



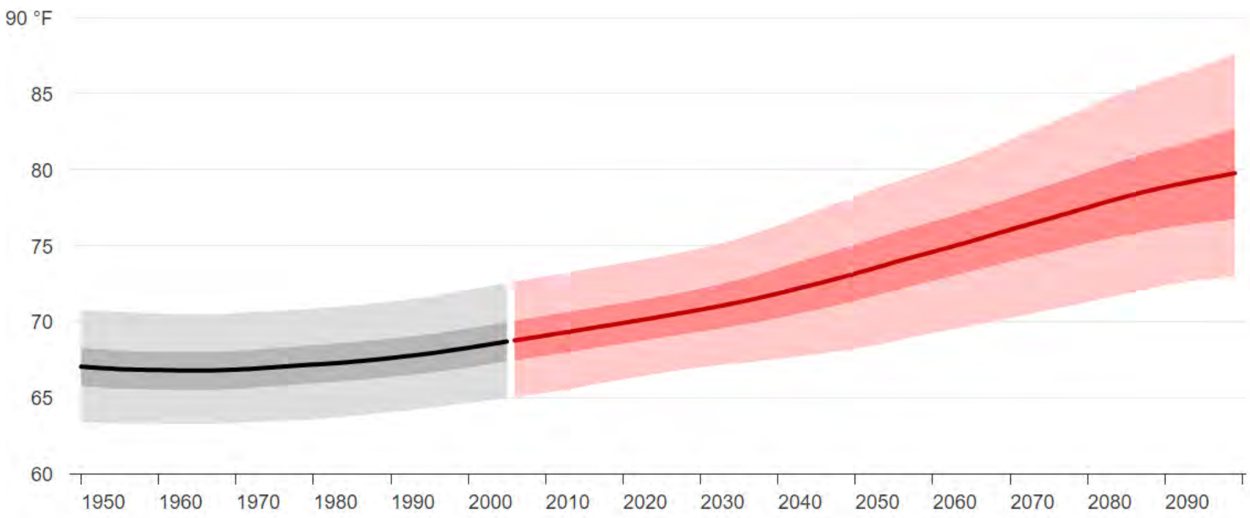
Note: The red line indicates the average monthly temperature between 1899 and 2024 in Spokane, WA
Sources: NOAA National Centers for Environmental Information, 2024; Cascadia Consulting Group, 2024.

Although year-to-year temperature fluctuations are affected by natural climate patterns like El Niño-Southern Oscillation (ENSO) and Pacific Decadal Oscillation (PDO), there is a trend of warming. Additionally, maximum temperatures in August, which may reflect potential summer heat stress, have risen by 3.5°F between 1979 and 2023 (Hegewisch & Abatzoglou, Future Time Series, n.d.).

Relative to the 1951 to 2005 historic average, the annual maximum daily temperature in Spokane is projected to rise from 60.6°F to 69.5°F under the RCP8.5 scenario, by 2099.

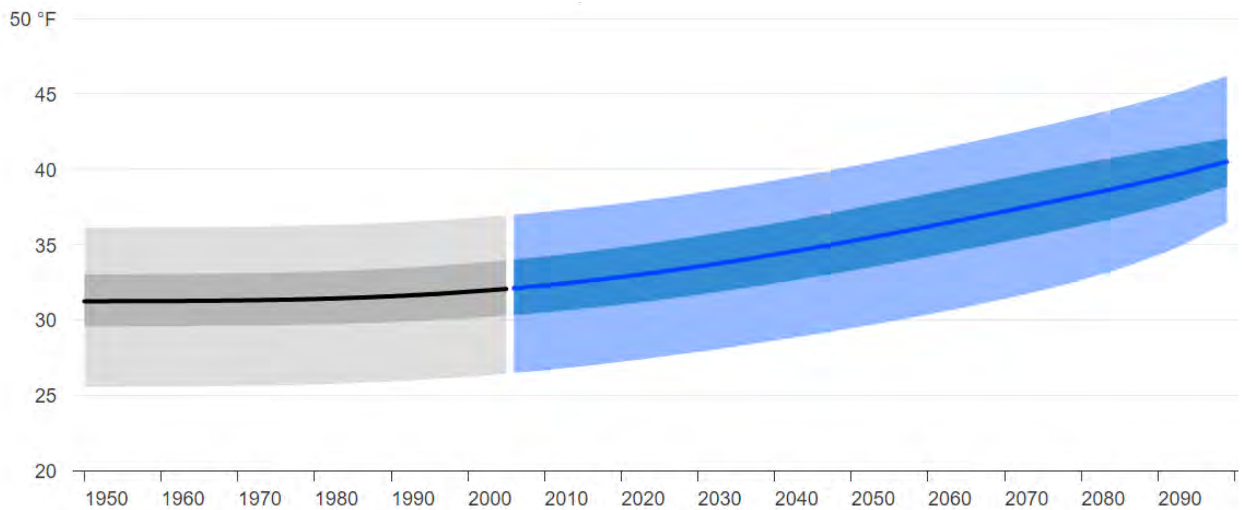
Under the same scenario and timeframe, average summertime temperatures (Jun-Aug) are projected to increase by 11°F (See Exhibit 16), and wintertime temperatures (Dec-Feb) are projected to increase by 8.9°F (See Exhibit 17).

Exhibit 16. Projected increase in average summertime (Jun-Aug) temperature under the RCP8.5 scenario, in the City of Spokane.



Sources: Climate Toolbox, 2024; Cascadia Consulting Group, 2024.

Exhibit 17. Projected increase in average wintertime (Dec-Feb) temperature under the RCP8.5 scenario in the City of Spokane.



Sources: Climate Toolbox, 2024; Cascadia Consulting Group, 2024.

The projected increase in temperature is associated with an increase in the frequency and intensity of heat waves and “hot” days (see Exhibit 18) within Spokane.

Exhibit 18. Projected change in the number of hot days per year in the City of Spokane under the RCP8.5 scenario, compared to the 1980-2009 baseline.

Time frame	2040-2069	2050-2079	2060-2089	2070-2090
Change in number of days above 100°F	9.8	14.1	19.0	23.8

Source: Climate Toolbox, 2024.

Areas most likely to experience the impacts of extreme heat are those areas with greater impervious area and less tree canopy. Land surface temperature is shown by block group on Exhibit 19.

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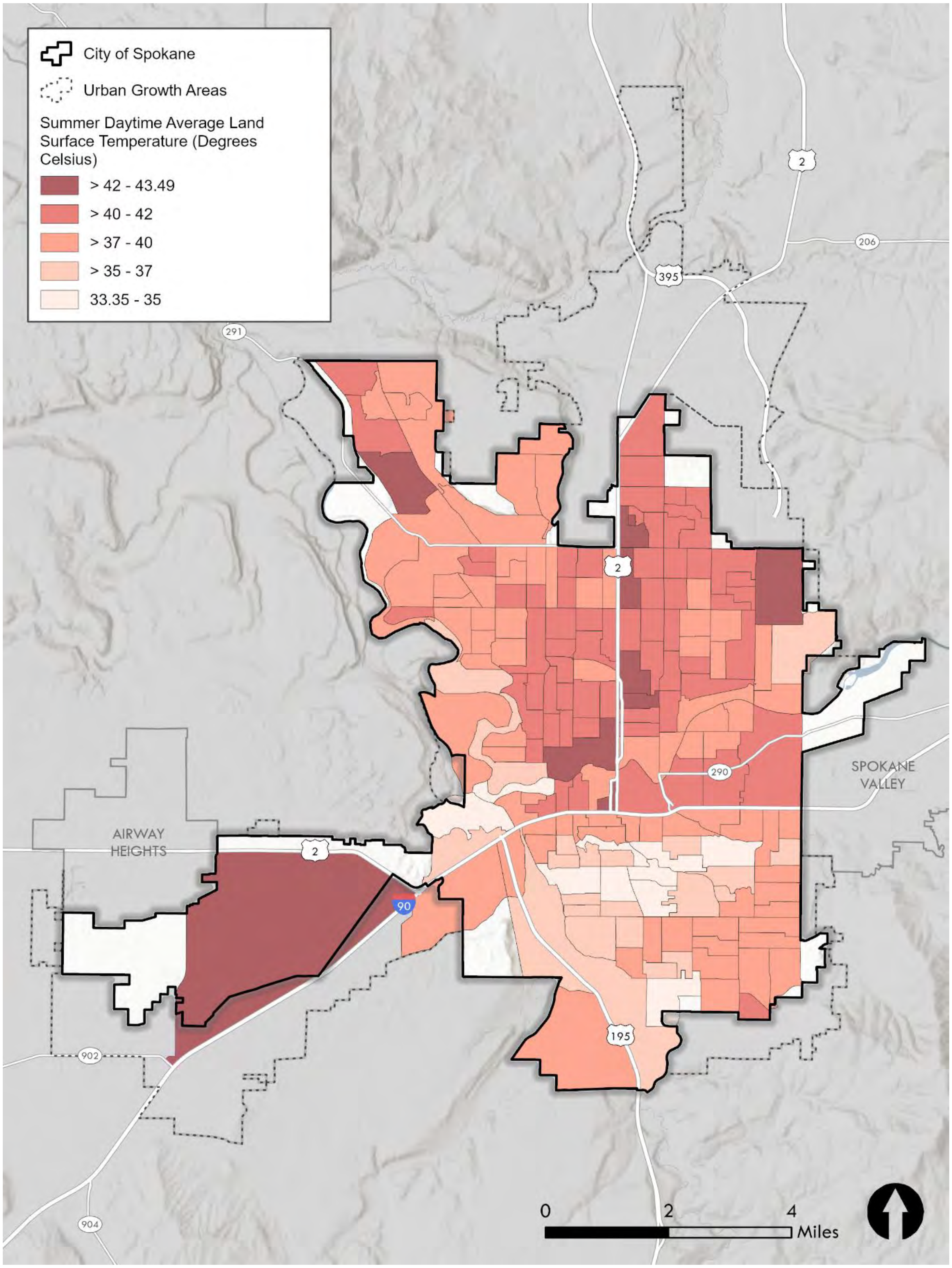
Exhibit 19. City of Spokane Climate Vulnerability Index: Land Surface Temperature



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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Meanwhile, cold weather events or cold waves are projected to become less frequent in Spokane. By the end of the century, the RCP8.5 scenario projects an increase of 87 days with a minimum temperature above 32°F per year (Hegewisch & Abatzoglou, Future Boxplots, n.d.).

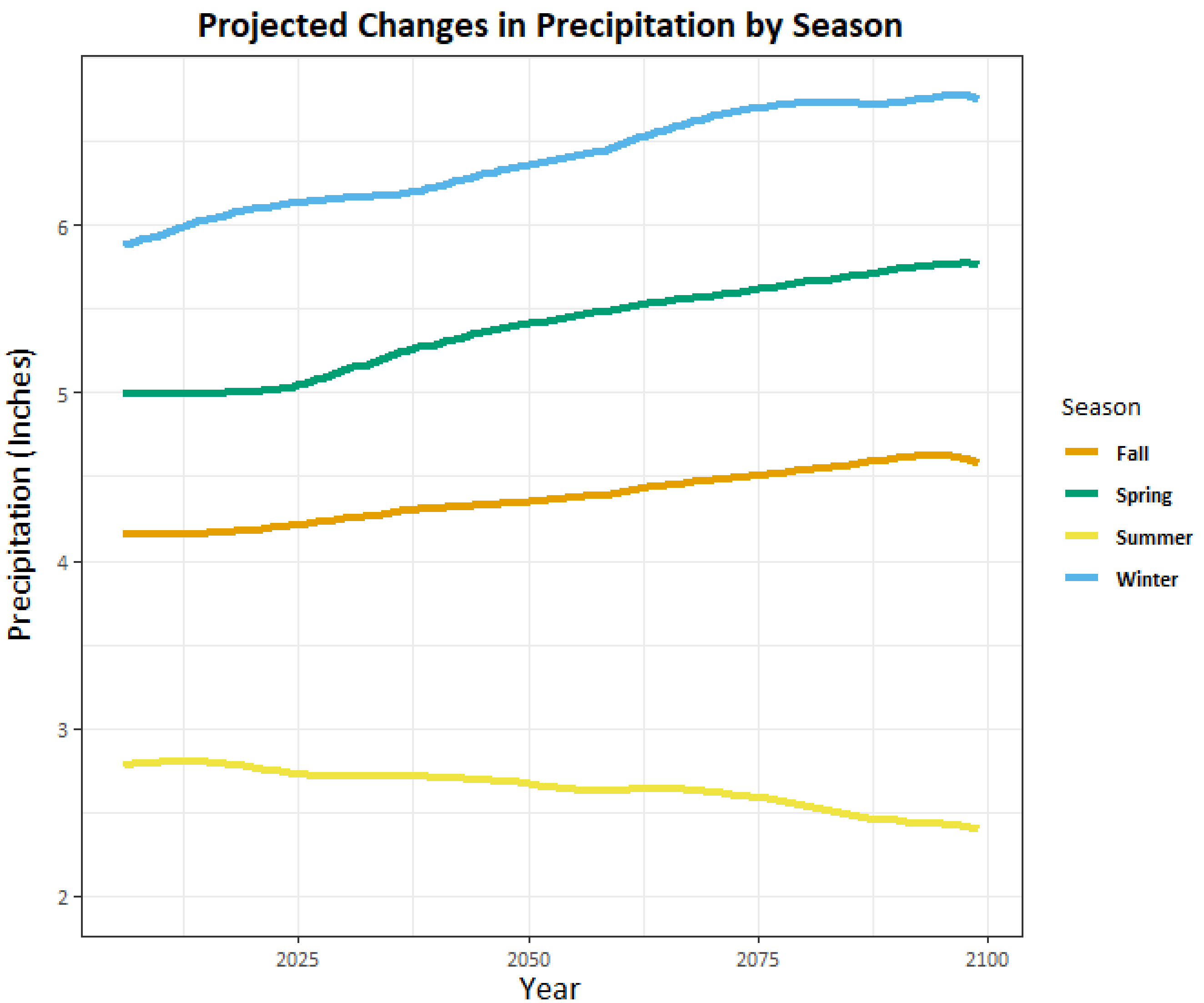
Precipitation, Snowpack, and Drought

Precipitation, snowpack, and drought are related hazards as they all affect the timing and amount of water that is available to Spokane's ecosystems and other functions.

Precipitation

From 1981 to 2010, the City of Spokane received an average of 17.6 inches of rainfall annually. In recent years, there has been a slight increase in rainfall, mainly due to more precipitation in the fall, winter, and spring (Breems & Booth, 2020). These trends are projected to continue as fall, winter, and spring precipitation increases and summer precipitation decreases, as shown in Exhibit 20 (Hegewisch & Abatzoglou, Future Time Series' web tool, 2020). Compared to the baseline period of 1951-2005, annual precipitation is projected to increase by 10% by 2099. However, summertime precipitation is expected to decrease by 14% during the same period (Hegewisch & Abatzoglou, Future Time Series, n.d.). Heavier precipitation is expected during the winter months with 24-hour storms that occur every 2 years expected to have on average 23% more rainfall relative to the historical baseline (1980-2009). Heavy precipitation is an indicator of flooding that can affect infrastructure (Raymond, 2022).

Exhibit 20. Projected seasonal precipitation changes compared to the baseline (1951-2005).



Note: The graph displays total seasonal precipitation projections (RCP8.5) by year.
Sources: Climate Toolbox, 2024; Cascadia Consulting Group, 2024.

Snowpack

Warming temperatures are expected to cause a shift from snow to rain across many western mountain ranges. In the Spokane region, snow stations in the Cascades and Northern Rockies are projected to experience low-snowfall years—those when the snowfall water equivalent falls below the 25th percentile—almost every year by midcentury, compared to the baseline average of every four years, as shown in Exhibit 21 (Lute, Abatzoglou, & Hegewisch, 2015).

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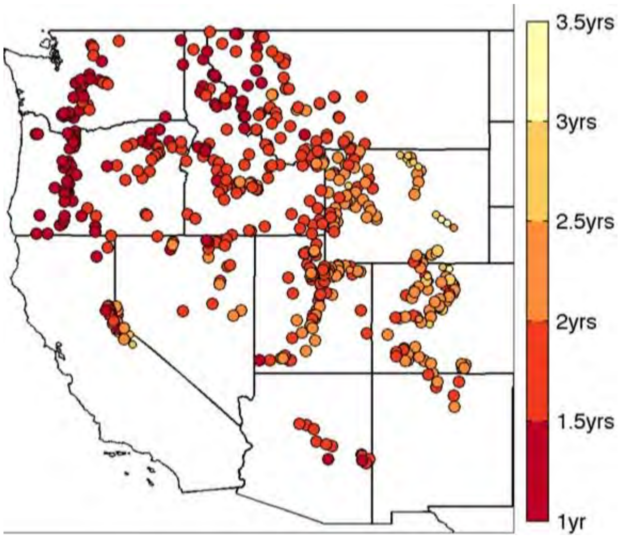
Exhibit 21. Low-snowfall year return intervals by mid-century in Western mountain ranges.



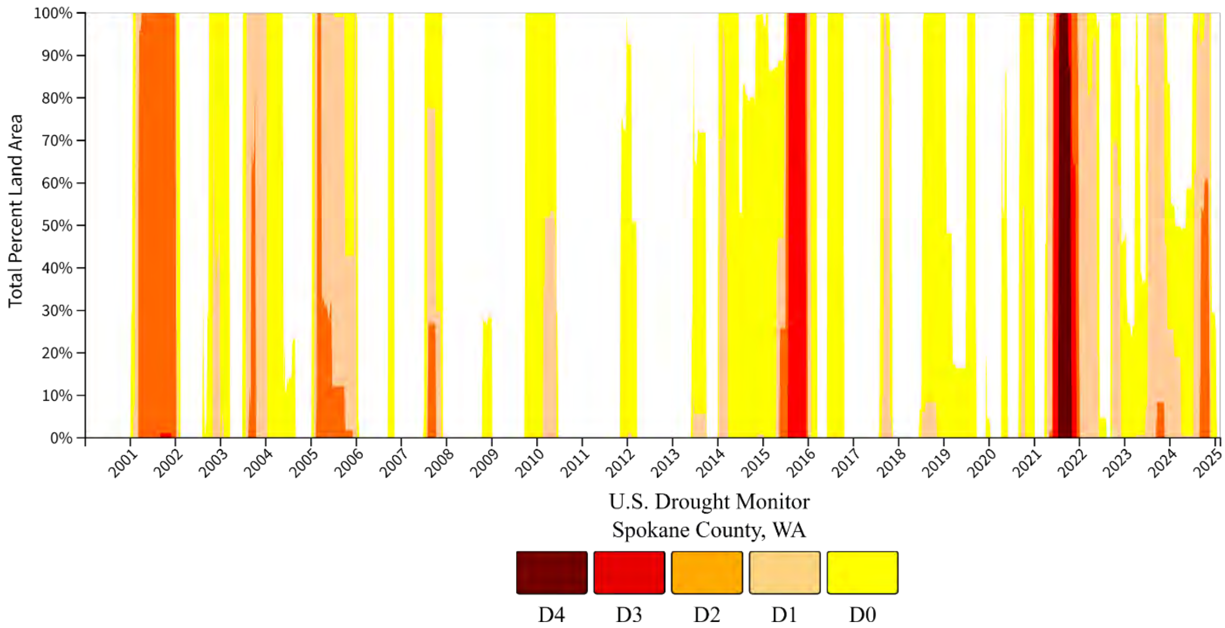
Source: AGU, 2024.

The increase in the frequency of low-snowfall years will likely lead to significant changes in snowpack. Under the RCP8.5 scenario, the likelihood of the April 1 snowpack in the Spokane county area being below 75% of the 1980-2009 average by the end of the century is nearly 100% (Chegwidden, Nijssen, Rupp, & Mote, 2017).

Drought

Between 2000 and 2025, Spokane County has experienced several years of drought, including a period of exceptional drought during 2021 characterized by shortages of water in reservoirs, streams, and wells (see Exhibit 22).

Exhibit 22 Drought periods for Spokane County are marked ranging from D0 to D4, with D0 being abnormally dry" and D4 being "exceptional drought".



Source: NOAA, 2025

The City of Spokane primarily pumps its water from the Spokane Valley-Rathdrum Prairie aquifer. Although slight increases in precipitation are projected, the benefits may be offset by decreased snowpack, potentially leading to less recharge of the aquifer (Meixner, et al., 2016).

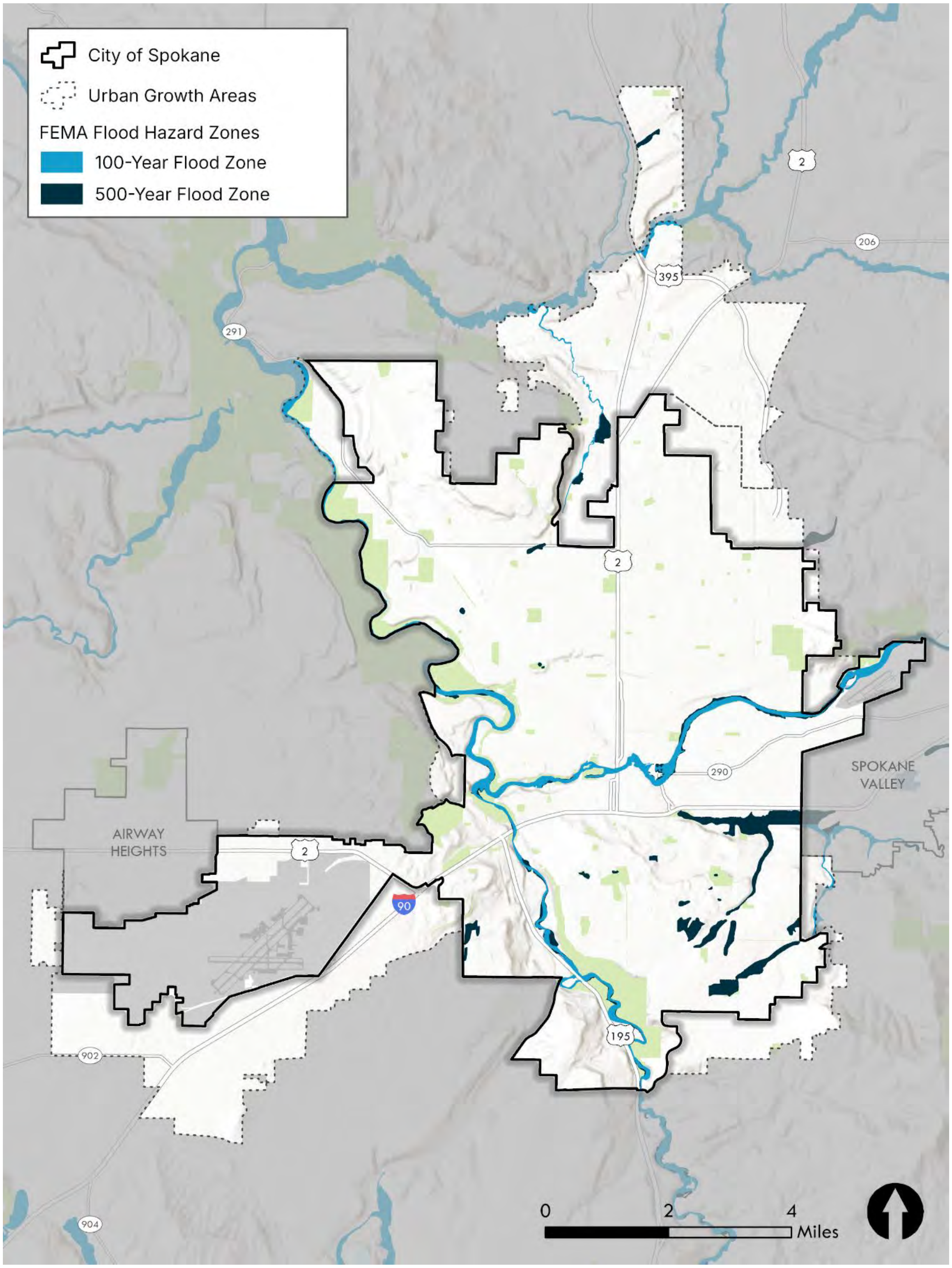
Additionally, Spokane and Kootenai counties, which surround the aquifer, are projected to see increases in evapotranspiration of 8.2 inches and 9.1 inches, respectively, by the end of the century under the RCP8.5 scenario (Hegewisch & Abatzoglou, Future Time Series, n.d.). These increases could further diminish the aquifer's recharge rate, potentially leading to more intense and prolonged drought in Spokane.

Streamflow and Inland Flooding

Inland flooding is expected to intensify and become more frequent as winter (December through March) streamflow in the Spokane River is projected to increase.

The City of Spokane has previously faced impacts from inland flooding from heavy rainfall and impervious surfaces. Heavy precipitation events are expected to increase in frequency and intensity. In addition, riverine flooding may become more of a concern, particularly in flood-zones. The 100-year flood zone, highlighted in red in Exhibit 23, represents areas with a 1% chance of flooding in any given year, based on historical data. Additionally, the 500-year flood zone, shown in purple, indicates regions with a 0.2% chance of flooding annually (City of Spokane, Economy, n.d.). These flood zones are concentrated along the city's major waterways and extend into urban areas.

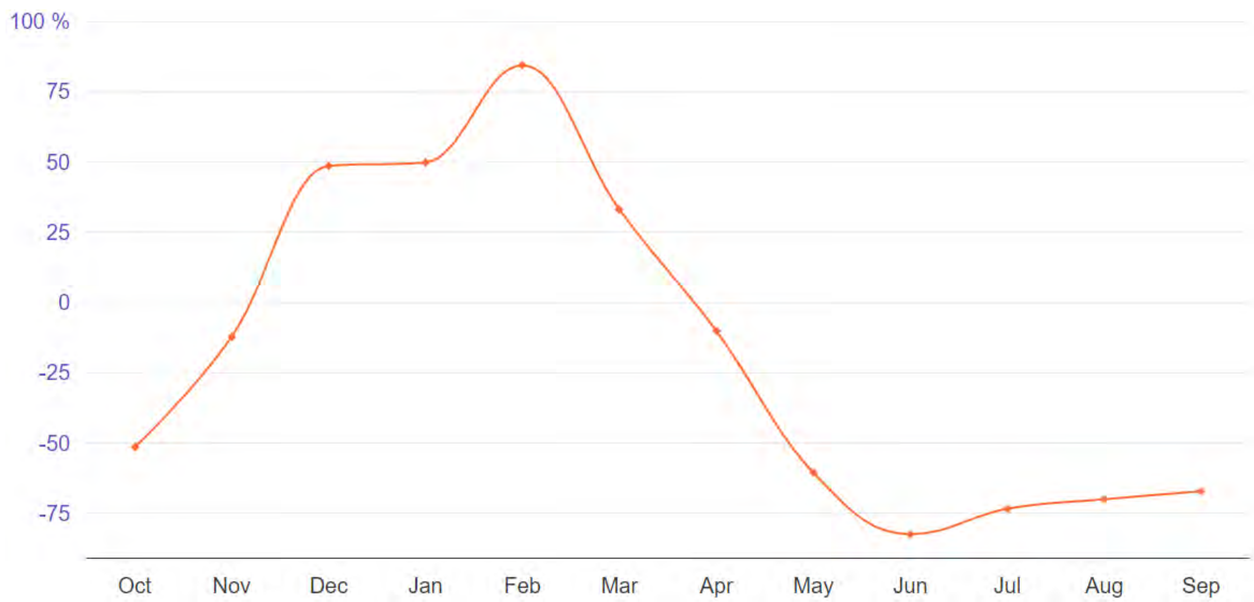
Exhibit 23. 100-year and 500-year flood zones within the City of Spokane.



Source: City of Spokane Map Spokane, 2024.

By the end of the century, February streamflow at the Monroe Street gauge along the Spokane River is projected to be 84% higher than the historical average, leading to increased flood risk, as shown in Exhibit 24 (Hegewisch, Abatzoglou, & Chegwidden, Future Streamflows, n.d.).

Exhibit 24. Projected (2070-2099) percent change in non-regulated streamflow- or modeled flow without dams vs historical in the Spokane River at Monroe Street.



Source: Climate Toolbox, 2024.

In contrast to the increasing winter streamflow, summertime streamflow is expected to decrease significantly in volume and begin earlier in the year, which could contribute to drought conditions. Under the RCP8.5 scenario, by the end of the century, May streamflow is projected to decrease by 10,598 cubic feet per second—a 60% reduction compared to the historical average, as demonstrated in Exhibit 25 (Hegewisch, Abatzoglou, & Chegwidden, Future Streamflows, n.d.)

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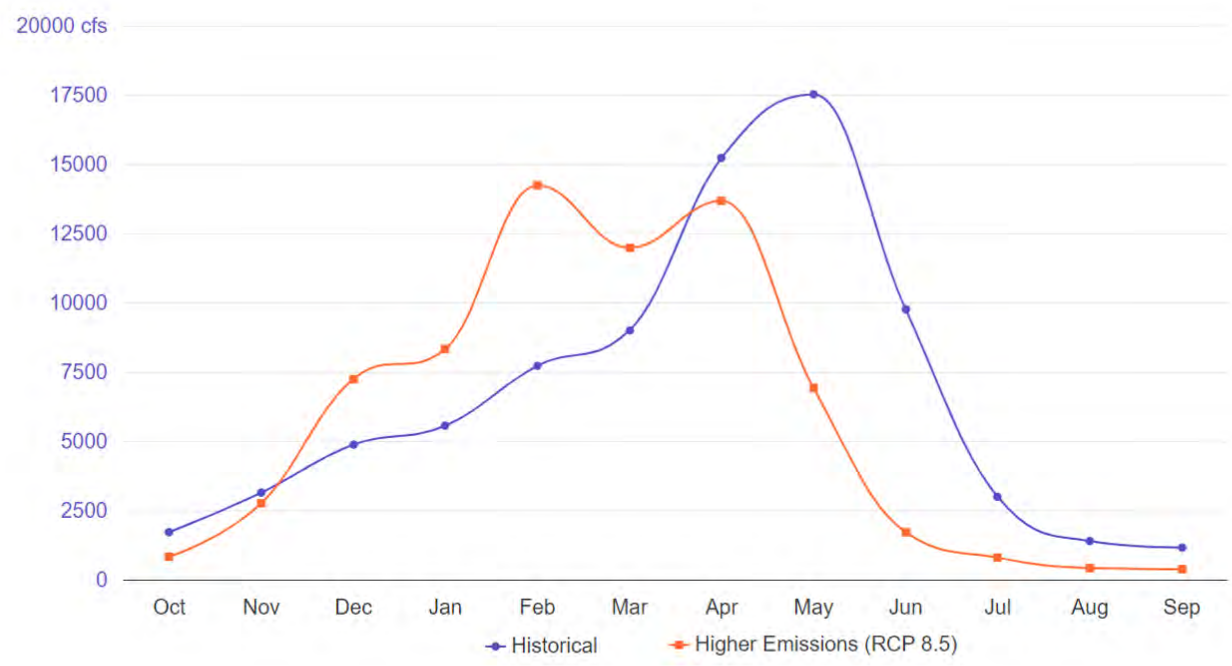
Exhibit 25. Projected and historic non-regulated streamflow- or modeled flow without dams in the Spokane River at Monroe Street.



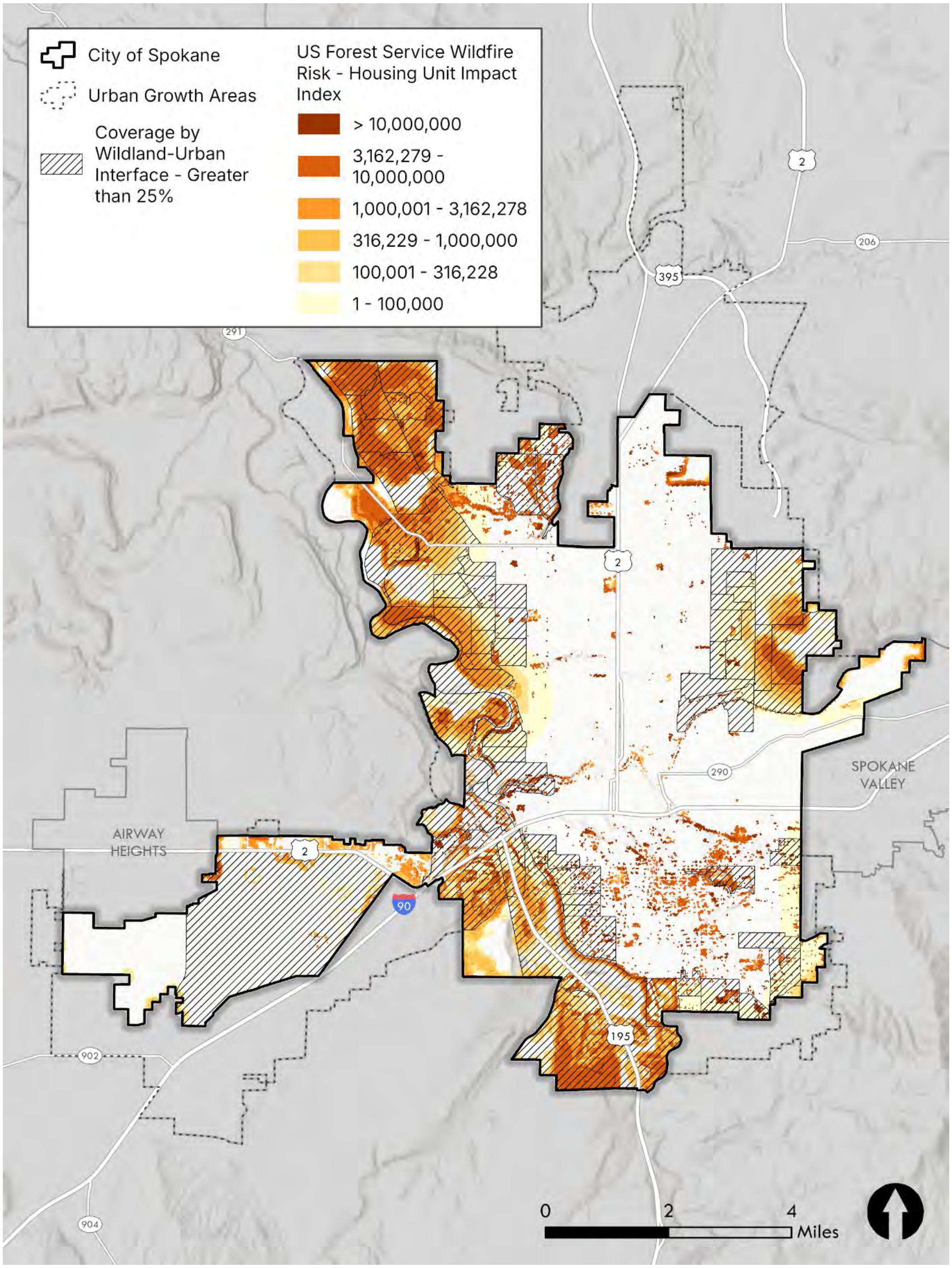
Source: Climate Toolbox, 2024.

The impacts of rising air temperatures, diminishing snowpack, and reduced summer flow are projected to cause warmer temperatures in low- and mid-elevation streams across Washington state, including the Spokane River (Gates, Quinn, & Georgiadis, 2022). Additionally, the combination of decreased flow and warmer stream temperatures can negatively affect the river's water quality, leading to increased levels of geological contaminants and higher turbidity (Snover, Mauger, Binder, Krosby, & Tohver, 2013).

Wildfires and Smoke

Due to its location being surrounded by forests, the City of Spokane has been historically at risk of wildfires. Areas within the wildland urban interface (WUI), where structures and other human development meets or intermingles with wildland vegetative fuels, are particularly at risk. See Exhibit 26. From 1878 to 2019, several wildfires have crossed or come close to the City of Spokane boundaries,

as shown in Exhibit 26. Climate Vulnerability Index: Blocks with Wildland Urban Interface 25%+ and US Forest Service Housing Impact Index

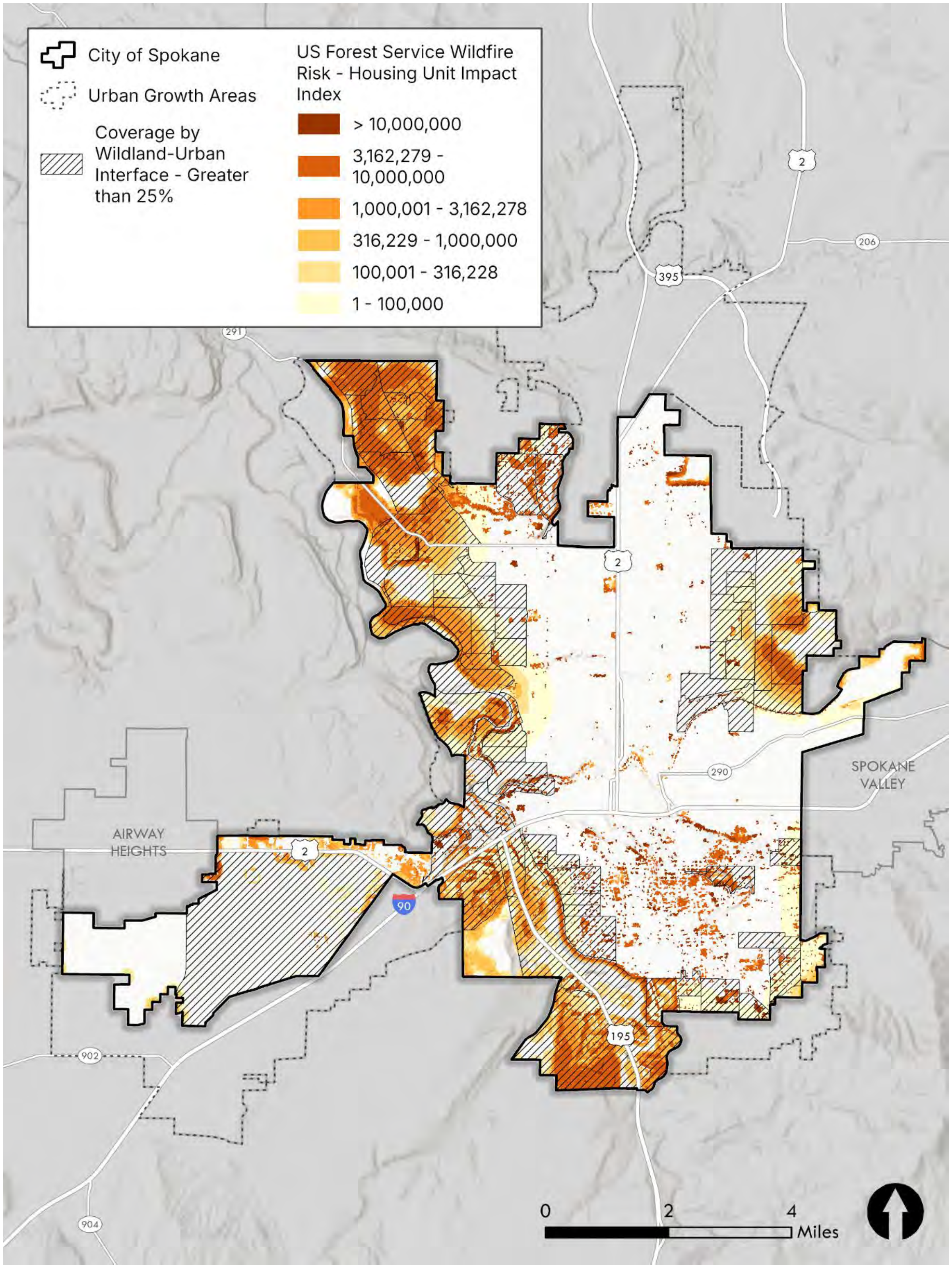


Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Exhibit 27 (Welty & Jeffries, 2020).

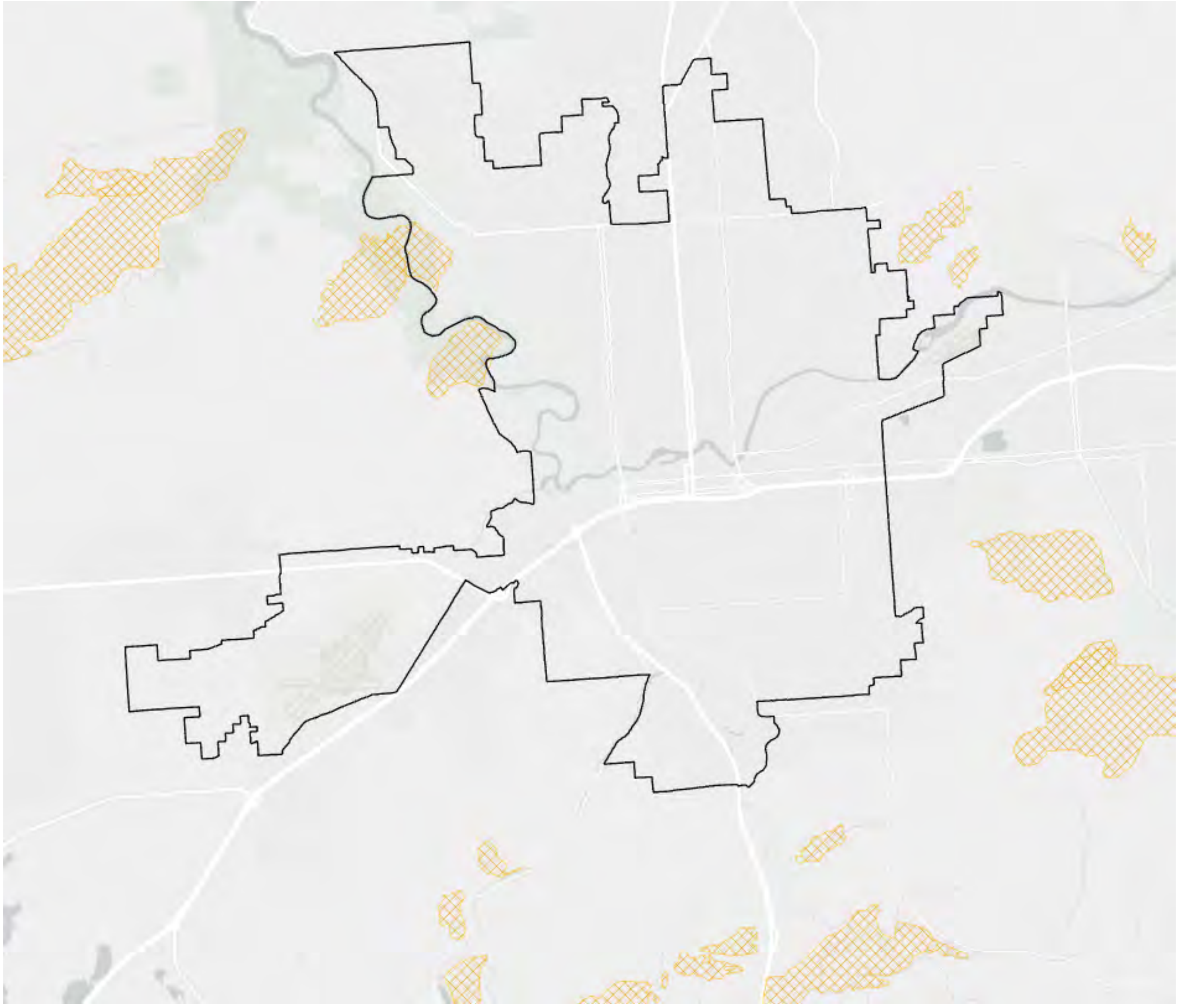
> *"Spokane ranks number four in the state as most subject to wildland urban interface danger, and is number one when it comes to the amount of homes in the WUI intermix. ." – Spokane Fire Department Staff Interview*

Exhibit 26. Climate Vulnerability Index: Blocks with Wildland Urban Interface 25%+ and US Forest Service Housing Impact Index



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Exhibit 27. Historic wildfires from 1878 to 2019 near City of Spokane.

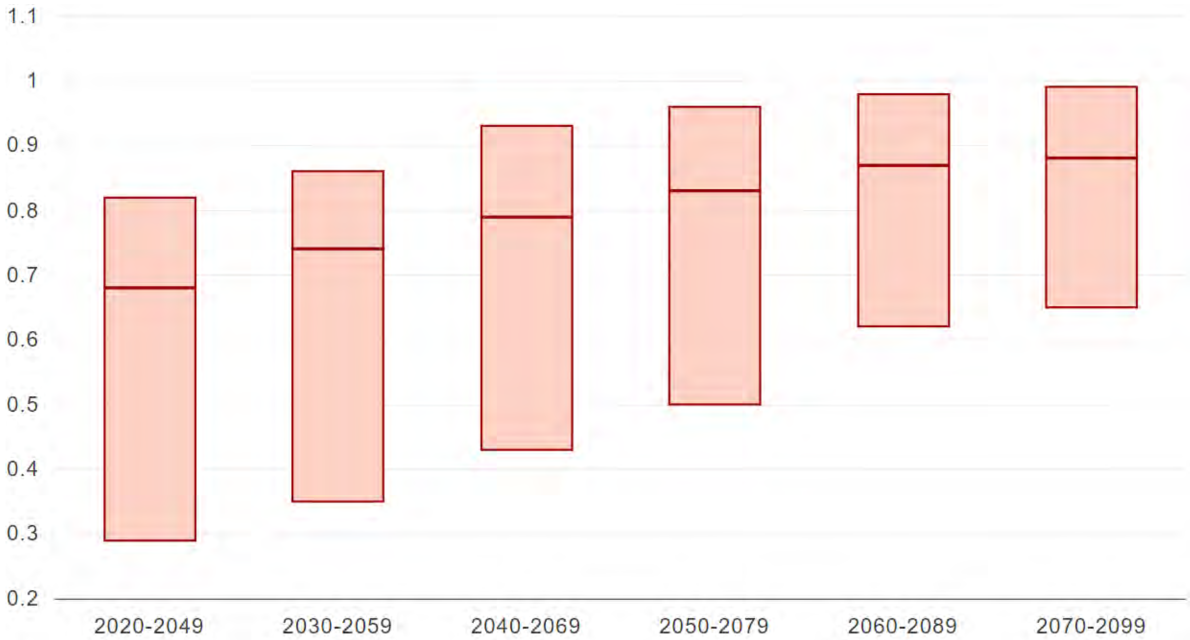


Source: City of Spokane Map Spokane, 2024.

As summertime precipitation decreases and temperatures rise, the amount of dead vegetation will increase, heightening the likelihood of wildfires (Chang, et al., 2023). The City of Spokane is projected to experience an additional 16 "very high" fire danger days and 11 "Extreme" fire danger days by midcentury (Hegewisch & Abatzoglou, Future Boxplots, n.d.). Spokane County is also projected to see an increase in wildfire probability. By the end of the century, the likelihood of climate and fuel conditions within Spokane County being favorable for wildfire in any given year is expected to be 87%, which means that there is an 87% chance that a given year between 2070-2099 will have climate and fuel conditions that are favorable for wildfire, as shown in Exhibit 28 (Sheehan, Bachelet, & Ferschweiler, 2015).

AGENDA

Exhibit 28: Likelihood of climate and fuel conditions being favorable for wildfire in any given year in Spokane County.

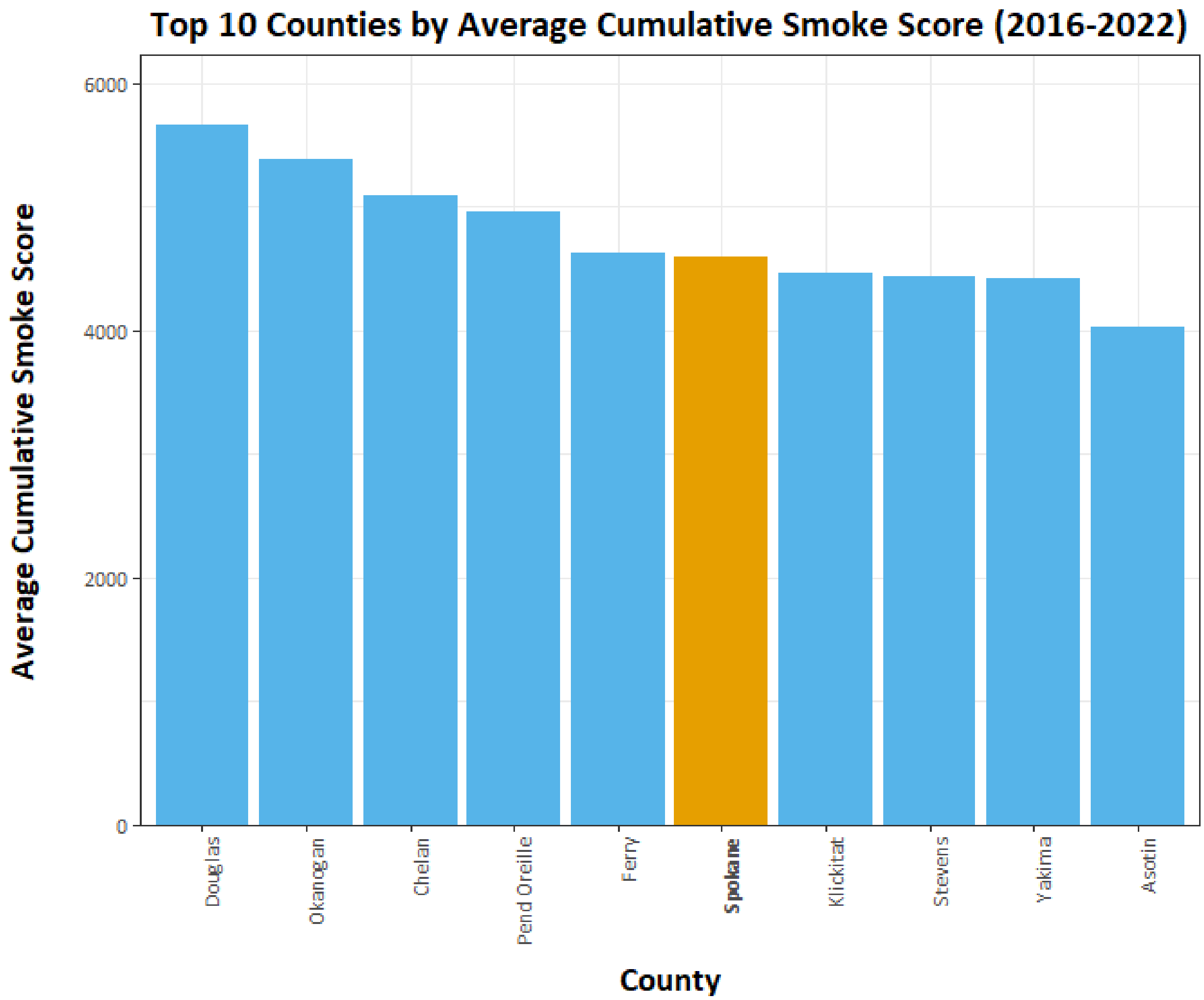


Source: Raymond & Rogers, 2022. Accessed 21 July 2024.

In addition to the extensive physical damage caused by wildfires, Spokane experiences significant air quality impacts from regional wildfire smoke from fires across the Western U.S. and Canada. Smoke from these fires degrades air quality and could cause significant health and economic issues for the City of Spokane. Wildfire smoke is strongly associated with increased hospital admissions and the worsening of respiratory and cardiac conditions (Wilgus & Merchant, 2024).

Spokane is already experiencing the impacts of wildfire smoke, with Spokane County having one of the highest wildfire smoke scores in Washington state (See Exhibit 29). These scores reflect elevated particulate matter concentrations on days affected by wildfire smoke (Washington Tracking Network & Washington State Department of Health, 2023).

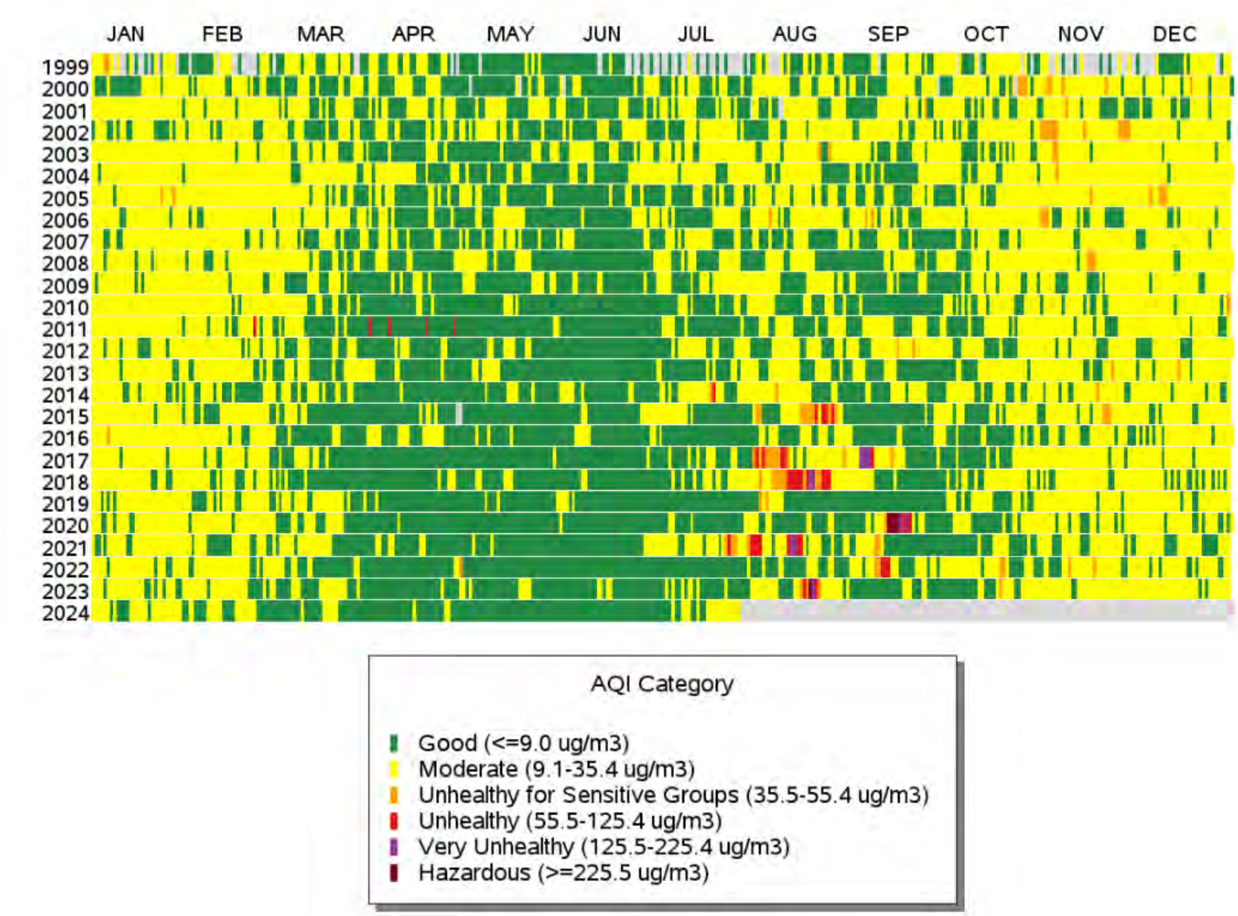
Exhibit 29. Washington state counties ranked by average cumulative smoke score (2016-2022).



Sources: Washington State Department of Health – Washington Tracking Network, 2024; Cascadia Consulting Group, 2024.

While particulate matter is difficult to project based on historical data, recent years have seen notable spikes, indicating unhealthy pollution levels for residents (EPA, Climate Change Land and Emergency Management: Resiliency and Adaptive Capacity, n.d.). See Exhibit 30. The Spokane-Spokane Valley area is susceptible to experiencing high levels of pollution, such as PM2.5, in any given year (Washington Tracking Network & Washington State Department of Health, 2023).

Exhibit 30. PM2.5 Air Quality Index (AQI) from 1999 to 2024 in the Spokane-Spokane Valley region.



Source: Environmental Protection Agency – AirData, 2024.

These spikes align with summer and early fall months, and have more recently been attributed to wildfire smoke than other sources like air stagnation/wood smoke (Spokane Regional Clean Air Agency [PM2.5-AQI-over-moderate-since-1999-2.pdf]).

Exhibit 31 Sources of air pollution on poor air quality days

Years	Number of Unhealthy to Hazardous Days due to Wildfire Smoke	Number of Unhealthy to Hazardous Days Due to other Sources
2020-2024	25	4
2015-2019	44	5
2009-2014	3	7
2005-2009		3
2000-2004	0	13

Source: Spokane Clean Air Agency, 2024

Changing Climate Trends and Vulnerable Populations

Warming temperatures, shifting precipitation patterns, increased wildfire risk, and more frequent smoke events are just a few of the climate hazards impacting the City of Spokane that are projected to intensify in the coming decades. These changes—driven by rising greenhouse gas emissions—pose risks to the city's infrastructure, ecosystems, economy, and the health and safety of its residents.

While changes in climate impact everyone, not all communities experience these impacts equally. Social, economic, and environmental conditions shape how different populations are affected and their ability to adapt. Communities that face the first and worst impacts to climate change often live in areas with aging infrastructure, limited access to healthcare, and exposure to environmental hazards—factors that heighten their risk and reduce their capacity to recover from climate-related events.

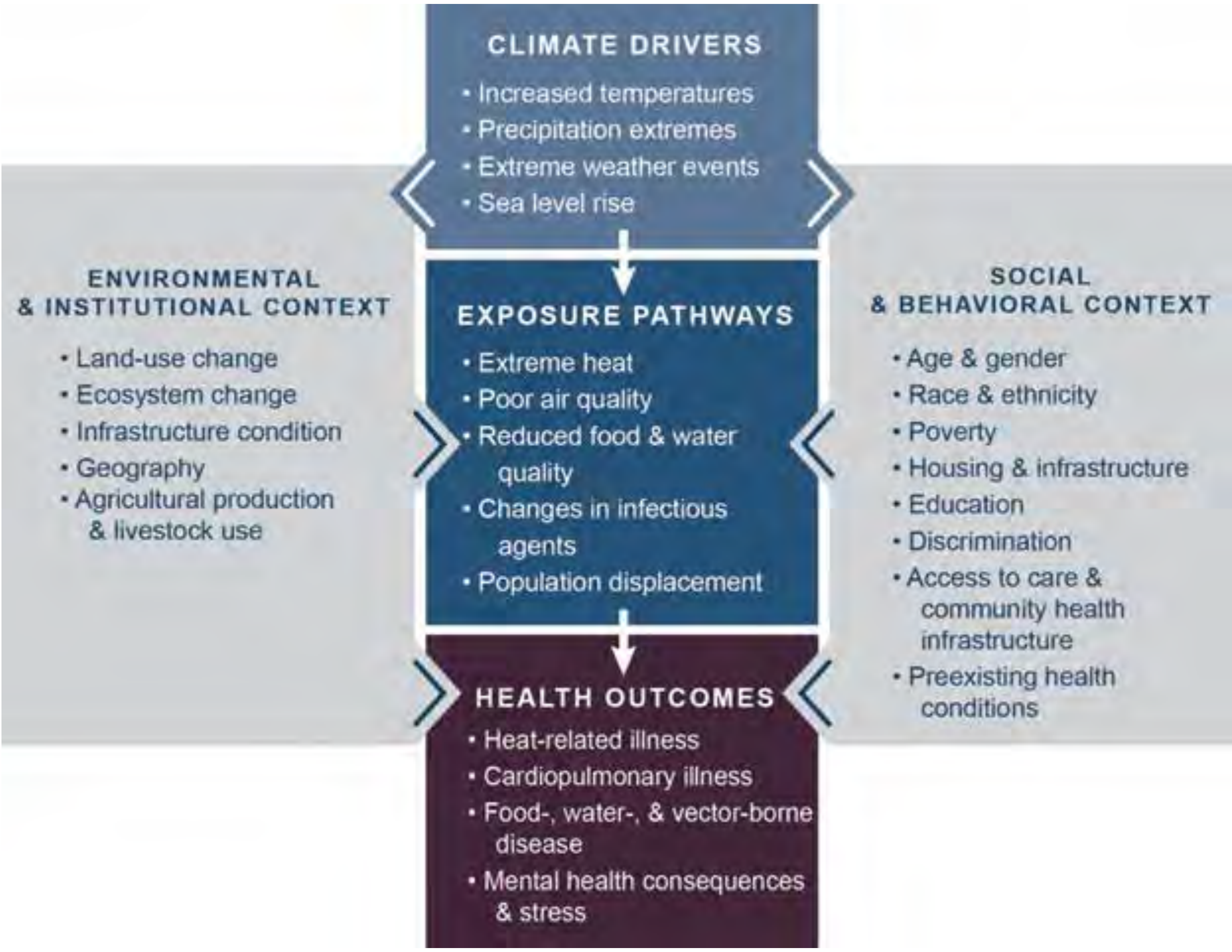
The following sections summarize historical climate trends and future projections for the City of Spokane, highlight key climate hazards, and identify which communities and systems are most vulnerable.

Vulnerable Populations

Specific communities and populations are more likely to experience barriers in preparing for and recovering from climate events. Many of these barriers are connected to institutional and structural discrimination that often puts these communities and populations in challenging life circumstances and unhealthy environments (WA Department of Health, n.d.).

These unequal structures are collectively known as social determinants of health. These determinants influence daily living conditions—like living and working environments, access to healthcare, and opportunities for healthy behaviors. In disadvantaged groups, social determinants of health interact with climate vulnerability, and climate impacts can exacerbate inequitable social conditions. These can lead to greater exposure to risks, increased sensitivity to health impacts, and reduced ability to adapt to climate impacts (see Exhibit 32).

Exhibit 32. Climate and determinants of health outcomes.



Source: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment, USGCRP, 2016

Key vulnerable populations in the City of Spokane:

- Native Americans
- Black and Latino residents
- Low-income residents and those experiencing poverty
- Houseless and housing-insecure residents
- Youth and older residents
- Residents with disabilities
- Residents with chronic health conditions
- Outdoor workers
- Women and female headed households

As the Environmental Protection Agency notes (EPA, 2025) certain groups may be more at risk because:

- People living in **environmental justice communities** and areas that are exposed to environmental harms like air pollution.
- They may live in **locations that are prone to climate-related health hazards**, such as flooding, extreme heat, wildfire risk, and wildfire smoke, which may be worsened by decades of infrastructural disinvestment and/or proximity to other pollution sources.
- They can have greater rates of **existing medical conditions often exasperated by environmental harms**, such as physical disabilities, poor mental health, kidney disease, diabetes, asthma, or heart disease, which can be worsened by climate change impacts.
- They may live in areas with **poorly maintained, aging infrastructure, or areas that are historically isolated with limited connectivity** that may not be able to handle climate-related events or be able to adapt as well. Such infrastructure can include buildings, utilities, transportation, and health care systems. Individuals in these communities may also struggle to access **resources and care** during and after extreme weather events.
- They may **have limited financial resources or experience barriers to access based on cultural, language, or citizenship context** that restrict their access to health care, social services, and safe, nutritious food (EPA, Climate Change and the Health of Socially Vulnerable People, n.d.).

Individuals who belong to multiple vulnerable groups may face intersecting risks, heightening their overall vulnerability. Such individuals face a disproportionate share of social, economic, and environmental challenges, which are compounded by climate impacts like extreme heat, wildfire risk, and poor air quality, and exasperated by resource disparities. For example, a low-income outdoor construction worker with asthma may have to work during a wildfire smoke event because they cannot afford to take time off, risking an asthma attack and hospitalization or lost wages. Intersectional reflects a climate-justice-forward approach, which considers how different aspects of a person's lived experience and identity interact in unequal and disparate ways in a term coined by legal scholar Kimberlé (Crenshaw, 1989). [4]

The following highlights from the U.S. Census Bureau profile provide context about some of the vulnerable communities within the City of Spokane, which has a population of about 230,000 people. See also Exhibit 33.

- **Native Americans:** Spokane is the ancestral homeland to the Spokane people, which were forcefully displaced in development of the city and region in the 1800s. Nearly 2% identify as American Indian or Alaska Native alone (while more may identify as two or more races) in the City of Spokane. Spokane also has a significant urban Native American population, currently estimated at around 25,000 in 2021, making it the eighth-largest urban Indian population in the United States with broader Tribal and Native residents from a many different U.S. Tribes and First Nations of Canada (U.S. Census Bureau, 2022). (Shanks, 2021) The Spokane, Kalispel, and Coeur d'Alene Tribes all have Tribal government presences in the region.
- **Communities of Color:** More than 20% of residents identify as Asian, Black or African American, Native Hawaiian and Pacific Islander, or other races. Additionally, around 7% of residents are Hispanic or Latino (of any race).
- **Low Income:** The median income across households is about $65,000 (lower than the County and state median), with about 13% of the population living below the federal poverty level. Census block groups with the lowest median household income are primarily located in the Central City, which also shows the highest poverty rates.
- **Disabled Residents:** About 18% of residents have disabilities, higher than in the state (13.5% per the Census Bureau). Central City and Northeast Spokane have a higher proportion of individuals with disabilities.
- **People Under 5:** Several Census block groups in Northeast Spokane have the highest proportion of the population under 5 years of age in the city.
- **People Over 65:** When looking at the percentage of residents aged 65 and over by Census block group, the highest shares of older residents are found in areas of upper Northeast Spokane, Central City/downtown, and the South Hill.
- **Female-headed households:** Female headed households make up nearly 12% of Spokane's population, but are nearly 15% of renter households, over 50% of households in poverty, and a quarter of those receiving food stamps.

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[4] "Intersectional" means that there is an interaction between and a cumulative effect of experiencing multiple forms of discrimination affecting the daily lives of individuals.

As the City of Spokane plans for a climate-resilient future, it is critical to incorporate the unique needs and adaptive capacities of these communities.

Exhibit 33. Table of Climate-Vulnerable Populations in City of Spokane.

Indicator	Source	Population (Spokane)	Percent of Population, Households, or Groups (Spokane)
American Indian and Alaska Native alone	Table DP05, 2018-2022 ACS Population: 227,922	2,882	1.3% of the population
Black or African American alone	Table DP05, 2018-2022 ACS Population: 227,922	6,006	2.6% of the population
Hispanic or Latino	Table DP05, 2018-2022 ACS Population: 227,922	16,457	7.2% of the population
Below Poverty Level	Table S1701, 2018-2022 ACS Population: 222,429	32,913	14.8% of the population
Women Below Poverty Level	Table S1701, 2018-2022 ACS	17,762	8.0% of the population
Houseless People (County)	Commerce's Snapshot of Homelessness (2024)	16,890 (County)	3% (County)
Seniors (65+)	Table S0101, 2018-2022 ACS Population: 227,922	36,836	16.2% of the population
Youth (Under 5)	Table S0101, 2018-2022 ACS	12,068	5.3% of the population

Indicator	Source	Population (Spokane)	Percent of Population, Households, or Groups (Spokane)
	Population: 227,922		
People with disabilities	Table S1810, 2018-2022 ACS Population: 224,831	37,409	16.6% of the population
5 to 17 years	Table S1810, 2018-2022 ACS Population: 34,072	2,921	8.6% of the age group
65 to 74 years	Table S1810, 2018-2022 ACS Population: 22,347	6,228	27.9% of the age group
75 years and over	Table S1810, 2018-2022 ACS Population: 13,306	6,946	52.2% of the age group
With a hearing difficulty	Table B18102, 2018-2022 ACS Population: 224,831	8,925	4.0% of the population
With a vision difficulty	Table B18103, 2018-2022 ACS Population: 224,831	6,361	2.8% of the population
With a cognitive difficulty	Table B18104, 2018-2022 ACS Population: 212,764	17,122	8.0% of the population
With an ambulatory difficulty	Table B18105, 2018-2022 ACS	16,893	7.9% of the population

Indicator	Source	Population (Spokane)	Percent of Population, Households, or Groups (Spokane)
	Population: 212,764		
With an independent living difficulty	Table B18107, 2018-2022 ACS Population: 178,692	14,538	8.1% of the population
Population in overburdened areas (Ranking 10 [Very High] in Environmental Health Disparities)	Environmental Health Disparities V 2.0, Washington Tracking Network (WTN), 2022 2018-2022 ACS	70,988	32.7% of the population
Female householders, no spouse present, family households	Table S2201, 2018-2022 ACS	11,094	11.6% of households
Owner-occupied	Table S2501, 2018-2022 ACS	4,998	9.1% of owner-occupied units
Renter-occupied	Table S2501, 2018-2022 ACS	6,096	14.9% of renter-occupied units
In poverty	Table S17019, 2018-2022 ACS	2,342	53.3% of the households in poverty
In poverty, renter-occupied	Table S17019, 2018-2022 ACS	1,838	41.9% of households in poverty
Average household size	Table S1101, 2018-2022 ACS	3.11 (2.30 for the total population)	-
Receiving food stamps/SNAP	Table S2201, 2018-2022 ACS	4,368	23.4% of households receiving assistance

Indicator	Source	Population (Spokane)	Percent of Population, Households, or Groups (Spokane)
One or more people 60 years and over	Table S1101, 2018-2022 ACS	3,151	28.4% of female householders, no spouse present, family households

Sources: See Source column in table. Compiled by BERK, 2024.

Intersectionality refers to the interconnected nature of different identities that people hold such as race, socioeconomic class, gender, age, and other aspects and how those create a cumulative effect of multiple privileges or forms of discrimination. This affects the daily lives of individuals or groups. For example, women of color have faced heightened discrimination due to both their gender and race. This can also be connected to climate vulnerability, for example a Native American, low income, and with pre-existing health conditions , for example, would face intersecting vulnerabilities and a higher cumulative vulnerability to impacts like extended wildfire smoke.

Climate Risk and Vulnerability Results

This section presents the core results of the City of Spokane's Climate Risk and Vulnerability Assessment (CRVA), highlighting how climate hazards will affect community systems, infrastructure, and populations across the city. It synthesizes findings from spatial data, sector-specific analysis, and community engagement to identify where and how climate change will have the greatest impact. Readers will find sector-by-sector results, as well as a geographic overview of where vulnerabilities—driven by climate exposure, sensitivity, and adaptive capacity—are most concentrated.

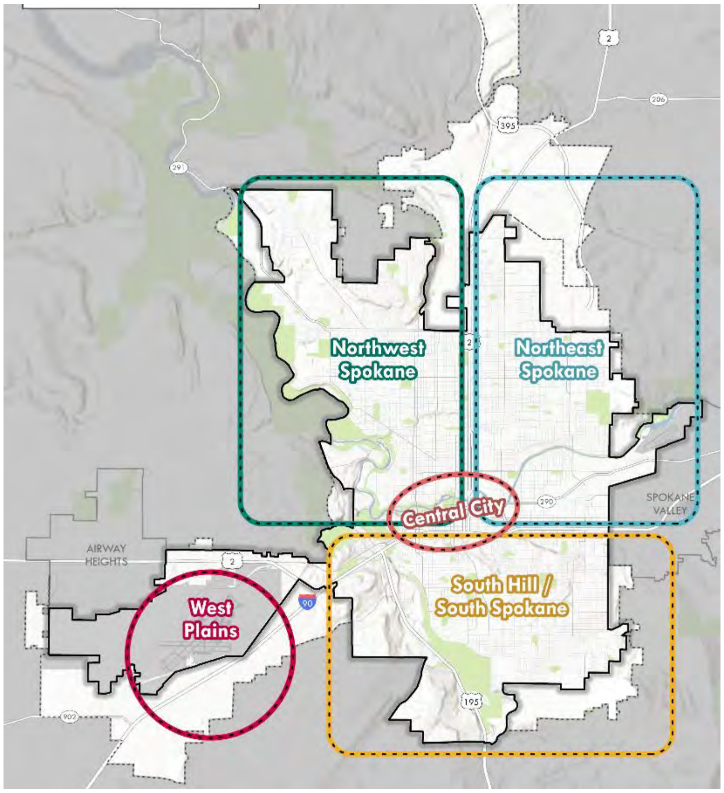
Climate Risks and Vulnerabilities by Location

This CRVA reports on vulnerability across sectors and sub-sectors based on results summarized in **Climate Vulnerability Index**. Areas of the city that are potentially vulnerable due to high exposure, high sensitivity, and low adaptive capacity are shared in Exhibit 35. Generally, the Northwest and Northeast quadrants of Spokane are more vulnerable than South Spokane. The blocks with very high vulnerability are also distilled in Exhibit 35. Exhibit 36 indicates blocks with the highest score considered "very high" in vulnerability.

When describing geographic areas of focus and vulnerability results the consultant team refers to either regions of Spokane such as Exhibit 34, or to particular neighborhoods and blocks considering the results in Exhibit 35.

This framework allows the City of Spokane to identify priority actions, investments, and policy changes that build resilience in the most affected sectors and communities.

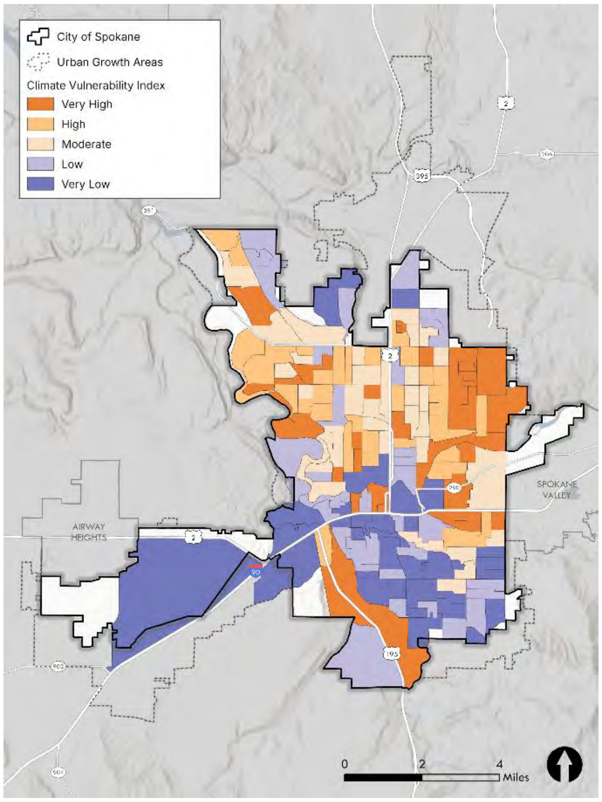
Exhibit 34. Regions of Spokane



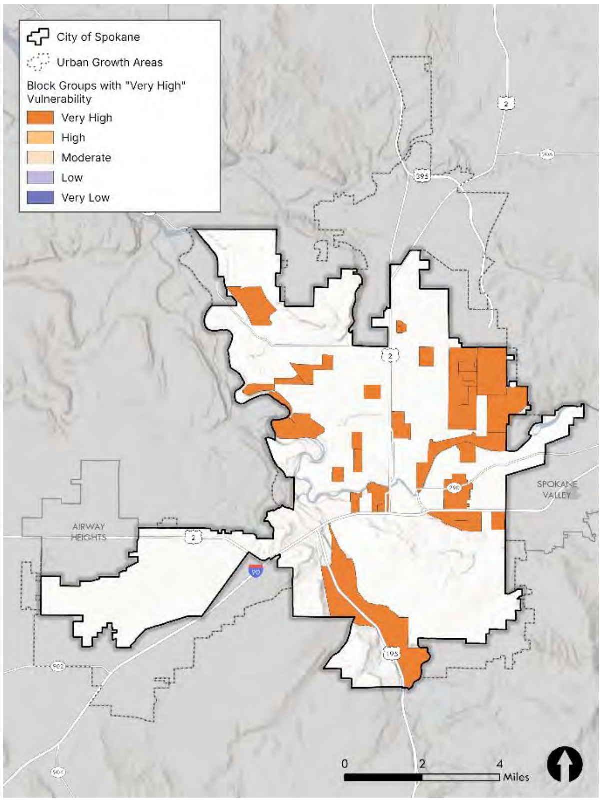
Source: City of Spokane, BERK, 2025.

Exhibit 35. City of Spokane Climate Vulnerability Index and Blocks with Very High Vulnerability

Climate Vulnerability Index



Blocks with Very High Vulnerability



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Exhibit 36. Census Blocks with Very High Exposure, Very High Sensitivity, and Low Adaptive Capacity

Census Block Group	Neighbor-hood	Index Exposure	Index Sensi-tivity	Index Adaptive Capacity	Vulner-ability Index	Drivers
530630010005	Audubon/ Downriver	Very High	Very High	Moderate	Very High	Extreme precipitation, Fire/Smoke, Age, Environment, Transportation
530630016002	Bemiss	Very High	Very High	Low	Very High	Heat, Fire/Smoke, Age, Health, Employment, Socioeconomics

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Census Block Group	Neighbor-hood	Index Exposure	Index Sensi-tivity	Index Adaptive Capacity	Vulner-ability Index	Drivers
530630016003	Bemiss	Very High	Very High	Low	Very High	Same as above plus Housing
530630030002	East Central	Very High	Very High	Low	Very High	Flooding*, Age, Health, Socioeconomics, Housing
530630144001	Hillyard	Very High	Very High	Low	Very High	Heat, Fire/Smoke, Age, Health, Transportation
530630002022	Hillyard	Very High	Very High	Low	Very High	Heat, Fire/Smoke, Age, Health, Socio-economics, Employment
530630018001	Logan, Bemiss, Minnehaha	Very High	Very High	Low	Very High	Heat, Flooding, Age, Environment, Health, Socioeconomics, Employment

Note: Regarding flooding the block has over 35% of its area within a 500 year flood plain. City information indicates an 84% increase in streamflow will exceed the bankfull capacity of the river.
Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

It should be noted that there are blocks with high exposure and high sensitivity but also higher adaptive capacity, discussed under **Community Design, Land Use, and Economic Development**.

How to interpret the sector results

The five focus areas of this CRVA address numerous health, cultural, natural, ecosystem, infrastructure, and community design sectors as described in Exhibit 2. A summary of vulnerability and risk for each sector is presented at the beginning of each chapter.

- Vulnerability: CRVA authors considered the combination of indicators for exposure, sensitivity, and adaptive capacity to identify vulnerability for each sector. For each CVI indicator the average city score was determined, and quintiles (five equal groups) were defined as Very Low, Low, Moderate, High, and Very High.
- Risk: A planning-level identification of risk can help focus City efforts to adapt to climate change. Risk is based on a climate hazard's probability and magnitude of

occurrence. Considering science and local conditions, individual or groups of indicators can be compared to develop relative risk. The steps included:

- Select an exposure indicator and one or two adaptive capacity or sensitivity indicators.
- Consider how close scores of each census block are to the average looking at a standard deviation and quintile scores.
- Compare indicators and identify number of census blocks and population potentially more at risk.

See **Appendix B. Climate Vulnerability Index Methodology** for more information,

5.2 Human Wellbeing and Emergency Management

Sectors and Indicators	Rising Temperatures & Extreme Heat	Wildfires	Smoke	Heavy Precipitation	Flooding	Drought & Reduced Snowpack	Climate Risk and Vulnerability			Overall Risk and Vulnerability	
Public Health											
✓ Rates of injury and illness	✓		✓				**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Low	**Vulnerability:** High	**Risk:** High
✓ Access to medical care		✓			✓		**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Moderate	**Vulnerability:** Moderate	**Risk:** Moderate
Social Services											
✓ General social services	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Moderate	**Vulnerability:** High	**Risk:** Moderate
✓ Childcare and Educational Facilities	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Moderate	**Risk:** Moderate
✓ Correctional Facilities	✓		✓				**Exposure:** Moderate	**Sensitivity:** Very High	**Adaptive Capacity:** Low	**Vulnerability:** High	**Risk:** Moderate
Emergency Management											
✓ Critical facilities	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Moderate	**Vulnerability:** High	**Risk:** High
✓ Major transportation routes	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Moderate	**Risk:** High
✓ Gathering spaces (schools, libraries)	✓		✓				**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Moderate	**Vulnerability:** High	**Risk:** High

Rising Temperatures & Extreme Heat | Wildfires | Smoke | Heavy Precipitation | Flooding | Drought & Reduced Snowpack

Key takeaways

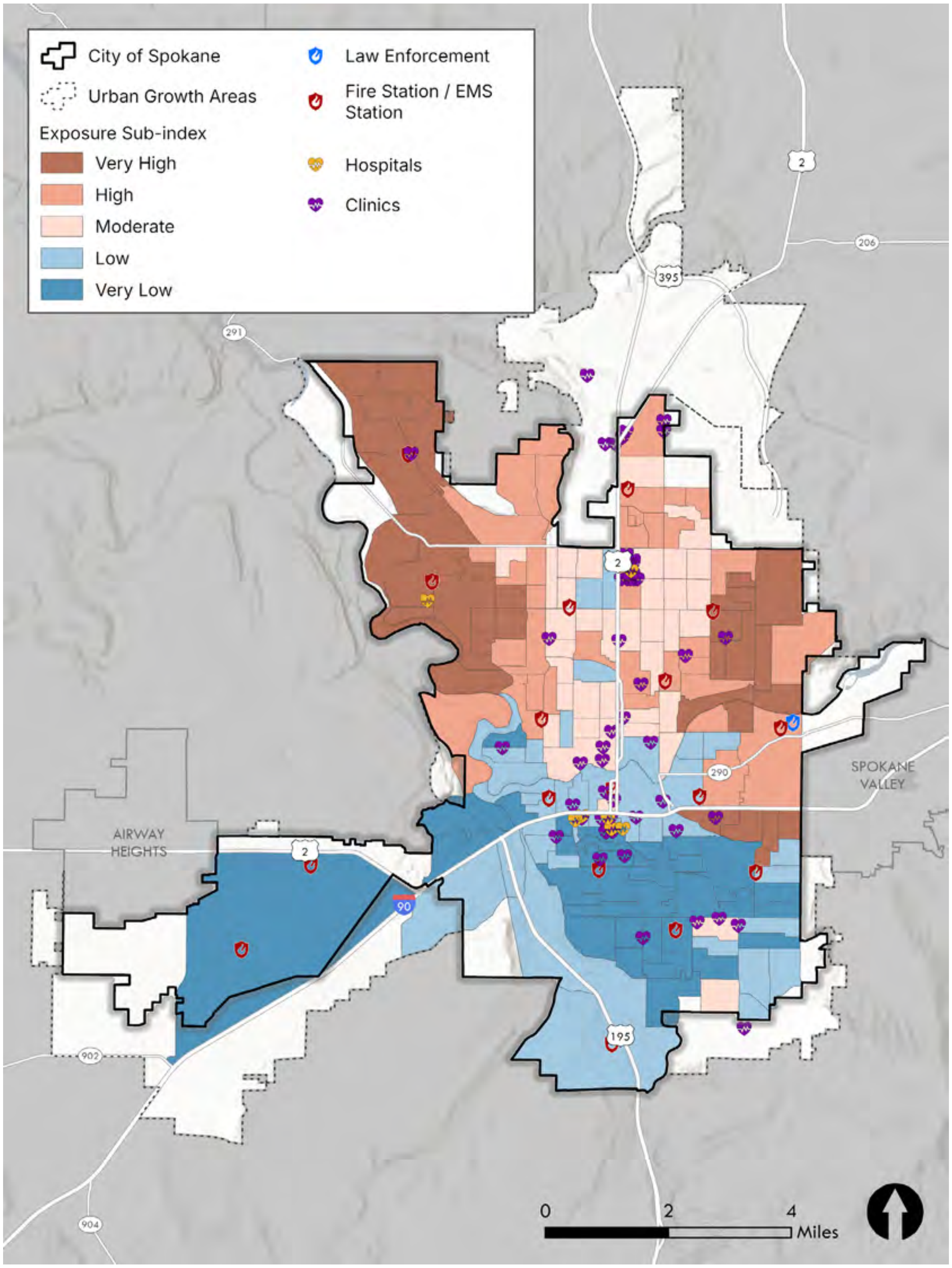
- Extreme heat will cause **increased rates of illnesses and injuries**. Wildfire smoke, increased pollen production, and shifts in geographic ranges of disease vectors are also likely to cause increases in some illnesses.
- **Medical care and emergency management systems** could become more difficult to access due to weather related disruptions, particularly flooding and wildfires yet these climate impacts may cause surges in need for their services.
- **Social services**, **including libraries** and **schools**, are relatively exposed to high ground temperatures and flooding. This may limit their ability to provide services and to serve as gathering places in an emergency.
- **Correctional facilities** face climate risks, both to the facilities and the people institutionalized there. Extreme heat and regional wildfires pose the largest health risks to incarcerated people.
- Several primary **evacuation routes** and **major arterials** overlap with flood hazard zones and the wildland-urban interface (WUI), increasing risks to emergency services.

Who is most at risk?

- Elderly residents, young children and pregnant people
- Individuals with disabilities, mental illnesses and/or chronic health conditions
- Residents who are cost-burdened and/or experiencing food insecurity
- Incarcerated people
- Unhoused people

Map of Spokane Emergency Service and Medical Facilities with Climate Exposure Index

Medical care, social services, and emergency management systems will all likely face climate-related disruptions while these same disruptions will cause increased demand for their services. The northern parts of the City of Spokane, particularly the Northeast and Northwest, contain multiple facilities with very high exposure to climate impacts; these are the most likely facilities to be disrupted. The central and southern parts of the city contain a higher number of critical facilities and face lower exposure.



City of Spokane CVI: Emergency Service and Medical Facilities with Climate Exposure Index

Human Well-Being and Emergency Management

Sector Summary

Climate impacts pose significant threats to the health of Spokane residents, especially to frontline and vulnerable communities (Gamble, et al., 2016). This chapter covers the vulnerability of the city's public health, emergency management, and social services systems. These personnel, programs, and assets protect and promote the health and well-being of residents. Care, health, and emergency systems, including the assets identified below like hospitals, are critical to climate resilience and to ensuring peoples' health and well-being during heat waves and prolonged wildfire smoke events, among other projected climate impacts.

Public Health

As a changing climate progresses, prevalences of illnesses and injuries are likely to increase due to extreme heat, wildfire smoke, and changing disease vectors. In addition, extreme weather will disrupt access to medical care facilities for some, while simultaneously leading to surges in patients seeking medical attention. These impacts will be felt unevenly across the city between neighborhoods, racial/ethnic demographics, socioeconomic classes, and women or female-headed households.

The Sensitivity Index, a composite measure that includes seven health outcome measures, highlights existing disparities in community health. Residents in neighborhoods like Shiloh Hills, Whitman, Hillyard, Bemiss, Chief Garry Park, East Central, Riverside, and portions of Emerson/Garfield have higher rates of self-reported poor physical health. There are similar trends in the prevalence of asthma, chronic obstructive pulmonary disease (COPD), diabetes, high blood pressure, heart disease, and poor mental health across the city, as reported by the U.S. Center for Disease Control and Prevention (CDC)[5]. As noted in **Source: Spokane Clean Air Agency,** 2024

Changing Climate Trends and Vulnerable Populations, people living with chronic health conditions are particularly vulnerable to illness, injury or death due to climate hazards like extreme heat.

Pregnant people and their fetuses are more vulnerable than the general population to health impacts of climate change; extreme heat, wildfires, and flooding can affect health problems, such as heat stroke, kidney failure, anemia, eclampsia, low birth weight, preterm birth, and miscarriage. During and after pregnancy people may be more prone to insect,

[5] Lincoln Heights, Latah/Hangman, and Balboa/South Indian Trail residents also exhibit greater prevalence of high blood pressure and coronary heart disease than the rest of the city.

food, and water related illnesses. Climate hazards can also impact women's mental health. (US EPA, 2025) (Sbiroli, 2022)

Existing neighborhood health disparities reflect longstanding health disparities between racial and ethnic demographics in the City of Spokane (Burley, 2022). The neighborhoods named above in central, east, and Northeast Spokane are also the communities with the highest percentage of people of color Hispanic residents (Burley, 2022). People of color often lack access to resources and opportunities that help promote health and prevent disease due to historical and systemic barriers (Macias-Konstantopoulos, et al., 2023).

Climate-Related Illnesses and Injuries

The prevalence of climate-related illnesses and injuries in the city's population is expected to rise due to increasing extreme heat events, declining air quality, and shifting disease patterns. More frequent and intense heat waves will heighten the risk of heat-related illnesses, particularly among vulnerable populations such as older adults, children, and those with chronic conditions. Worsening air quality from wildfires, pollen, and ground-level ozone may lead to more respiratory issues like asthma. Additionally, a changing climate is altering the range and activity of disease-carrying organisms, such as mosquitoes, ticks, and fungi, increasing the risk of vector-borne and environmental diseases in the region.

Heat Events

Historical data indicates a concerning trend in climate-related fatalities. For example, warmer temperatures can lead to increased incidents of heat-related emergencies, placing additional strain on local medical services. This was seen during the 2021 Heat Dome, a severe and unprecedented heat wave causing 157 heat-related deaths across Washington State and at least 19 heat-related deaths in Spokane County (Washington State Department of Health, n.d.). The City of Spokane could see an increase in dangerously hot conditions, particularly during the summer months, as projected changes in the city's climate include an increase in the number of peak summer temperatures throughout the season. Populations, including low-income people, aging and elderly people, children, homebound people, unhoused people, outdoor workers, people with mental illness, and those with chronic health conditions, are at a higher risk of developing heat-related illness, such as dehydration, heat exhaustion, and heat stroke (Savioli, et al., 2022; Harris & Albrecht, 2024).

Engagement conducted for this Climate Risk and Vulnerability Assessment (CRVA) highlights how low-income households have less resources to protect themselves from harmful health impacts, particularly from extreme heat. The City of Spokane's Community Climate Planning Survey (2025) indicated that, apart from the rising cost of living, the most commonly-reported impacts of climate hazards on households with incomes at or below the poverty line were on residents' mental and physical health. The Tribal Engagement Workgroup (TEW) also voiced concerns about the rising cost of electricity, which members said prevents many individuals from using air conditioning during heat waves. Some

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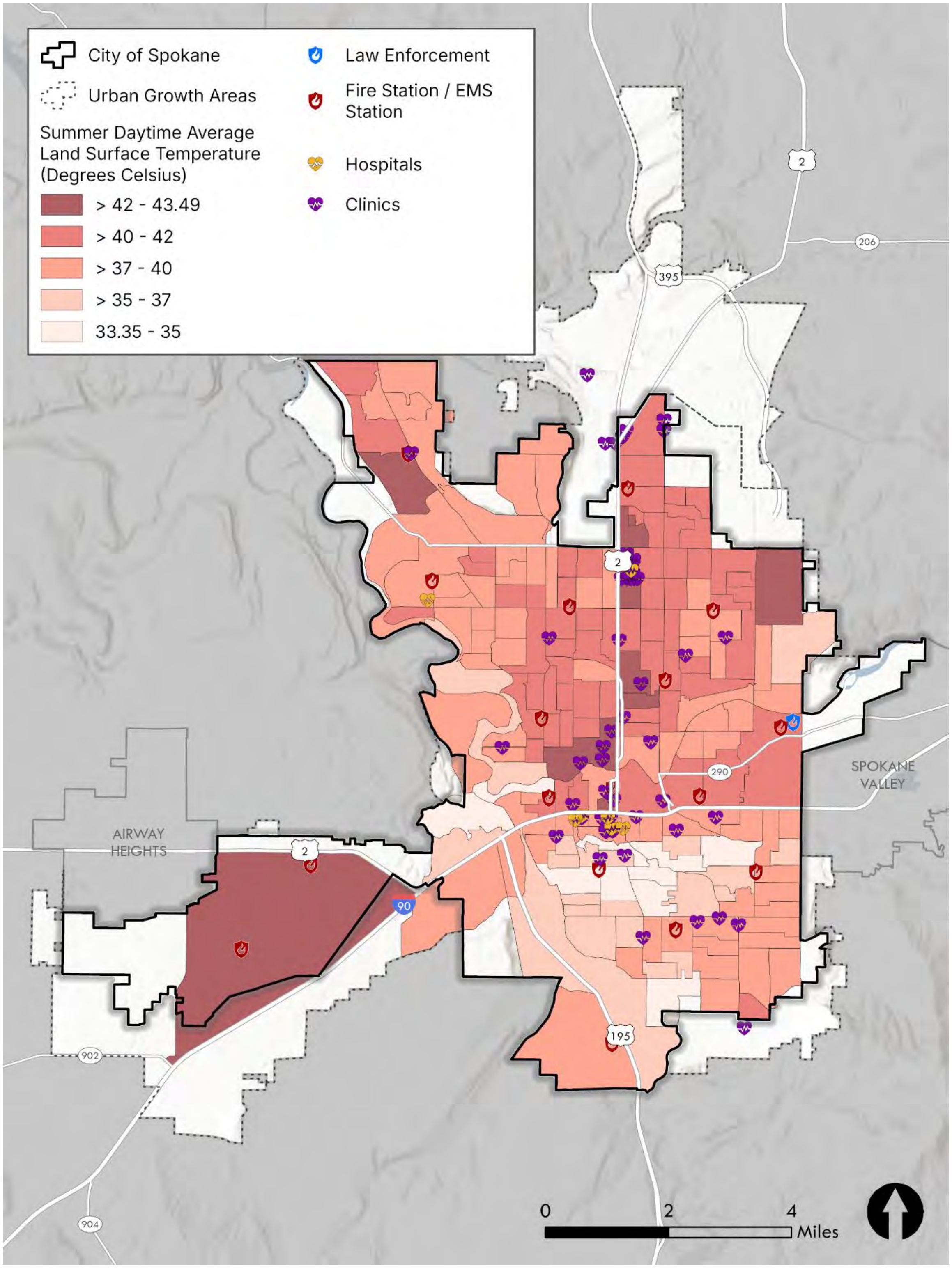
reported that people in their communities go without cooling during extreme heat events due to costs of utilities, increasing the risk of health conditions like heat stroke and dehydration, in addition to going without heat during cold events. Additionally, power outages have created challenges for medical treatments and medication storage, particularly for those relying on insulin and life-sustaining medical devices, such as ventilators, home dialysis machines, or oxygen concentrators, leading to serious and even fatal health risks.

Generally, we conclude that residents of and outdoor workers in neighborhoods in central, north, Northeast Spokane are currently most affected by extreme heat. Residents and workers here likely face the most severe impacts as temperatures continue to warm due to existing Urban Heat Islands in those areas (see Exhibit 38). Based on our data, outdoor workers at Spokane International Airport may face health risks from particularly high summertime temperatures.

Exhibit 38. City of Spokane Climate Vulnerability Index: Land Surface Temperature and the Distribution of Medical Facilities Across the City of Spokane



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Worsening Air Quality

Spokane is one of 16 communities in Washington State identified by the WA Department of Ecology that is overburdened and highly impacted by criteria air pollution with relatively high particulate matter pollution (PM 2.5) (Air Quality Program, 2023). Though residential wood burning, mobile sources like cars, trucks, trains, and dust from construction and agriculture are other primary sources of air pollution in Spokane and Spokane Valley, respiratory illness (e.g., asthma or Chronic Obstructive Respiratory Disease) and respiratory illness-related hospitalizations will become more common due to declining air quality from more frequent and intense wildfires, increased pollen production, and increased ground-level ozone (Chang., et al., 2023). Studies project that by the mid-21st century, Spokane County may experience increased illness and mortality rates due to elevated ground-level ozone concentrations associated with higher temperatures (Jackson, 2009). Members of the TEG reported that Tribal populations, including Elders and children, are already significantly affected by poor air quality during wildfire smoke events. They also note that clinics have reported increased cases of respiratory illness, asthma complications, and cardiovascular issues during heavy smoke periods.

Disease Vectors

The impacts of a changing climate on the environment and local ecosystem may influence the behavior, geographic range, and health of animals and disease vectors, which can change the distribution and human health risk of these diseases. For example, mosquito species capable of carrying West Nile Virus (WNV) have increased their geographical range. In 2023, 85 samples of mosquitoes collected in Washington tested positive for WNV, all from Eastern Washington counties (Cary, 2024). These mosquitoes are projected to keep expanding to higher latitudes, lengthening their activity season, and increasing their abundance in some regions (Heidecke, Schettin, & Rocklöv, 2023). Disease-carrying ticks and fungal pathogens may also increase their habitat areas (Washington State Department of Health, n.d.). Warmer winters and longer growing seasons allow ticks to survive in regions that were previously too cold, increasing the risk of tick-borne diseases like Lyme disease and Rocky Mountain spotted fever. Though historically found in tropical and subtropical regions, *Cryptococcus gattii*, a fungus that can cause a severe cough, meningitis, and pneumonia if it enters the lungs, has been detected in new, temperate areas like Washington. This expanded range is likely due to increasing temperatures and environmental changes that support its growth (Washington State Department of Health, n.d.).

Medical Care Accessibility and System Capacity

Consistent and timely access to health care and medicine can be the difference between life and death for a patient who is injured or ill. (See sidebar.) Climate-related events, such as severe storms, may disrupt health care services and – physically or financially – reduce individuals' ability to access and receive essential medical care. The Northeast and Northwest regions of the City of Spokane lack the robust emergency services and medical

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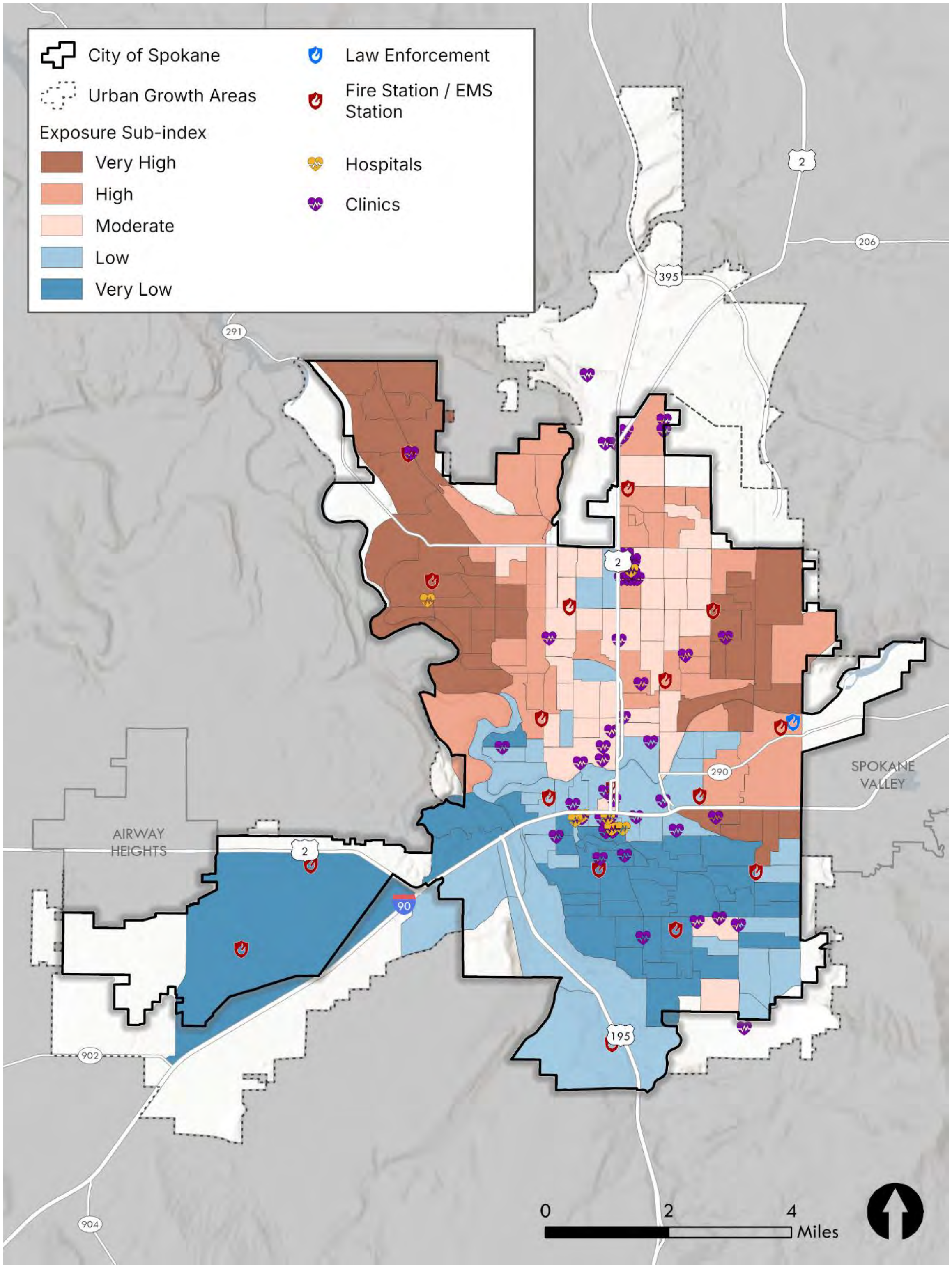
Being close to a hospital does not guarantee that a person will request, receive, or be able to afford medical treatment. Lacking health insurance or financial resources may discourage one from seeking treatment. Several vulnerable populations highlighted in **Climate Risk and Vulnerability Results,** including people of color and houseless people, may avoid health care or emergency services personnel due to past negative interactions (Funk, 2022). Sexual and gender minority individuals are more likely to be exposed to discrimination in health care settings and are also disproportionately likely to avoid necessary health care (Liu, Patel, Sandhu, Reisner, & Keuroghlian, 2024).

facilities present in Central City. This does not align well with the high levels of exposure to climate and environmental hazards modeled in these areas (see Exhibit 39).

Exhibit 39. City of Spokane Climate Vulnerability Index: Climate Exposure and the Distribution of Medical Facilities



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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Extreme weather, flooding, and wildfires can hinder transportation to or operations of healthcare facilities, e.g., through supply chain shortages, power outages, or facility damage. Individuals in the City of Spokane without ready access to a vehicle or public transit and those with limited mobility may be especially challenged. During crises, their limited ability to seek timely medical attention can lead to severe health consequences.

The City of Spokane's hospital systems are currently experiencing financial issues and a lack of bed availability, rendering them ill-prepared for future events, such as heat waves, that could cause a surge in health care demand. Like many hospitals statewide, five out of six hospitals in the City of Spokane experienced extensive financial losses between 2022 and 2024 (Washington State, 2025). In 2022 and 2023, the Washington State Hospital Association stated bed availability and other services were affected by this financial crisis, attributing losses to staff shortages and challenges in discharging patients due to a lack of availability at post-acute care facilities (Sullender, 2024; Kaczaraba, 2023).

Washington has fewer hospital beds per capita than any other state, leaving little extra capacity for new patients (Kaiser Family Foundation, 2022). This is an issue as future climate conditions, like heat waves, wildfire smoke events, vector-borne disease, and flooding, may challenge hospital and clinic capacity as demand for health care surges. For example, across the Pacific Northwest, the mean daily number of heat-related illness (HRI) emergency department visits during the 2021 Heat Dome was 69 times higher than that during the same days in 2019 (Center for Disease Prevention and Control (CDC), 2021). If rising temperatures and more frequent heat waves lead to future surges in HRI emergency department visits, hospitals and clinics could face significant capacity challenges, straining emergency services and reducing the quality of care for all patients. Overburdened healthcare facilities may experience longer wait times, resource shortages, and increased staff burnout, potentially worsening health outcomes—especially for vulnerable populations such as the elderly, outdoor workers, and those with preexisting conditions. Members of the TEG noted that these hazardous climate conditions may directly impact healthcare workers themselves, further exacerbating staff shortages.

"During major environmental events, patients suffer, and staff at clinics and emergency facilities also become ill, straining the healthcare system at critical moments."

- Tribal Engagement Group Member

Social Services

Social services and community centers – including libraries, educational institutions, and correctional facilities—play a critical role in the City of Spokane's well-being. These services are essential for public health, safety, and education, and face increasing risks from climate impacts, including extreme heat, wildfire smoke, flooding, and severe storms. As a changing climate accelerates, these impacts are expected to intensify, threatening both service continuity and the physical safety of staff and service users (EPA, 2025). The ability of these facilities to adapt will directly impact the city's most vulnerable residents, including low-income individuals, people experiencing homelessness, students, and incarcerated populations (Chang, et al., 2023).

Currently, the City of Spokane's social service infrastructure is experiencing high demand, often outpacing supply—particularly in housing, food access, and mental health care. In addition, much of this infrastructure is aging and not designed to withstand climate hazards, making these systems doubly vulnerable.

General Social Services

The City of Spokane hosts a range of general social services, including shelters, drop-in centers, food banks, public libraries, mental health and addiction treatment, domestic violence services, and programs for elderly, cost-burdened, and unhoused individuals (Spokane Neighborhood Action Partners and Downtown Spokane Partnership, 2025). These services are crucial given that 13.1% of the City of Spokane's population lives in poverty—higher than the state average of 10.3% (U.S. Census Bureau, 2023). The impacts of a changing climate change may result in greater poverty borne by women and girls already experiencing greater poverty and food insecurity in Spokane compared to other households as noted in Exhibit 33 (UN Women, 2025). The unhoused population in the City of Spokane was estimated at 2,021 in 2024, with the highest concentration of unhoused living in downtown (Clouser, 2025; Hut, 2024). Currently, demand for housing assistance exceeds supply, leading to long waitlists for those in need (Spokane Neighborhood Action Partners, 2022).

A changing climate is already affecting access to and demand for these services. During extreme heat and wildfire smoke events, cooling centers – typically set up in existing facilities such as libraries, community centers, and shelters – experience surges in demand, but resources and space are often limited (City of Spokane, 2024). Access to shelters can be further constrained by capacity issues at low-barrier facilities, which can leave individuals who are substance-dependent with limited options. People with pets or large quantities of personal belongings also face barriers, as many shelters are not equipped to accommodate these needs (Rankin et al., 2016). Libraries and food banks see increased traffic as residents seek relief and support during climate-related disruptions (Chang, et al., 2023). Severe weather can also interrupt transportation, further limiting access to critical services—particularly for people without cars or those living in neighborhoods without adequate public transit.

Prolonged heatwaves, poor air quality, and severe storms will drive up demand for food assistance, housing, and medical services—especially for low-income residents and those with preexisting health conditions (EPA, 2025). Many of the facilities providing these services are located in older buildings that are not well-equipped to handle climate hazards, leaving them vulnerable to storm damage, heat stress, poor indoor air quality, and flooding (City of Spokane, 2025; Spokane County, 2020).

Much of the City of Spokane's social service infrastructure—particularly services for the unhoused—is concentrated Downtown, where over 50% of residents live in poverty (Spokane Neighborhood Action Partners and Downtown Spokane Partnership, 2025). This area also experiences some of the highest land surface temperatures in the city, with summer daytime averages exceeding 42°C (or more than 107°F) in parts of the downtown core, as shown in Exhibit 40. These conditions are driven by high impervious surface coverage (65–84.3%) and low tree canopy (0.3–6.8%), which amplify the urban heat island effect and increase the severity of extreme heat events (Chang, et al., 2023). Additionally, libraries and other social service facilities in Hillyard, Bemiss, Minnehaha, East Central, Audubon/Downriver, Northwest, Balboa/South Indian Trail, and North Indian Trail face high overall exposure to climate risks (City of Spokane, 2025).

Exhibit 40. City of Spokane Climate Vulnerability Index: Land surface temperature and impervious surface coverage in Downtown Spokane

Note: Many of the city's social services are located in Downtown Spokane.
Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

These spatial patterns of risk overlap significantly with the City of Spokane's most socially vulnerable communities. Neighborhoods like East Central, Hillyard, and West Central have higher concentrations of low-income households, racially diverse populations, and residents with limited English proficiency or access to healthcare (City of Spokane, 2025). These same communities often face structural barriers—such as inadequate public transit, aging infrastructure, or a lack of localized services—that make it more difficult to respond to climate stressors (EPA, 2025). Without targeted investments to improve the capacity, accessibility, and climate resilience of the City of Spokane's general social services, a changing climate is likely to deepen existing inequities and leave the city's most at-risk residents without adequate support when they need it most.

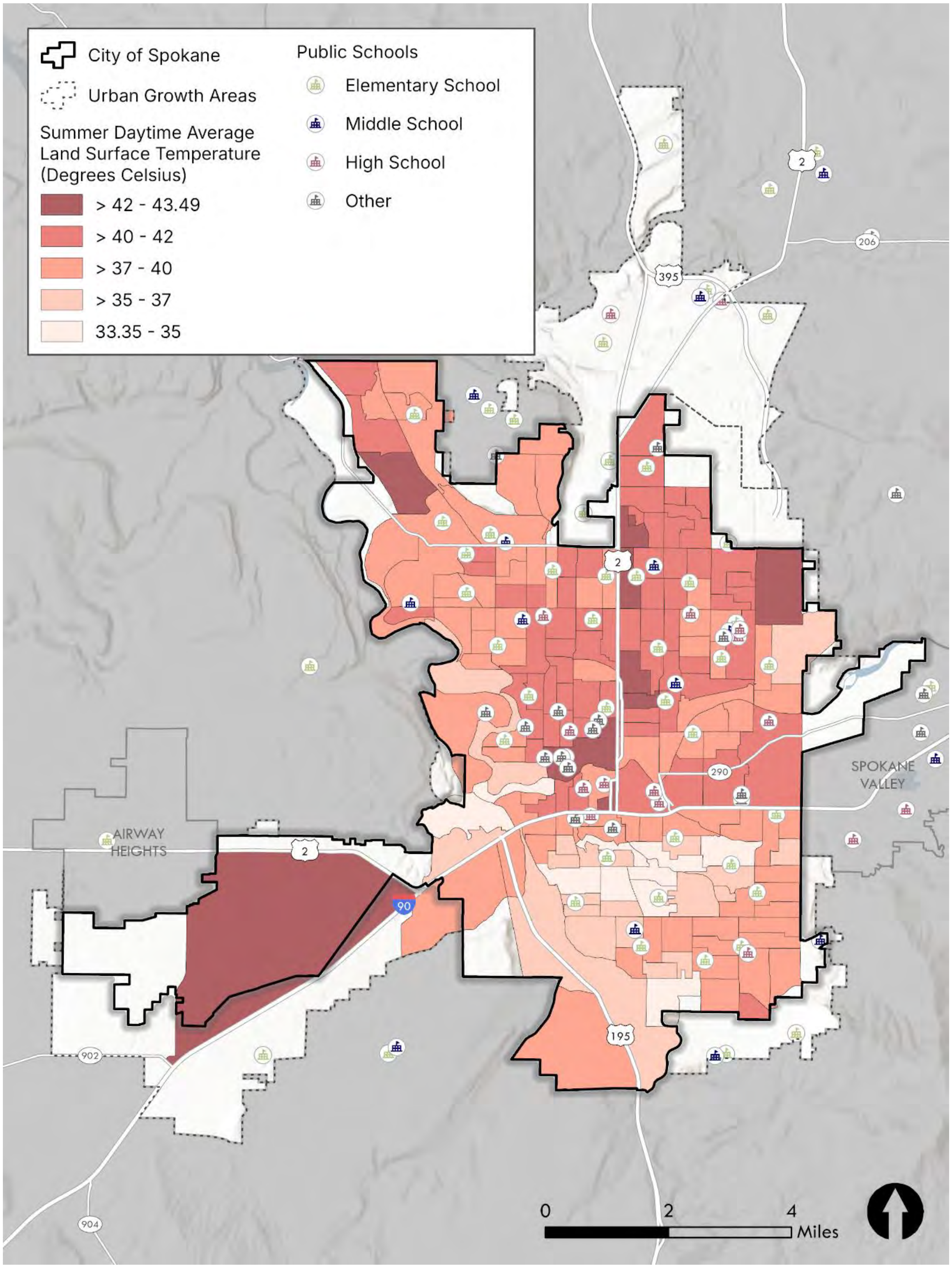
Childcare and Educational Facilities

Flooding, extreme heat, wildfires, and severe storms threaten school infrastructure, disrupt transportation, and create unsafe learning conditions. Older or deteriorating buildings are particularly at risk, increasing dangers for students and staff (Spokane County, 2020). As of 2017, 14 of Spokane Public Schools' 52 buildings lacked air conditioning, heightening heat-related health risks (Francovich, 2017). Young children are particularly susceptible to both heat stress and wildfire smoke exposure (See Exhibit 41) (Chang, et al., 2023).As climate impacts intensify, childcare and educational facilities will face more frequent and prolonged disruptions. Increases in extreme heat, wildfire smoke, and severe storms are expected to cause more frequent school closures and indoor activity restrictions, reducing instructional time and negatively impacting student health and development (Newsome et al., 2023; Washington State Department of Health, 2024). Outdoor recreation and physical activity are also expected to decline due to worsening air quality during wildfire seasons (Chang, et al., 2023). Without infrastructure upgrades and contingency planning, climate impacts will place growing strain on school operations and the educational outcomes of the City of Spokane's youth.

Results from the City of Spokane's 2024-2025 Community Climate Planning Survey show that mental health impacts were most frequently reported personal impact of climate hazards among respondent ages 24 and under. Nearly 60% of youth respondents cited mental health impacts – significantly higher than any other category, including physical health impacts, cancelled events, or access to resources.[6]

[6] City of Spokane. (2024–2025). Community Climate Planning Survey. Figure 13: Impacts of extreme weather and climate hazards on residents ages 18–24.

Exhibit 41. City of Spokane Climate Vulnerability Index: Land Surface Temperature and Location of Schools.



Note: High land surface temperature and impervious surface coverage in the City of Spokane indicates that schools in Central City, Downtown, and Northeast Spokane are vulnerable to extreme heat.
Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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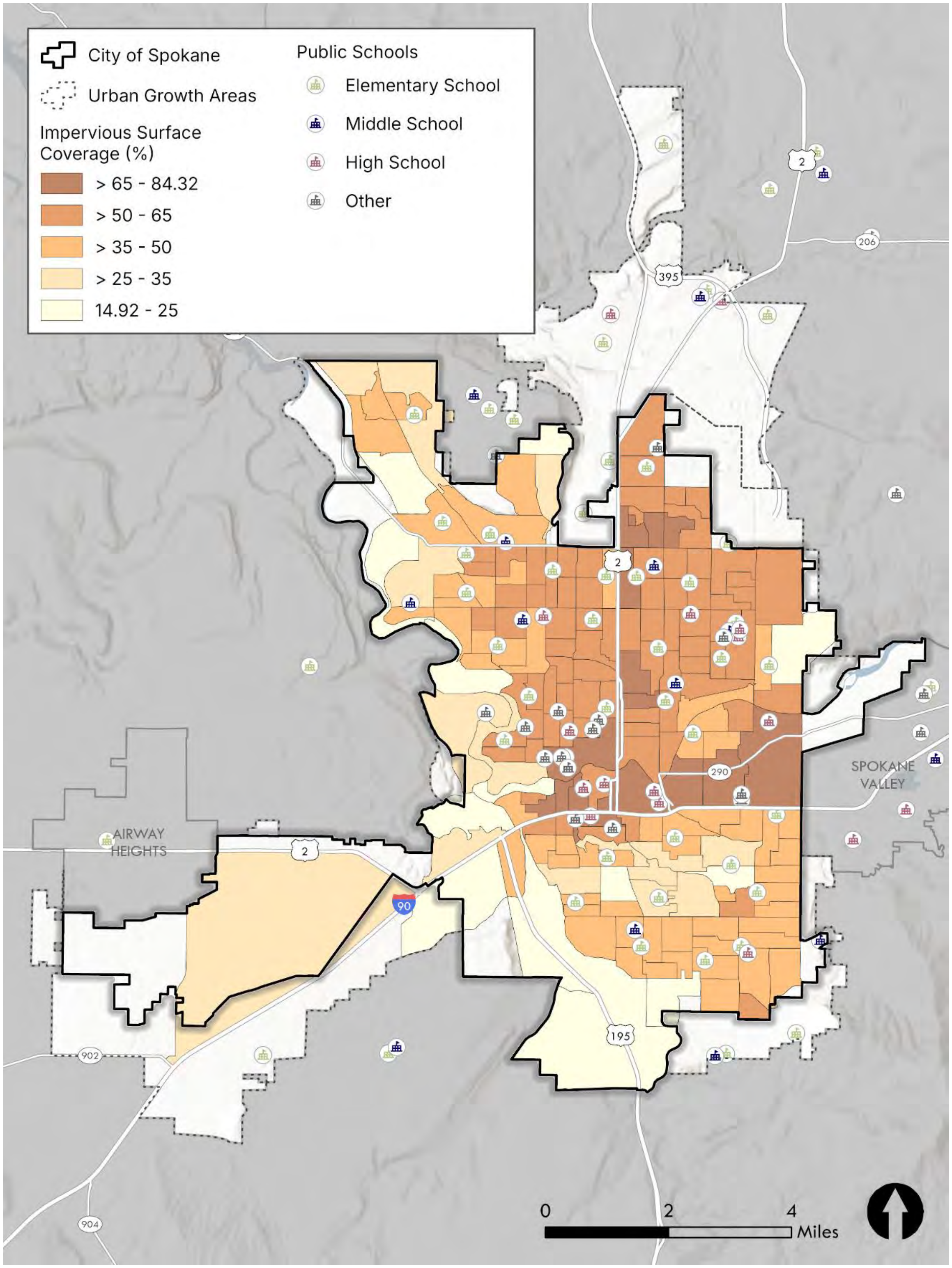
Exhibit 42. City of Spokane Climate Vulnerability Index: Impervious Surfaces and Location of Schools.



Note: High land surface temperature and impervious surface coverage in the City of Spokane indicates that schools in Central City, Downtown, and Northeast Spokane are vulnerable to extreme heat.
Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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The level of exposure to climate hazards varies across the City of Spokane's childcare and educational facilities. Daycares and schools situated near flood zones, wildland-urban interface areas, and neighborhoods with high impervious surfaces and low tree canopy face greater risks (Spokane County, 2020). Notably, Frances Scott Elementary is located within or adjacent to the 500-year floodplain, increasing its susceptibility to flooding (Spokane County, 2020). Additionally, the East Central Community Center and Summit Christian Academy are situated in areas designated as high flood hazard zones, indicating significant flood risk. Furthermore, daycares and schools in neighborhoods such as Hillyard, Bemiss, Minnehaha, East Central, Audubon/Downriver, Northwest, Balboa/South Indian Trail, and North Indian Trail exhibit high overall exposure to climate hazards (City of Spokane, 2025). Exhibit 41 highlights high land surface temperatures and impervious surface coverage in Central City, Downtown, and Northeast Spokane, indicating heightened heat vulnerability for many educational facilities.

Many of the most exposed schools and childcare centers are in neighborhoods with higher concentrations of low-income households, racially diverse populations, and families with limited English proficiency (City of Spokane, 2025). These populations often face additional barriers to accessing cooling, healthcare, and emergency resources during climate events. Disruptions to childcare and school can disproportionately affect working families and single-parent households, particularly female households, and further exacerbating existing social and economic disparities.

Correctional Facilities

Correctional facilities face unique challenges when it comes to the impacts of a changing climate. Incarcerated populations are uniquely vulnerable to climate-related hazards due to their lack of mobility and reliance on facility administrators to implement protective measures (Harvard Law Review, 2023). Currently, there are two correctional facilities in the City of Spokane with a combined daily population of over 700 inmates (Spokane County Detention Services, n.d.). While these facilities are managed by Spokane County, they are within city limits.

Rising temperatures are already impacting correctional facilities. Outdated infrastructure, limited access to cooling systems, and poorly maintained buildings place incarcerated individuals at heightened risk during heatwaves and severe storms (Spokane County, 2020). Correctional settings without adequate air conditioning can become life-threatening in extreme heat. One study found that a single day of higher-than-average summer temperatures correlates with a nearly 4% increase in prison deaths, while suicide rates rise by 23% within three days of a heatwave (Prison Journalism Project Contributors & Abdullahi, 2024).

As extreme heat events increase in frequency and severity, these risks will grow. Researchers project a 5% rise in prison deaths for every 10-degree increase above the typical summer temperature (Harvard Law Review, 2023). The locations for the City of Spokane's two correctional facilities are among the hottest parts of the city. As illustrated in Exhibit 43, both sites experience summer daytime land surface temperatures exceeding 42–43.5°C (107.6–110.3°F), placing them in high-risk zones for extreme heat exposure (City of Spokane, 2025). The facilities' location, lack of green space and cooling infrastructure, and future warming will exacerbate indoor temperatures and increase the risk of heat illness for both inmates and staff.

Exhibit 43. City of Spokane Climate Vulnerability Index: Land surface temperature at the City of Spokane's two correctional facilities

Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Beyond exposure risks within the facilities, some incarcerated individuals face heightened dangers on the frontlines of climate hazards. The City of Spokane is home to DNR Arcadia 20 Hand Crew, or DNR ARC-20, an elite Hand Crew unit composed of incarcerated individuals from Eleanor Chase House Reentry Center, a minimum-security facility in downtown Spokane (Mills McKnight, 2024). These Hand Crew members (see Exhibit 44) are deployed to wildfires across the state, often working in highly dangerous conditions with extreme heat, heavy smoke, and unpredictable fire behavior—risks that are escalating as wildfires become more frequent and severe due to a changing climate. As climate-driven disasters intensify, these ARC-20 Hand Crew members will increasingly bear the brunt of

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hazardous working conditions while playing a critical role in Washington's wildfire response efforts.

Exhibit 44. Kenyatta Bridges, ARC-20 Hand Crew member, sets fire to a burn pile during prescribed fire operations on a deployment near Northport, WA

Source: Department of Corrections WA State, 2024.

Emergency Management

Emergency management services are essential for protecting residents during extreme events, but a changing climate is increasing the strain on these services. Rising temperatures and urban heat island (UHI) effects will likely lead to greater demand for emergency response and hospital care. Additionally, the increasing frequency of wildfire smoke days will put further pressure on critical facilities, such as emergency response centers, educational institutions, and hospitals. Wildfires and flooding not only pose direct threats to communities but also disrupt critical routes commonly used for evacuation and emergency response operations, complicating disaster recovery efforts. Effects will be most prominent in underserved areas where resources are already limited (Clark County, 2021).

As climate impacts intensify, the City of Spokane is expected to experience more frequent and severe heatwaves, exacerbating UHI effects, and increasing heat-related illnesses. Wildfires are projected to become more intense, further straining emergency response systems. Increased winter precipitation will heighten flood risks, impacting critical infrastructure and delaying emergency response efforts.

The City of Spokane has its own Emergency Management Department, currently staffed with one full-time position in 2025, but coordinates with the work conducted by Spokane County Emergency Management in their Comprehensive Emergency Management Plan

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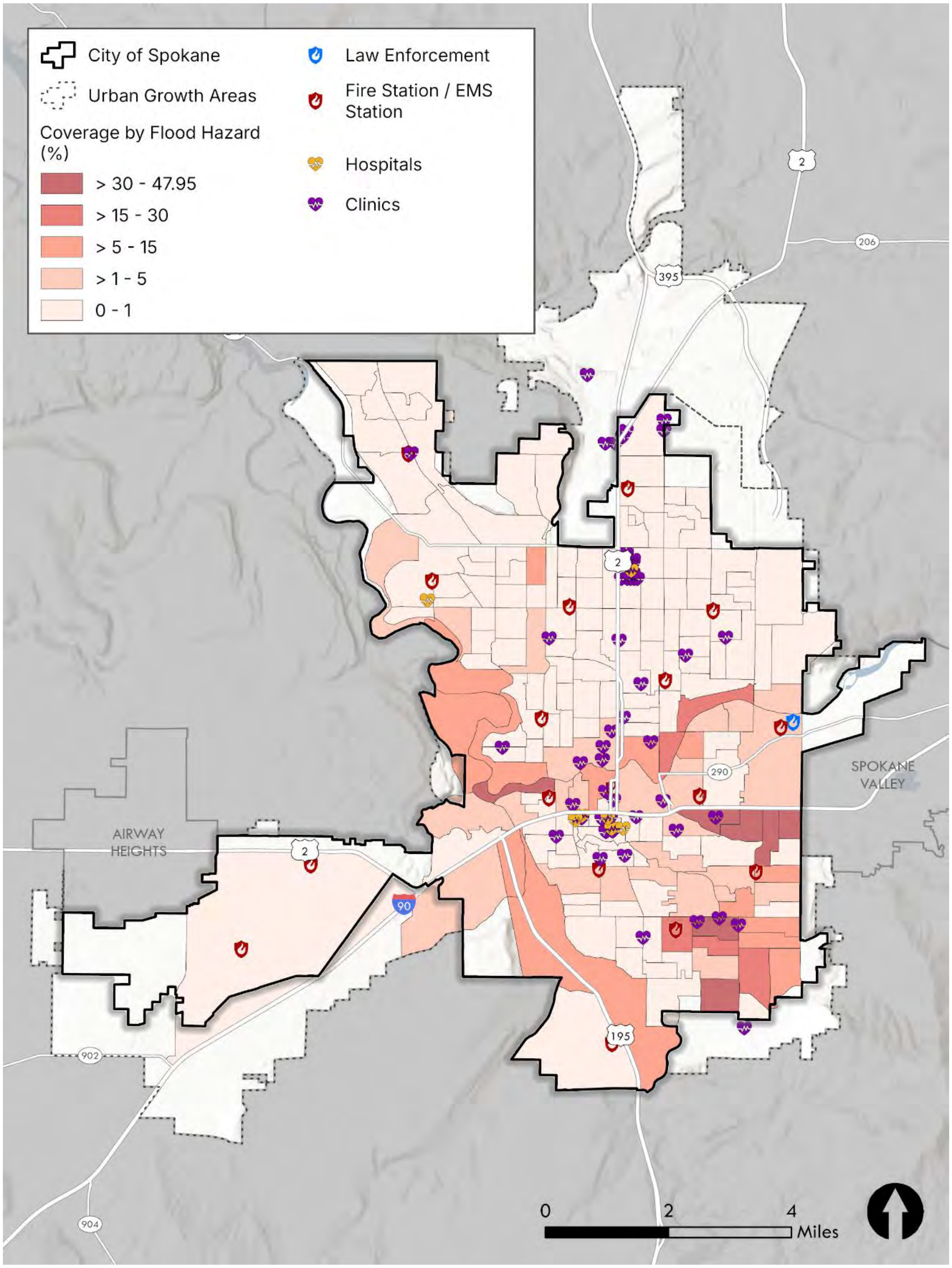
(CEMP). Other agencies that support emergency management include the City of Spokane police and fire departments, and the Spokane County Emergency Operations Center (Spokane County Emergency Management, 2021).

Critical Facilities

The City of Spokane relies on seven hospitals, seventeen fire stations, eight law enforcement offices, and a wide array of health clinics. Spokane County's emergency management services include emergency response centers (e.g., police, fire, and dispatch centers), hospitals, and community shelters that provide aid during extreme weather events. These services are critical for disaster preparedness and response but are facing increased stress due to climate-related hazards.

Exhibit 45. City of Spokane Climate Vulnerability Index: Emergency and medical services overlaid on the 100-and 500-year floodplain



Source: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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While no hospitals are located within the 100-year or 500-year flood zones, many health clinics, law enforcement offices, and fire stations overlap with flood-prone areas. These facilities may be at risk of disruption during extreme flooding events. Furthermore, several fire stations, police departments, and medical facilities are located near high-risk wildland-urban interface (WUI) zones.

In recent years, extreme heat events have already contributed to increased emergency medical calls and hospital admissions (Decker, 2021). Heat domes, which trap warm air and sustain high temperatures over extended periods, can lead to prolonged heat exposure, increasing the likelihood of heat-related illnesses. Heat domes can also worsen air quality by trapping pollutants, affecting respiratory health. Wildfires are also increasing the risk of hazardous air quality, contributing to more respiratory illnesses and straining healthcare facilities (Usman, et al., 2024). Additionally, recent flooding events have inundated highways and roads, disrupting emergency response services (Duggan, 2025).

The impacts of natural hazards will not only intensify with a changing climate, but their seasonal patterns will also shift, making some hazards a year-round threat to emergency management operations and first responders. These threats include the lengthening of wildfire seasons, more frequent and intense extreme heat and drought, and increasingly severe precipitation events (FEMA, 2023)

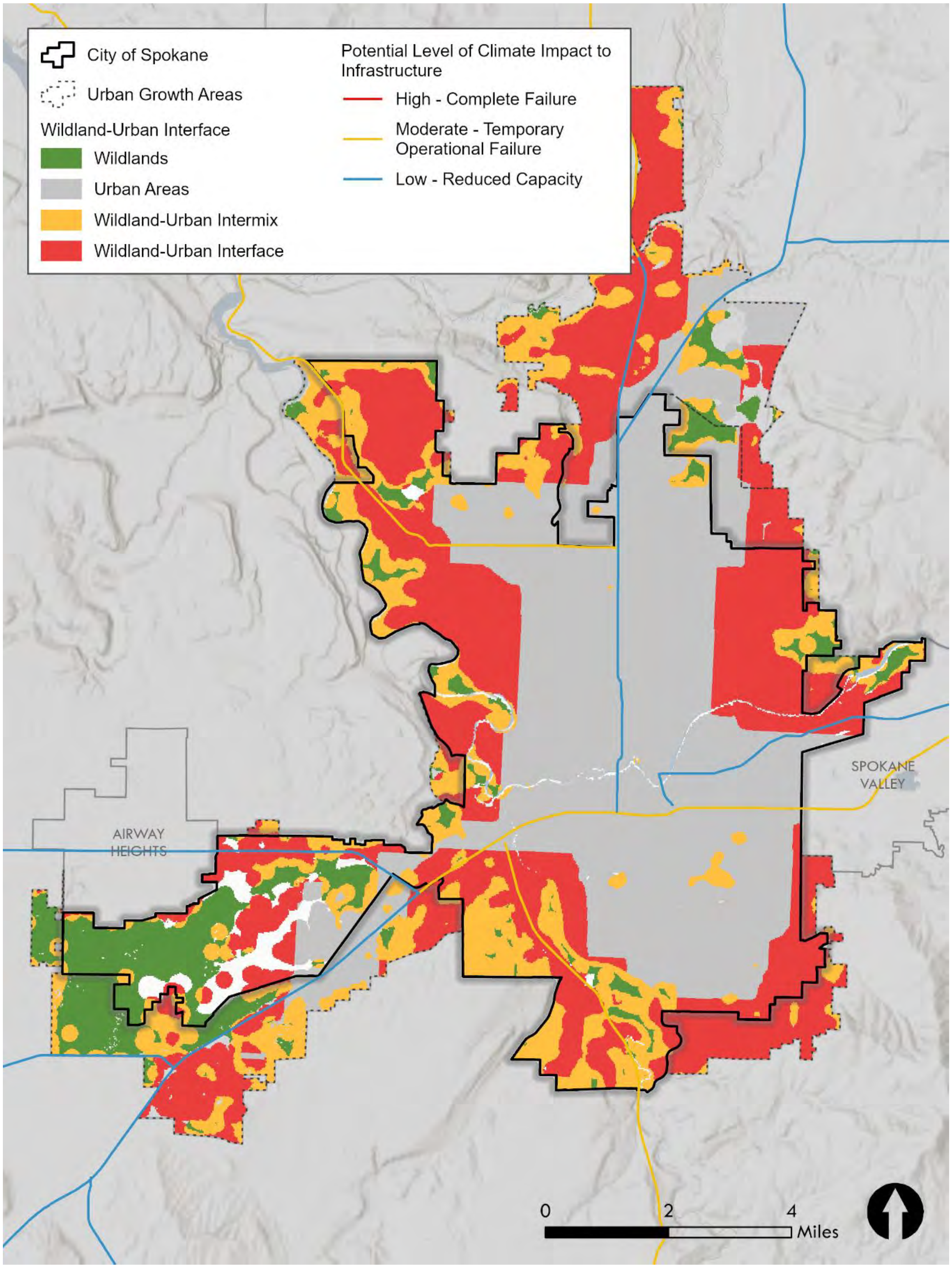
Transportation & Evacuation

Disruptions to transportation networks can significantly impact emergency response efforts by blocking evacuation routes and delaying assistance during disasters.

The City of Spokane is divided into several evacuation zones where residents are informed where to go during an emergency or an evacuation. Primary evacuation routes typically include major highways such as I-90, US 2, and State Route 395, and depend on the location of the impact. Secondary roads such as Sunset Highway, Thorpe Road and other county roads serve as alternative routes if primary routes are blocked. If evacuation is needed, police officers and other officials will direct residents to these routes (Garcia, 2024).

The Washington State Department of Transportation (WSDOT) conducted a climate vulnerability assessment of its infrastructure, revealing that several highways and routes through the City of Spokane have a moderate vulnerability to climate-related disruptions. These risks include temporary operational failures caused by extreme weather. For example, several primary routes used for evacuation and major arterials overlap with flood hazard zones and the WUI, increasing risks to emergency services. A nearby example of these risks occurred during the 2023 Medical Lake/Gray Fire, when I-90 was shut down in both directions for several days (FOX 13 Seattle , 2023). This closure caused major logistical challenges for the region, as I-90 serves as a critical corridor for goods, food supplies, and evacuation. It also exposed difficulties in identifying suitable alternative detours during an emergency. Projections indicate a shift from snow to rain and an increased likelihood of wildfires, which can reduce vegetation and heighten landslide risks (WSDOT, 2011). This increases vulnerability for key transportation routes surrounding the City of Spokane.

Exhibit 46. City of Spokane Climate Vulnerability Index: Moderately vulnerable WSDOT routes and low-vulnerability routes overlaid on the City of Spokane's wildland-urban interface.



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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Emergency Shelters and Gathering Places

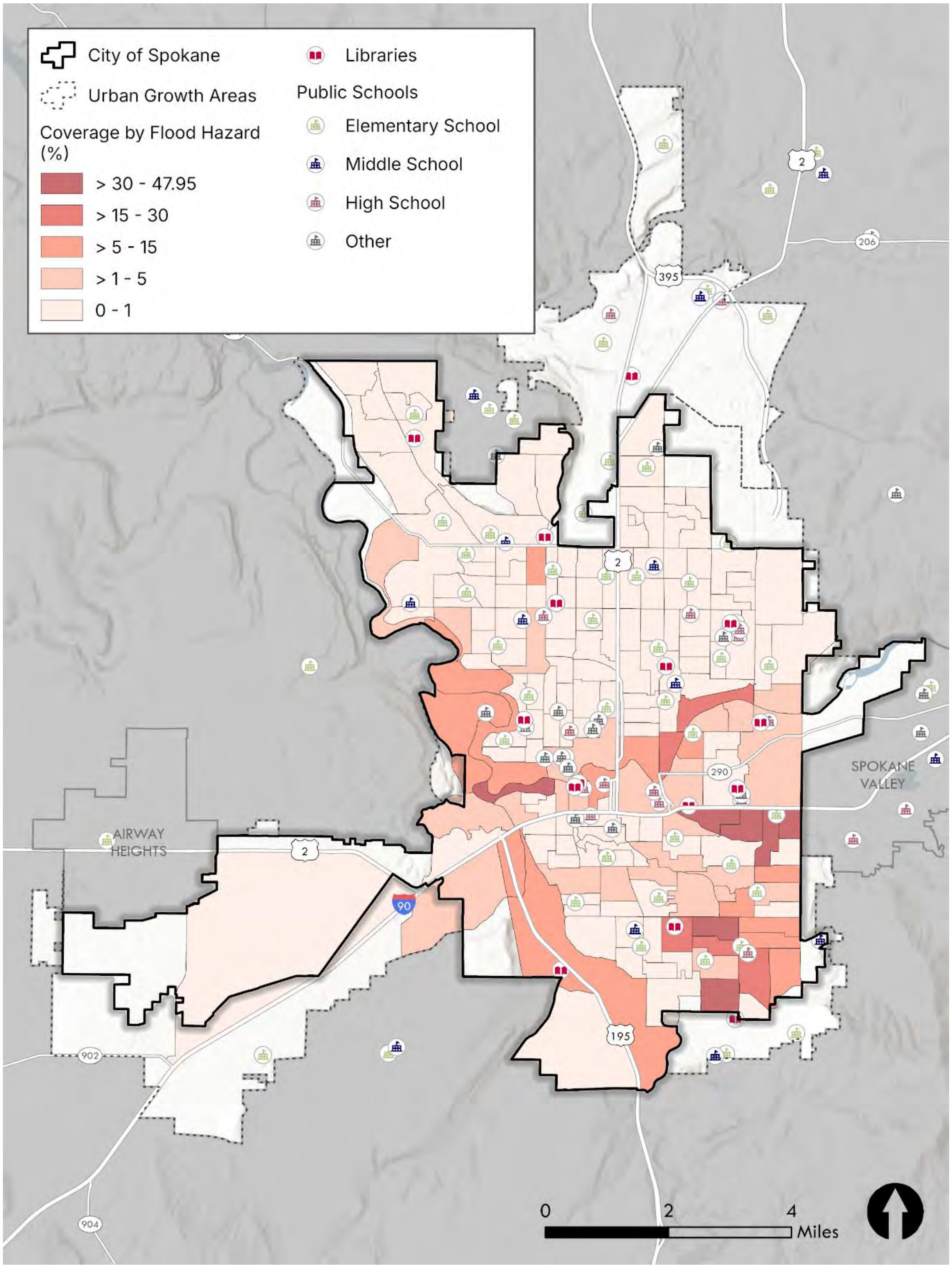
Beyond emergency response, community centers such as libraries, public schools and even places of worship play a critical role during disasters by serving as gathering spaces and shelters.

Within city boundaries, there are eight libraries, along with numerous schools and community centers, all with the potential to serve as key locations for emergency gatherings. Additionally, the City of Spokane operates warming spaces and safe air centers for adults, children, and families during periods of extreme cold or hazardous air quality. To mitigate the impacts of extreme heat, the city also provides cooling centers at libraries and parks (Garcia, 2024).

Climate hazards, such as flooding and wildfires, can lead to displacement and put additional strain on emergency shelters, particularly for houseless populations and people experiencing housing instability (Mello, 2023). As a changing climate increases the intensity and frequency of these events, the City of Spokane should anticipate greater demand and pressure on these facilities.

Some shelters and gathering places are already at risk, as several are located within or near flood zones. Notable facilities with heightened flood exposure include Spokane Falls Community College, Scott Elementary, Ferris High School, and the South Hill Library—sites that serve as critical educational, social, and emergency resources during extreme weather events. This proximity may limit access during emergencies, further increasing their vulnerability. See Exhibit 47.

Exhibit 47. City of Spokane Climate Vulnerability Index: Libraries and schools overlaid on the 100-year and 500-year floodplain.



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

AGENDA

Adapting to a Changing Climate

Below are five highlighted strategies to help the City of Spokane's human well-being and emergency management sector adapt to climate impacts, particularly extreme heat and wildfire smoke. These include measures the City is already advancing or could further address.

Expand access to cooling centers and hazard shelters. This includes retrofitting public buildings, such as libraries, schools, and community centers, with air conditioning and advanced filtration systems. The City is partnering with Avista to develop resilience hubs that can serve community needs during climate and energy emergencies. This enables them to function as safe havens during heatwaves and periods of poor air quality caused by wildfire smoke. The City of Spokane should continue to extend the hours that Spokane Public Library locations offer shelter during heat events. Efforts should also continue to prioritize partnerships with Spokane Transit Authority to make public facilities accessible through public transportation and ensure targeted outreach to vulnerable populations, like the elderly, individuals with disabilities, and those experiencing homelessness. Past efforts to provide rideshare waivers for residents going to weather relief centers have been successful and should continue to be used during extreme heat, cold, and air quality events. Facilities that support human well-being—including hospitals, correctional facilities, and care centers—should also be prioritized for retrofits, including backup power systems and climate-resilient design.

Enhance air quality monitoring and public alert systems. By improving local air quality networks to provide real-time, localized data on wildfire smoke and pollution, the City of Spokane can better equip its residents with timely health advisories and recommendations. Coupled with robust communication strategies, these systems can deliver essential guidance, such as when to wear masks or stay indoors. This is particularly important for schools, childcare centers, correctional facilities, and other locations where indoor air quality directly affects vulnerable populations.

Implement community-based health interventions to build resilience. Free or subsidized health checks and medical support should be made available during extreme weather events, particularly for respiratory and heat-related conditions. Training community health workers to identify and assist at-risk individuals and conducting educational campaigns on the health risks of extreme heat and wildfire smoke would ensure that the City of Spokane's residents are informed and better prepared.

Offering free or subsidized air purifiers, heat pumps, air conditioning systems, and face masks—or instructions on how to create DIY clean air spaces or cooling centers in homes, schools, and workspaces—could further empower residents to safeguard their health. The Tribal Engagement Group highlighted the need for heating, ventilation, and air conditioning (HVAC) as well as clean air resources in urban Native spaces, due to increased wildfire smoke exposure. The WA State Department of Health recommends upgrading the filter efficiency of the HVAC system and changing filters frequently during periods of smoke to improve indoor air quality. Supplementing with High Efficiency Particulate Air (HEPA) portable air cleaners can further mitigate wildfire smoke impacts on students (Washington State Department of Health, 2024).

Invest in green infrastructure to reduce the impacts of extreme heat. Continue to expand on existing urban forestry programs to increase tree canopy cover in heat-vulnerable neighborhoods can mitigate the urban heat island effect. Meanwhile initiatives, like green roofs, reflective surfaces, and cooling gardens with shade structures and water features, can provide additional relief from rising temperatures.

Plan for emergency preparedness and future long-term resilience. Comprehensive climate adaptation plans that address extreme heat, air quality, flooding and vector-borne disease should be developed in collaboration with diverse stakeholders, including marginalized communities. Regular community emergency drills and securing funding for climate-resilient infrastructure, such as backup power systems for critical facilities, can enhance the City of Spokane's ability to respond effectively to climate-related emergencies.

Language access and communication gaps are major barriers in both emergencies and ongoing climate education. ~Climate Justice Focus Group, May 7, 2025

Incarcerated populations are uniquely vulnerable due to poor building conditions and reliance on institutional preparedness. Evacuation planning, filtration upgrades, and heat-mitigation strategies are critical in these settings (Harvard Law Review, 2023).

5.3 Cultural and Natural Resources

Climate Impacts

Sectors and Indicators	Rising Temperatures & Extreme Heat	Wildfires	Smoke	Heavy Precipitation	Flooding	Drought & Reduced Snowpack	Climate Risk and Vulnerability			Overall Risk and Vulnerability	
Cultural and Heritage Assets and Sites											
✓ Cultural and Heritage Assets and Sites	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Low	**Vulnerability:** Very High	**Risk:** High
✓ Schools & Education	✓		✓				**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Moderate	**Vulnerability:** High	**Risk:** High
✓ Libraries	✓	✓	✓	✓	✓	✓	**Exposure:** Moderate	**Sensitivity:** Moderate	**Adaptive Capacity:** High	**Vulnerability:** Moderate	**Risk:** Moderate
Food Systems											
✓ Food Processing, Urban Agriculture, Gardens	✓	✓	✓	✓	✓	✓	**Exposure:** Moderate	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Moderate	**Risk:** Moderate
Parks, Trails, and Open Space											
✓ General	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Moderate	**Vulnerability:** Moderate	**Risk:** High
Urban Forest											
✓ Tree Canopy	✓		✓			✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Moderate	**Vulnerability:** High	**Risk:** High

Rising Temperatures & Extreme Heat | Wildfires | Smoke | Heavy Precipitation | Flooding | Drought & Reduced Snowpack



Key takeaways

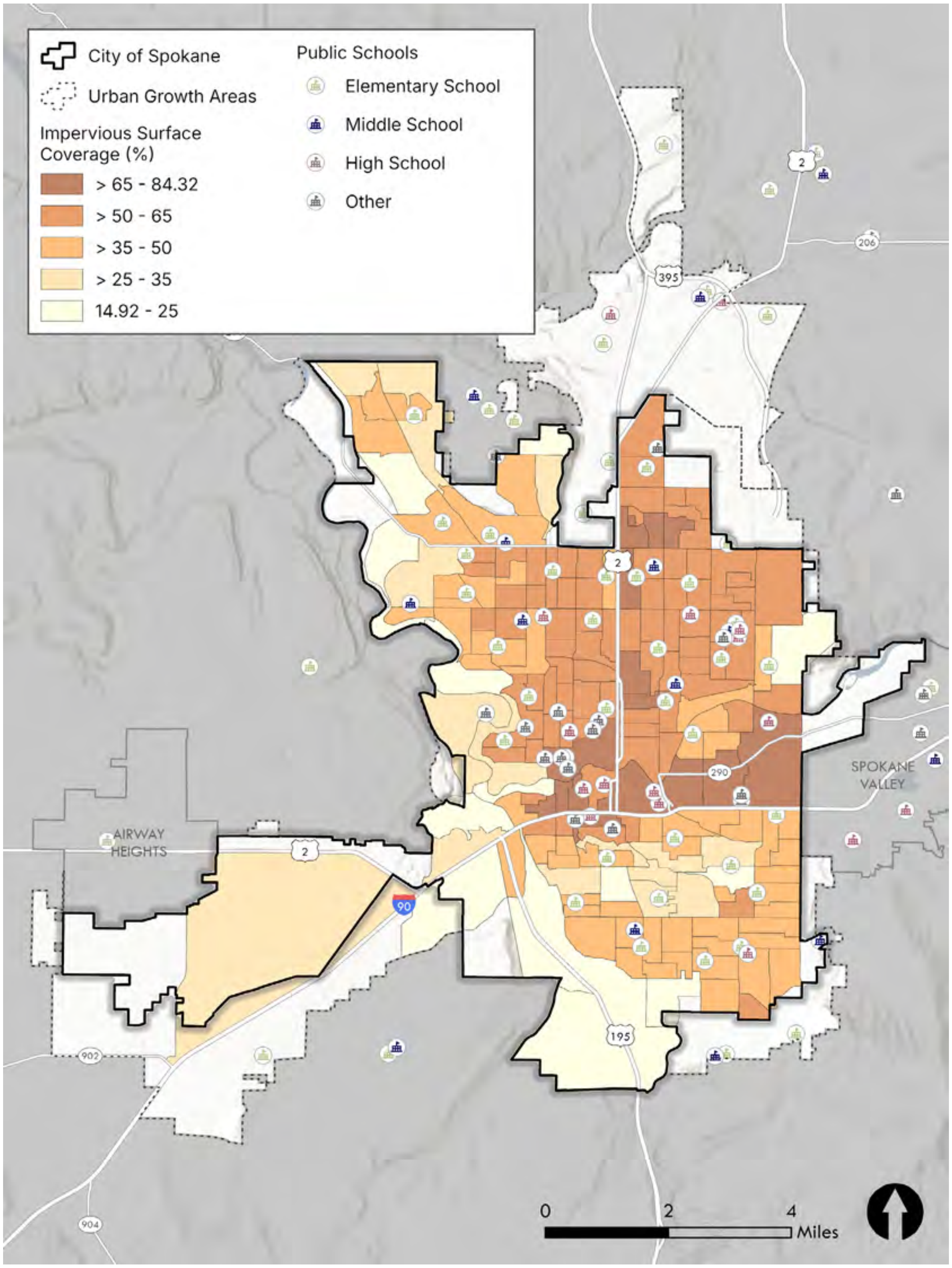
- **Extreme heat**, **wildfire smoke**, **flooding**, **extreme precipitation**, and **drought** are accelerating the degradation of traditional foods, medicinal plants, salmon populations, and culturally significant landscapes.
- Indigenous cultural practices are deeply tied to specific land-based traditions and are therefore **threatened by environmental changes**.
- Cultural gatherings have already been affected by **air quality**, **diminished berry and root harvests, and damage to sacred sites**.
- Climate disruptions are likely to **deepen food insecurity** in Spokane.
- Heat events are likely to **increase demand for indoor facilities**, **water features**, **water access**, and **shade in parks**.
- **Heat and smoke** make parks and outdoor areas **less safe** for visitors, staff, and natural resources workers.
- Flooding and wildfire could damage some parks assets directly.
- Discrepancies in urban forest cover already result in **large differences in localized temperatures** in summer.
- Urban forests can be weakened by **drought and rising temperatures**.

Who is most at risk?

- Tribal Elders and youth
- Urban Native populations
- Cultural practitioners and traditional plant gatherers
- Tribal service providers
- Agricultural workers
- Outdoor resource workers
- Communities in areas with low tree canopy cover

Map of Impervious Surfaces and Education Facilities

Cultural and natural resources in Spokane include community gathering places, historical or heritage sites, food systems, parks, trails, open space, and the urban forest. Tribal cultural resources are threatened by interconnected risks from climate change, including heat, wildfire, altered hydrology, and extreme weather. For example, impervious areas can exacerbate extreme heat events and create urban heat islands (UHI) affecting building temperatures as well as exacerbate runoff associated with extreme precipitation events. The northside of Spokane has greater shares of impervious areas.



City of Spokane CVI: Impervious Surface Coverage and Education Facilities

Cultural and Natural Resources

Sector Summary

Cultural and natural resources in Spokane include community gathering places, historical or heritage sites, food systems, parks, trails, open space, and the urban forest. Tribal cultural resources are threatened by interconnected risks from climate change, including heat, wildfire, altered hydrology, and extreme weather. Emotional, spiritual, and physical harm from these risks is already occurring in Tribal communities. Food systems are likely to see disruptions that ultimately affect food security, particularly for lower-income households. The City's parks system can serve as a refuge but is also at risk of damage from climate events and changing weather patterns. The City’s urban forest also supports resiliency but is vulnerable as more drought, heat and extreme wind events occur. Overall, the cultural and natural resources that support the emotional and physical wellbeing of residents are already experiencing changes and more impacts are expected in the coming years.

Cultural Resources

This section examines some climate risks to Indigenous cultural resources in the City of Spokane and outlines Tribal-led adaptation strategies to enhance climate resilience. Addressing these challenges will require stronger protections for sacred sites, investments in community resilience infrastructure, and the integration of traditional ecological knowledge (TEK) into regional climate adaptation planning. As noted by Indigenous leaders, this work must be conducted with respect, partnership, and long-term commitment.

Cultural resources play a key role as sites for community gathering and/or for fostering social capital, which is imperative for adaptive capacity (Carmen, 2022). These assets can also include groups like Emergency Response Teams, which can help support community members during climate events. Also identified are shorelines and cultural assets of particular importance to Tribal and Native community members. Cultural resources—including sacred sites, TEK, community institutions, and historic landscapes—are foundational to the identity, well-being, and governance of Indigenous peoples in the Spokane region. The Spokane Tribe of Indians, Kalispel Tribe of Indians, and Coeur d'Alene Tribe of Indians, as well as urban Native communities represented by the American Indian Community Center (AICC), The Native Project, Spokane Tribal Network, and Upper Columbia United Tribes (UCUT), hold ancestral and contemporary connections to these lands and waters (Upper Columbia United Tribes, 2021).

Climate impacts present interconnected risks that threaten Indigenous cultural and natural heritage in the Spokane region. Rising temperatures, increasing wildfire smoke, altered hydrology, and extreme weather events are accelerating the degradation of traditional foods, medicinal plants, salmon populations, and culturally significant landscapes (Kalispel Tribe Natural Resources, 2023). These environmental changes threaten Indigenous governance systems, language preservation, and intergenerational knowledge transfer, as cultural practices are deeply tied to specific land-based traditions (Coeur d'Alene Tribe, 2023). Community members have already experienced the cancellation of cultural gatherings due to poor air quality, diminished berry and root harvests from ecosystem shifts, and damage to sacred sites from wildfires, flooding, and erosion. They are also seeing declines in fish populations caused by warmer stream temperatures, degraded water quality, erosion, and reduced water availability — all of which threaten traditional fishing practices and vital food sources. Tribes emphasize the emotional, spiritual, and physical harms that come from witnessing these cherished places, resources, and lifeways in decline.

Future climate scenarios suggest continued intensification of these trends. Increased frequency of heatwaves and longer wildfire seasons will limit access to sacred spaces and disrupt intergenerational learning opportunities. Rising river levels and altered runoff patterns may permanently damage burial grounds and historic landmarks. Loss of culturally significant plant species may further erode food sovereignty and land-based knowledge systems. If unaddressed, these cascading impacts may contribute to cultural dislocation and hinder Indigenous self-determination. However, proactive efforts led by Tribal nations to establish native plant nurseries, cultural fire practices, and climate education programs offer hope and resilience.

Vulnerability is especially high in rural areas surrounding the Spokane and Columbia Rivers, where burial sites and cultural landmarks are at risk from flooding and erosion. Wildfire-prone landscapes in forested and grassland areas near Tribal lands pose acute risk to traditional gathering grounds and sacred spaces. In urban settings, particularly within the City of Spokane, many older buildings used by Native organizations are located in areas with limited tree canopy and greater urban heat island effects, further increasing exposure to extreme heat and poor air quality.

Elders and youth are particularly vulnerable to health impacts from wildfire smoke and extreme heat and are also central to cultural transmission. Urban Native populations often face higher barriers to accessing clean air and cooling spaces due to socioeconomic disparities and mobility limitations. Cultural practitioners and traditional plant gatherers are directly impacted by changing phenology, fire regimes, and land access constraints. Students in older school buildings are at higher risk of exposure to poor air quality and elevated indoor temperatures. Tribal service providers and healthcare workers report compounded stress and burnout during climate events, which threatens the capacity of culturally significant institutions.

Social and Tribal Service Centers

Tribal service centers—including the American Indian Community Center (AICC) and The Native Project—are vital to Indigenous community resilience, particularly for Spokane's urban Native population. These centers provide food security programs, healthcare, emergency shelter, housing support, and cultural services (American Indian Community Center, 2022). These spaces can act as lifelines during wildfire events and as key entry points for cultural education and intergenerational healing.

- **Extreme Heat & Wildfire Smoke Exposure**
  Heatwaves and prolonged wildfire smoke disproportionately affect Indigenous Elders, youth, and those with preexisting health conditions such as asthma and cardiovascular disease (Washington State Department of Health, 2023). However, many Tribal service centers lack air conditioning, high-efficiency filtration systems, or backup power, limiting their ability to function as climate shelters. During periods of extreme smoke, some residents have chosen to endure hazardous air quality in homes without filtration rather than relocate to unfamiliar or inaccessible shelters. This demonstrates the urgent need for Indigenous-led and trusted resilience hubs.
- **Emergency Preparedness & Climate Resilience Capacity**
  Many Indigenous residents in the City of Spokane face mobility and financial barriers that prevent them from accessing cooling centers and clean-air shelters during extreme weather events (Washington Tracking Network, 2022). AICC and The Native Project have advocated for decentralized resilience hubs across Spokane to improve access to emergency services (American Indian Community Center, 2022). These calls were echoed during tribal engagement sessions, with community members stressing the need for culturally safe spaces that reflect Native identity and offer wraparound services.
- **Infrastructure & Policy Needs**
  Tribal service centers require climate-adaptive upgrades, including solar-powered backup generators, expanded shelter capacity, and improved HVAC systems to enhance resilience against heatwaves and wildfire smoke (City of Spokane, 2025). Proposed facilities—such as AICC's green cultural center—would incorporate interpretive walkways and native plants, emphasizing the dual role of these spaces as both shelters and sources of education.

Community and Tribal Gathering Places

Gathering spaces—including powwow grounds, longhouses, community centers, and outdoor ceremony sites—are essential for continuing Tribal governance, intergenerational learning, and cultural identity (Kalispel Tribe Natural Resources, 2023). These locations are also used for salmon ceremonies, seasonal gatherings, and food-sharing events that are central to Indigenous spiritual and cultural life.

- **Heat & Smoke Disruptions to Cultural Events**
  The Spokane Powwow, salmon feasts, and other ceremonial gatherings are increasingly impacted by extreme heat and wildfire smoke. These events, which serve as opportunities for cultural transmission and community cohesion, have been canceled or modified due to hazardous conditions (Coeur d'Alene Tribe, 2023). In community discussions, it was emphasized that losing access to ceremony disrupts not just events but social fabric. "Our ceremonies are not just events—they're how we teach our children and honor our ancestors. Cancelling them is like erasing a page from our story."
- **Displacement from Traditional Lands & Ceremony Sites**
  Many sacred sites and traditional food harvesting areas are in wildfire-prone forests, riverbanks, and grasslands. As climate hazards intensify, access to these spaces is increasingly restricted (UCUT, 2021). The Spokane Tribe has reported the loss of berry-picking and root-harvesting areas due to shifting seasonal patterns and ecosystem degradation (Spokane Tribe, 2022). One tribal participant noted that these changes "hurt your body" to witness, but they also spoke of the resilience of the land and people: "We also witness the land's resilience—those daily miracles still happen."
- **Adapting Gathering Spaces for Climate Resilience**
  Investments in shaded outdoor structures, improved ventilation in cultural centers, and emergency air quality plans for indoor events are necessary to sustain cultural practices despite climate hazards (UCUT, 2021). Community members also called for the use of interpretive signage, community gardens, and native plant landscaping to make these spaces more resilient and reflective of cultural teachings.

Residents support shared solutions like gardens, composting, and mutual aid. ~ NE Spokane Focus Group, May 3, 2025

Cultural and Heritage Assets and Sites

Sacred sites, burial grounds, and historic village locations are increasingly vulnerable to wildfires, flooding, and erosion. These places hold deep cultural and ancestral meaning and are critical to the transmission of Indigenous identity.

- **Erosion & Flooding Risks to Archaeological Sites**
  Rising water levels and more intense precipitation events along the Spokane and Columbia Rivers threaten Indigenous burial sites and cultural landmarks (UCUT, 2021). The Spokane Tribe has documented multiple instances of erosion-related damage to historic sites in recent years (Spokane Tribe, 2022). Tribal leaders

requested stronger policies for heritage site monitoring and early-warning systems for flooding events.

- **Wildfire Damage to Cultural Landscapes**
  Many sacred landscapes used for root and berry gathering, medicinal plant harvesting, and ceremonial practices are within wildfire-prone areas. Severe fires destroy these ecosystems and expose archaeological sites to erosion and desecration (Kalispel Tribe Natural Resources, 2023).
- **Protection Strategies**
  - Conduct climate vulnerability assessments for sacred sites and cultural landscapes.
  - Expand Tribal co-management agreements with local, state, and federal agencies and support ongoing efforts such as fire fuel reduction.
  - Implement emergency response plans for heritage site protection
  - Promote native plant nurseries and restoration efforts that align with cultural uses.

Schools & Education

Educational institutions serving Indigenous youth—including Spokane Public Schools, Tribal schools, and Native education programs like the Salish School of Spokane—face increasing climate-related disruptions. These disruptions compound existing disparities in educational access and outcomes.

- **Extreme Heat & School Closures**
  Spokane Public Schools have reported heat-related closures and increased classroom temperatures, particularly in older buildings lacking modern HVAC systems (Spokane Public Schools, 2023). Community members expressed concern that this disproportionately affects Native students and advocated for equitable school infrastructure improvements.
- **Wildfire Smoke & Indoor Air Quality Concerns**
  Many schools lack sufficient air filtration systems, leading to prolonged exposure to hazardous air quality during wildfire events (Washington State Department of Health, 2023).
- **Adaptation Needs**
  - Upgrade HVAC and air filtration systems in schools.
  - Expand Indigenous-led climate education programs.
  - Implement climate preparedness protocols for school closures.
  - Partner with Native educators to create land-based, TEK-informed curricula.

Libraries

Libraries serve as community resilience hubs but require infrastructure upgrades to function effectively in a changing climate.

- **Role in Climate Resilience**
  Spokane Public Libraries provide cooling and clean-air spaces but lack consistent ventilation upgrades (Spokane Sustainability Action Plan, 2023). Tribal and urban Native members recommended that libraries be equipped to serve as communication and education centers during climate events.
- **Indigenous Knowledge & Climate Education**
  Expanding Indigenous-led climate programming in libraries will help preserve cultural knowledge and strengthen community-wide climate resilience (UCUT, 2021).

Food Systems

The City of Spokane's food system is increasingly vulnerable to the impacts of a changing climate, with extreme temperatures, drought, and flooding affecting agricultural production, food distribution, and access to nutritious food. As climate hazards become more frequent and severe, every segment of the food supply chain—from farm to table—faces compounding stressors. These disruptions threaten to deepen food insecurity, especially for those already struggling to access healthy, affordable food.

Currently, the City's diverse food system consists of urban agriculture, regional farming, food processing facilities, and expanding food access programs. While the City supports a growing community gardening movement, regional food production is still heavily reliant on Spokane County's over 2,500 farms, the second-highest number in the state (City of Spokane, n.d.). Local food processing contributes approximately $566 million in revenue annually, and food banks distribute millions of pounds of food each year to meet rising demand (Rillo, 2024; Spokane Neighborhood Action Partners, 2022). Community gardening has also expanded considerably, growing from around eight gardens in 2008 to 56 by 2019 (Drokina, 2019). However, while the City has designated 153 acres for Residential Agriculture in Latah Valley—including 92 acres of prime agricultural land—this zoning does not provide long-term protection for agricultural lands (Spokane Food Policy Council, 2016).

The changing climate has already begun to affect the City of Spokane's food system, particularly through extreme weather events that disrupt food access and delivery. In recent years, community organizations have seen a steep rise in food assistance needs. Over 6.25 million pounds of food were provided by or for more than 100 community organizations between June 2020 and January 2021—an over 60% increase from previous years (Spokane Neighborhood Action Partners, 2022). Local food banks like Second Harvest Inland Northwest, which provides an estimated 80,000 meals daily, play a major role in addressing food insecurity (Rillo, 2024). Despite these efforts, food banks faced severe shortages during the 2024 holiday season, highlighting ongoing challenges in meeting community food needs. Local food systems, when connected to addressing food insecurity, can advance climate resilience by way of reducing reliance on supply chains. At the same time, local food systems in Spokane experience impacts from wildfire smoke and extreme heat have limited outdoor growth and harvesting conditions in both community gardens and nearby farms. Anecdotal evidence suggests climate-related changes in wild food availability, including shifts in growing seasons and taste variations in certain edible plants (Spokane Food Policy Council, 2016).

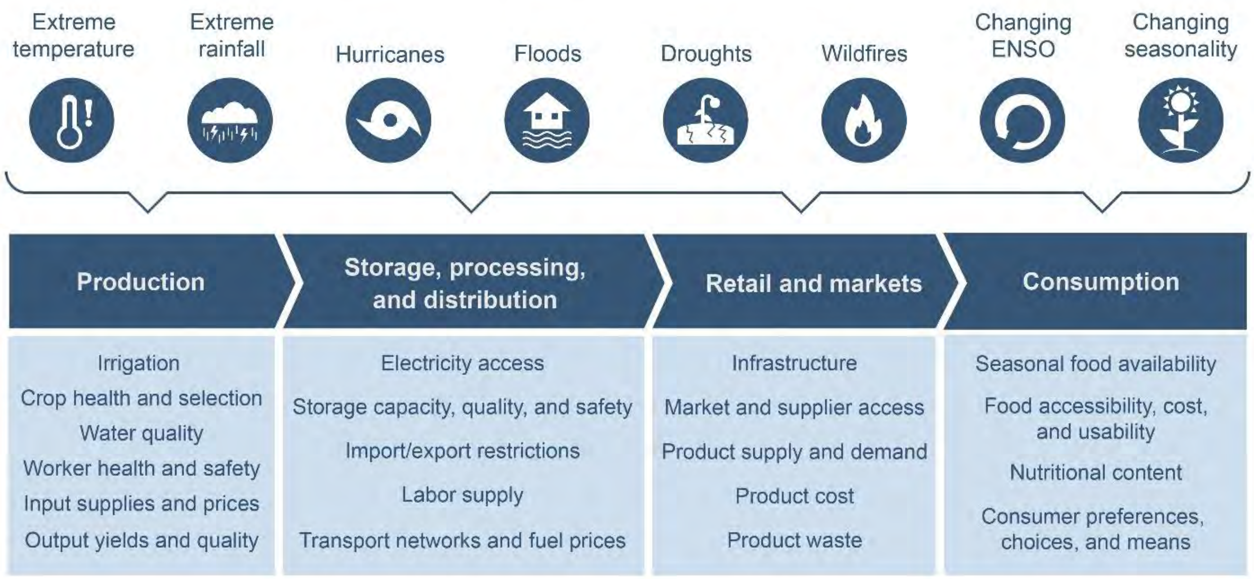
"I used to garden and grow more of my own food but I'm finding it more and more difficult with the extreme heat that can wipe the garden out in a matter of a week."
- Personal story submitted from 2024-2025 City of Spokane Community Climate Planning Survey

The City of Spokane's food system—spanning production, processing, distribution, retail, and consumption—will face growing risks from hazards such as extreme temperatures, flooding, and drought, as shown in Exhibit 49. Longer and more intense droughts and shifting precipitation and temperature patterns are expected to disrupt agricultural output by lowering crop yields, increasing pest pressures, and reducing the total acreage under production (Chang, et al., 2023; Spokane County, 2020; Spokane Food Policy Council, 2016). Additionally, changes in wild food availability remain uncertain, though anecdotal evidence suggests shifts in growing seasons and taste variations in certain edible plants (Spokane Food Policy Council, 2016).

"I'm worried about the impact if the climate gets too hot and dry. Not only will we have to deal with more fires but crop failures, drought and everything else. This will definitely have an economic impact on the area."
- Personal story submitted from 2024-2025 City of Spokane Community Climate Planning Survey

Beyond agriculture, disruptions in food processing, distribution, and retail will present further challenges. Grocery stores, food banks, and restaurants throughout Spokane face risks from severe weather, and aging infrastructure may compound these vulnerabilities (Spokane County, 2020). As change accelerates, disruptions in food availability, affordability, and supply stability are likely to increase.

Exhibit 49. Example effects of climate impacts on the food supply chain



Source: Bolster, et al, 2023

Food access is already limited in several low-income neighborhoods—including Browne's Addition, Peaceful Valley, West Central, Minnehaha, Hillyard, and Shiloh Hills—where many residents in parts of the neighborhoods live more than a mile from the nearest supermarket, as shown in Exhibit 49 (U.S. Department of Agriculture, 2025). These areas face overlapping food insecurity and transportation barriers. Additionally, the West Central, Minnehaha, and Hillyard neighborhoods exhibit very high climate vulnerability (See Exhibit 50), which could further strain access to food and increase dependence on emergency food systems (Climate Vulnerability Index).

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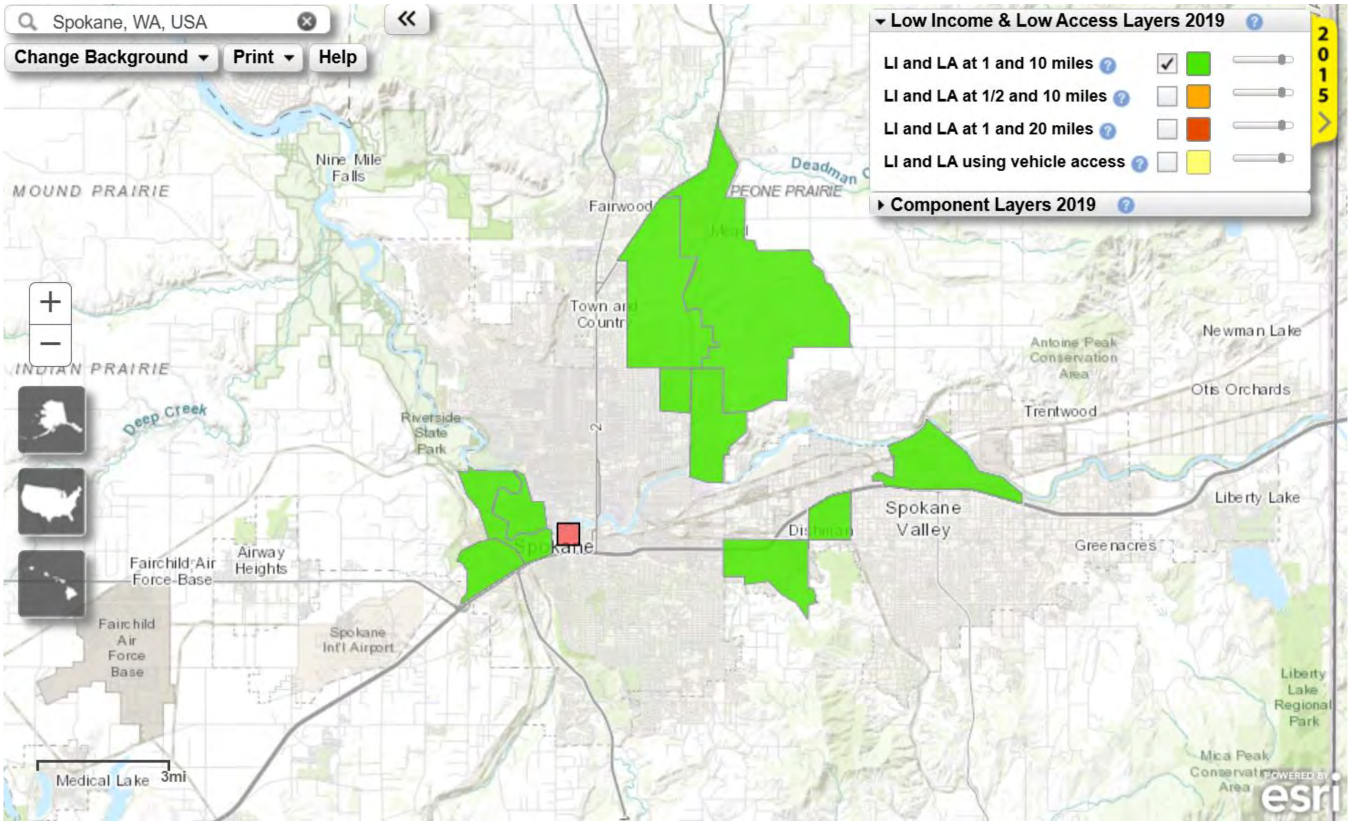
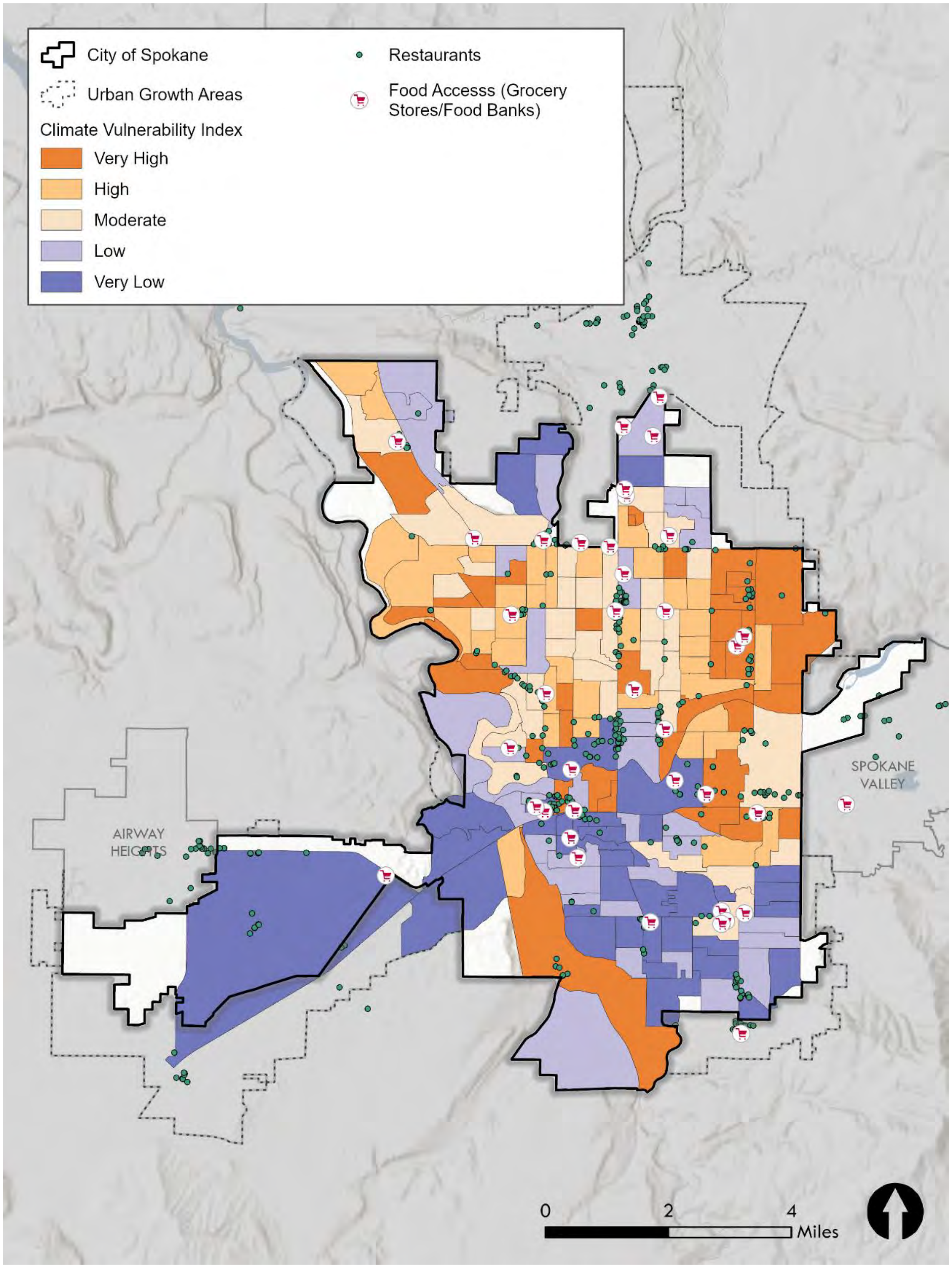
Exhibit 50. Supermarket Access



Note: Areas in green highlight low-income census tracts where a significant number or share of residents is more than 1 mile (urban) or 10 miles (rural) from the nearest supermarket
Source: U.S. Department of Agriculture, 2025.

AGENDA

Exhibit 51. City of Spokane Climate Vulnerability Index: Food Access and Climate Vulnerability



Note: West Central, Minnehaha, and Hillyard neighborhoods exhibit very high climate vulnerability. These same neighborhoods are low-income areas where a significant number or share of residents is more than one mile from the nearest supermarket.
Source: City of Spokane Climate Vulnerability Index, 2025

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The impacts of a changing climate on the City of Spokane's food system will not be felt equally. More frequent and severe climate-driven disruptions are expected to disproportionately affect vulnerable groups, including women, children, older adults, people with disabilities, and people in neighborhoods that are more than one mile from the nearest super market (see Exhibit 45) (Bolster, et al., 2023). These communities already face barriers to accessing fresh, nutritious food—whether due to transportation, cost, or geographic isolation (US EPA, 2025). .

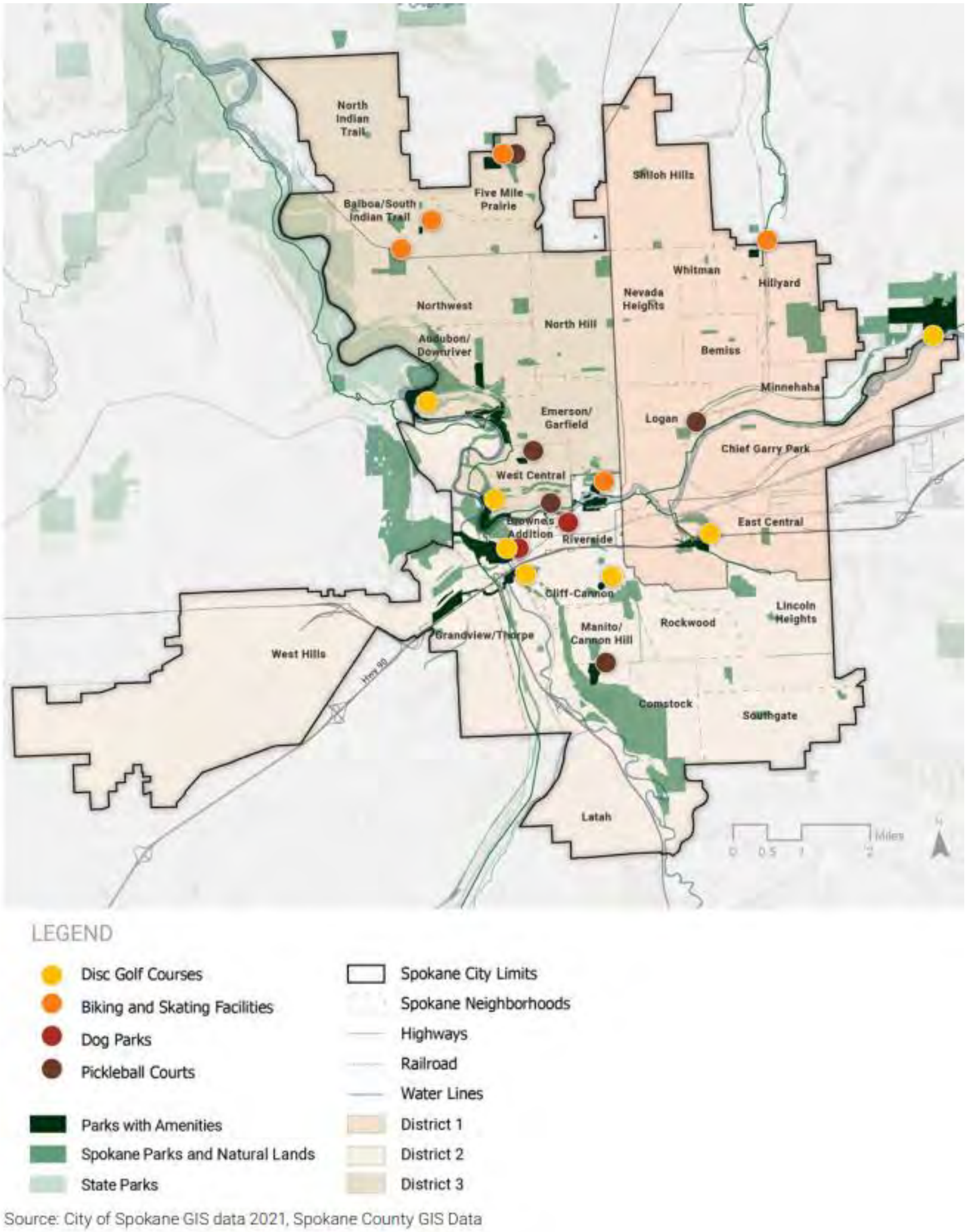
"I'm very concerned about accessibility to food, especially given that I frequent local farmer's markets and have seen vendors go away – according to others, partially because of climate-caused difficulties like unusually late frosts."

- Personal story submitted from 2024-2025 City of Spokane Community Climate Planning Survey

Parks, Trails, and Open Space

Changes in climate pose risks to the city's parks, trails, and open space system, including plants, buildings, amenities, and infrastructure. The City manages approximately 130 miles of trails and 3,800 acres of parks, including 1,600 acres of natural lands (City of Spokane, 2022). 83% of the city's trails are natural trails. Within the City's more than 87 parks, the city provides a range of facilities, including playgrounds, sports fields, sports courts, community gardens, formal gardens, dog parks, splash pads and pools, and unprogrammed field areas. The City of Spokane also owns and manages three sports complexes, four public golf courses, six aquatic centers, and an arboretum. Natural lands provide opportunities for passive recreation and plant and animal habitat. Trails serve as corridors for pedestrian and bicycle use for both commuting and recreation. All of these facilities provide green space for city residents and workers. Two of the City's most popular and iconic parks are Riverfront Park, located on the Spokane River downtown, and Manito Park, in the Manito/Cannon Hill neighborhood south of downtown.

Exhibit 52. Spokane Parks and Amenities



Source: (Spokane Parks and Natural Lands Master Plan, 2022)

Parks, trails, and open spaces are community assets that are likely to be affected by various climate hazards, including extreme heat, drought, flooding, and wildfires and smoke. Extreme temperatures already impact park use depending on the specific conditions of the park. Parks or trails with shade, air-conditioned indoor facilities, water features, and water access are already often used as a place to cool off during heat events, whereas parks with more impervious surfaces are more unsafe to use. Under extreme heat and drought, vegetation, such as trees, grass fields, and landscaping, can also be impacted and require more intensive watering and maintenance. The City could also incur greater energy costs for cooling and air filtration in parks buildings in heat and smoke events. Fire and smoke could also make park access and use less safe. Safety of park maintenance staff, who generally work outdoors, may be at risk during extreme heat and smoke events. There may be greater demand over time for park features that allow them to serve as refuges in heat and smoke events. Natural resources in parks that are of particular importance to Tribal communities, such as fish-bearing streams, are also likely to be affected by heat, drought, and flooding. Spokane Parks and Recreation capacity and funding are limited, and those resources are likely to be stretched further as the City prepares for and reacts to climate events. Partnerships with other entities, such as co-management of wildland parks with Tribes to mitigate fire risk, can help maximize the City's staff time and funds.

Some park assets could also be directly damaged if a fire occurred, especially those in wildland-urban interface areas near the west, northeast, and southeast edges of the city, such as Minnehaha Park and Fish Lake Trail.

Exhibit 53. Riverfront Park

Source: City of Spokane, 2024

Flooding could impact certain parks, trails, and open space, depending on their location, by eroding trails and damaging other park assets directly. Potential flooding mechanisms in Spokane include a swollen Spokane River and urban runoff from high-intensity rain events. Some properties are particularly vulnerable to flooding, including those within parts of the East Central, Southgate, and Lincoln Heights neighborhoods and along the Spokane River and Hangman Creek. These waterways support wildlife habitat, recreation, and public amenities such as Riverfront Park and the Centennial Trail. Significant stretches of shoreline lie within the 100-year floodplain, including popular parks like People's Park, Wentel Grant Park, Peaceful Valley Park, and Riverfront Park (City of Spokane, 2021). Flooding may increase in frequency and severity, damaging infrastructure, trails, and parks, and overwhelming natural filtration systems that maintain water quality. Landslide risk is also a concern at some parks, including Peaceful Valley Park, which required City monitoring and action in 2021 (The Spokesman-Review, 2021).

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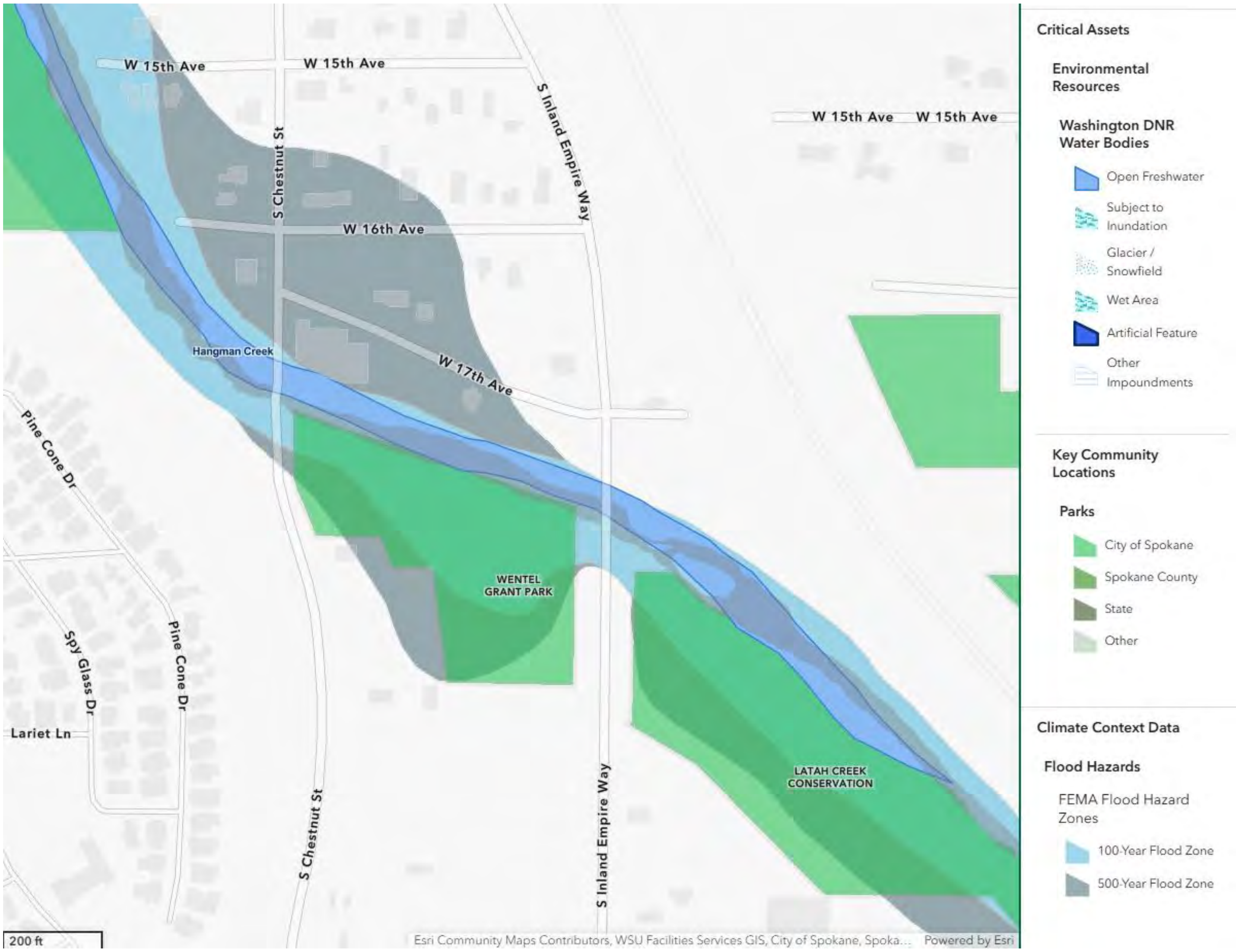
Larger areas of the city could be affected by landslide in the event of a wildfire followed by rain.

Longer dry periods followed by intense storms will also worsen non-point source pollution, leading to more days when swimming or fishing may be unsafe. Impacts to fishing also affect Tribal members' access to cultural resources. Many of the shoreline recreation areas are located near lower-income neighborhoods that may have limited access to transportation, indoor recreation, or alternative cooling options. As shoreline conditions worsen, these communities may lose access to affordable, safe outdoor spaces for exercise, cooling, and gathering. Populations that rely on public parks and water access for their well-being and social connection may be disproportionately affected by closures or degraded environmental conditions, especially during extreme heat and smoke events when these spaces serve as refuges (Chang, et al., 2023).

Exhibit 54. Floodplain Overlay on Wentel Grant Park



Source: City of Spokane, Map Spokane, 2025

Changes in climate have already begun to affect Spokane's inland shorelines. In May 2023, extreme rainfall led to flooding along Upriver Drive, temporarily closing portions of the trail (Davis, 2023). Heavy storms have increased erosion and carried more debris into the Spokane River, making swimming and boating hazardous. Long periods of low summer streamflows have reduced water levels and limited recreational activities such as paddling and fishing. These seasonal shifts have also contributed to higher concentrations of pollutants, including sediments, nitrogen, pesticides, and pathogens—that degrade water quality and increase health risks for people and aquatic species (NWF & WDFW, 2011).

Some parks that provide a lot of recreation value outside of the City's system, including Riverside State Park, are also at risk.

Parks, trails, and open space not only can be affected by climate impacts but also provide citywide adaptive capacity benefits. They often include natural infrastructure, like trees and vegetation, that helps to mitigate heat, flooding, and air quality impacts. They can also serve as hubs during emergencies to communicate with others, access resources, and stay cool. Indoor park facilities have the added benefit of providing shelter from extreme weather. These facilities also help improve the adaptive capacity, and therefore the long-term resilience, of people. They provide places to be active, de-stress, and interact with neighbors, creating healthier and more connected communities that are better positioned to respond to climate events.

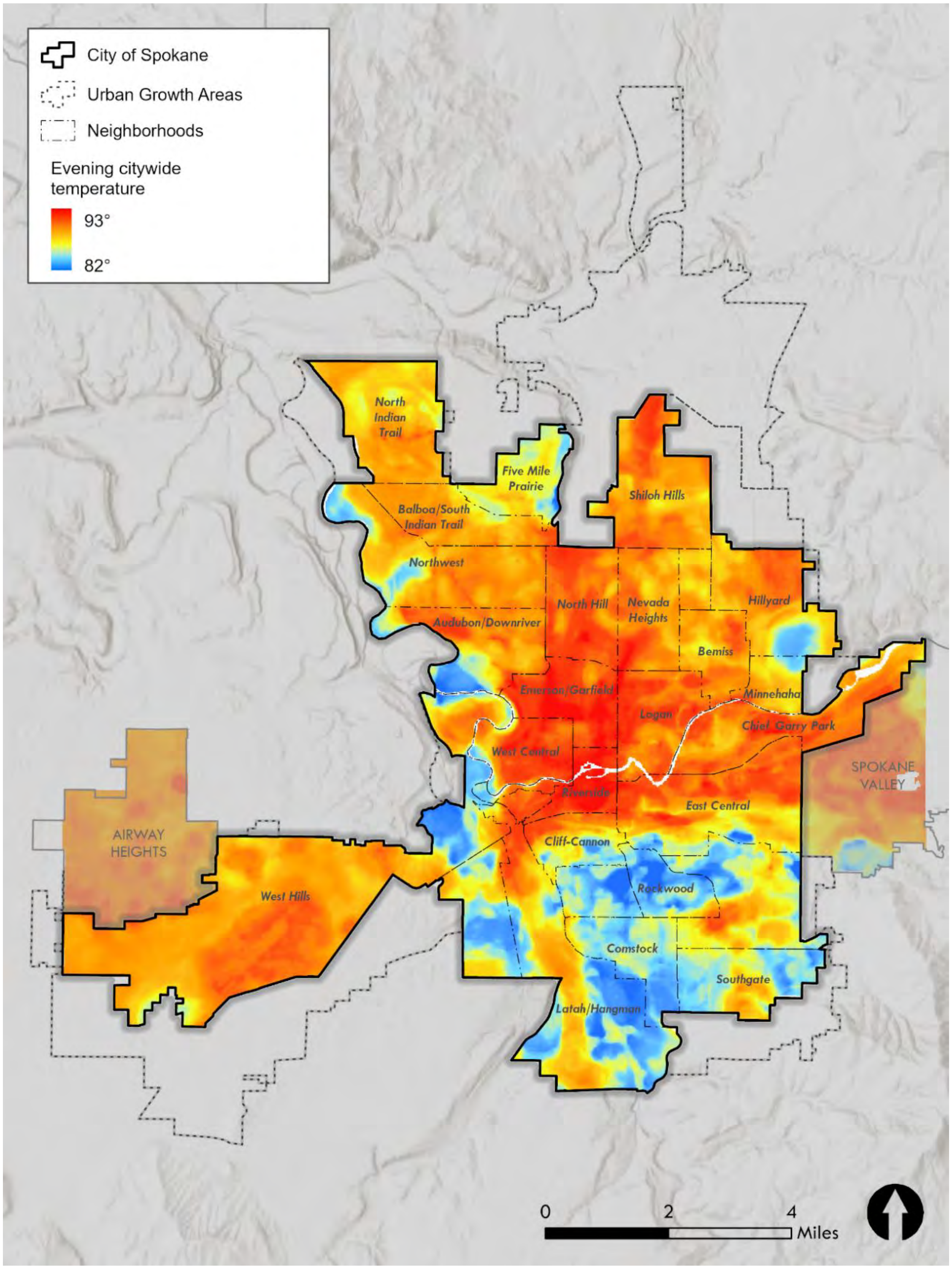
Urban Forest

As Spokane continues to experience the impacts brought on from a changing climate, its tree canopy will serve an increasingly vital role in climate resiliency, helping sequester carbon, reducing urban heat island effect, and managing stormwater runoff (Thrower, 2024).

On average, Spokane has 20% tree canopy coverage across its boundaries, though this varies significantly by neighborhood, ranging from 11% to 40% (The Lands Council, 2023). Spokane's composite tree equity score of 80 indicates relatively strong citywide tree cover compared to other metropolitan areas (American Forests, 2025). However, significant disparities exist in the distribution of urban greenery. Some neighborhoods, particularly those with high concentrations of impervious surfaces like roads and buildings, experience localized temperature differences of up to 14°F. For example, on a 90°F day, areas with fewer trees and more paved surfaces can feel as hot as 104°F (Henning, Ducken, Honebein, Corrina, & Brown, 2023).

The spatial distribution of evening temperatures across Spokane further highlights the impact of UHI. See Exhibit 55. Areas shown in red and orange represent higher evening temperatures (up to 92°F), while cooler zones, depicted in blue, reach lows of 82°F.

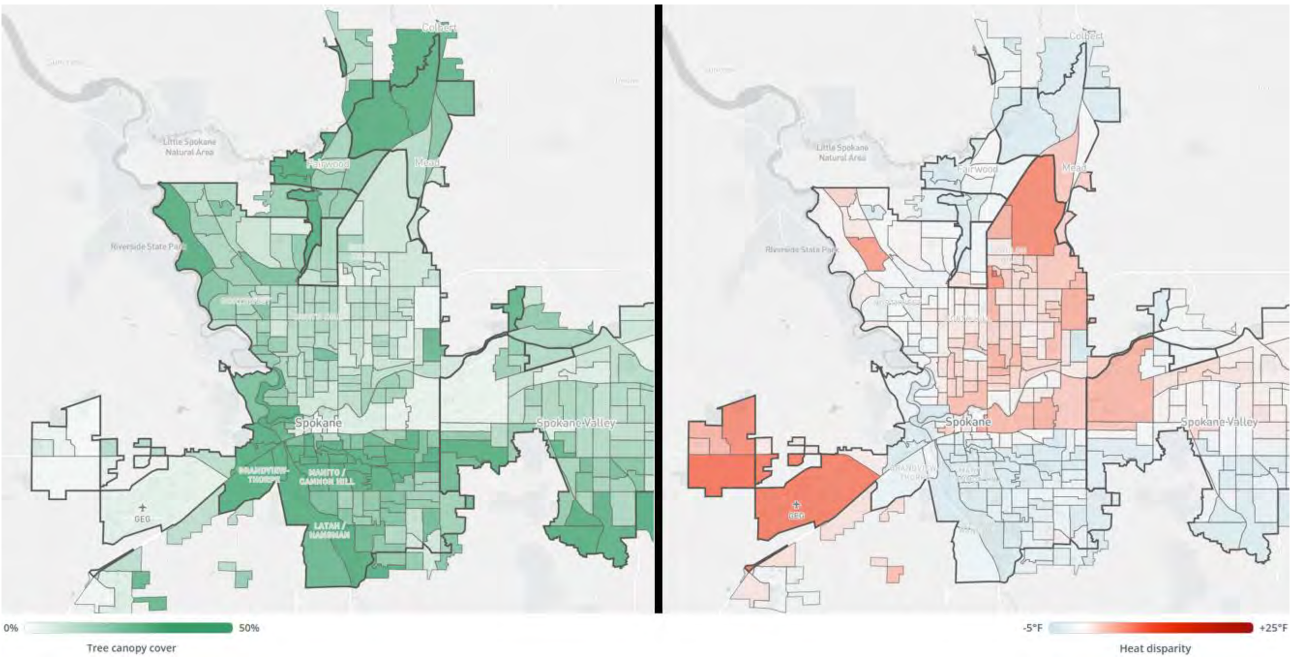
Exhibit 55: Predicted evening urban heat distribution across the City of Spokane



Note: This is based on data from the July 16, 2022, urban heat island mapping campaign.
Source: (Gonzaga Institute for Climate, Water & Environment, 2024)

This temperature pattern underscores the role of green spaces in moderating heat and highlights the need for targeted urban forestry initiatives in the hottest neighborhoods. The trend is also apparent when comparing tree canopy cover and heat disparity by block group within the City of Spokane. See Exhibit 56. Areas with lower tree canopy tend to correlate with neighborhoods that experience significant heat disparities.

Exhibit 56. Tree canopy cover and heat disparity by block group within the City of Spokane



Source: (American Forests, 2025)

As extreme heat events become more frequent and intense, the UHI effect will exacerbate public health risks. Urban forests, street trees, and green spaces help mitigate these effects by providing shade and cooling the surrounding environment (Gillerot, Landuyt, De Frenne, Muys, & Verheyen, 2024). Areas with abundant tree cover generally experience lower temperatures, making urban forests an essential component of climate resilience.

While urban forests and street trees provide essential cooling benefits, they are increasingly challenged by climate impacts. Rising temperatures and increased drought can weaken trees by reducing photosynthesis and increasing stress from excessive heat exposure (Egerer, Schmack, Vega, Barona, & Raum, 2024). Additionally, impervious surfaces in urban areas limit water infiltration, making it harder for tree roots to access moisture (Mullaney, Lucke, & Trueman, 2014). Wetter winters and extreme winter storm events can also create risks of trees falling, impacting housing, buildings and infrastructure, whereas trees and vegetation can also lead to wildfire risks depending on maintenance and location. Such maintenance costs have been noted during community listening sessions (e.g., PlanSpokane Neighborhood Council Climate Workshop in December 2024) and can become a cost barrier to increasing tree canopy for cooling benefits for low-income residents. Without intervention, projected increases in temperature and drought conditions, as well as winter storms, may further strain the City of Spokane's urban forests and create additional damages, diminishing their ability to mitigate UHI effects.

Adapting to a Changing Climate

Below are key strategies to help the City of Spokane build cultural and ecological resilience in the face of a changing climate, particularly by supporting Indigenous communities, protecting natural and cultural assets, and strengthening community spaces and food systems.

Center Indigenous knowledge and leadership in climate adaptation. Spokane-area Tribes and Indigenous organizations are already leading adaptation efforts. Spokane can enhance cultural resilience by recognizing Tribal climate plans within the city's broader resilience framework, strengthening consultation and co-governance mechanisms, and protecting sacred landscapes, salmon habitats, and culturally significant gathering areas. These places are not only spiritually and culturally vital but also provide food security and natural buffers to climate impacts. Supporting Tribal-led ecological restoration and stewardship rooted in Traditional Ecological Knowledge (TEK) will promote long-term resilience. Cultural sites may also serve as "climate havens" or food sources, but many are vulnerable to streamflow and temperature changes and may require protection or climate-smart restoration.

"We're not just impacted—we are resilient. We carry knowledge systems that help our people adapt and thrive." Tribal Engagement Group (TEG)

Invest in Tribal and cultural infrastructure to improve climate resilience. Many Tribal service centers, libraries, schools, and urban Native community spaces may need upgraded HVAC systems, air filtration, and backup power to maintain safe conditions during wildfire smoke events and heatwaves. These buildings could also serve as resilience hubs if made accessible via transit and equipped with wraparound services. Arts-related businesses, heritage landmarks, and sacred sites likewise support mental health and community identity and may require efficiency and climate-resilience improvements to withstand fire, flooding, and extreme heat. Historic buildings, cemeteries, theaters, and other cultural assets support community cohesion, but many are older structures with limited energy efficiency and may require targeted investments to improve their climate resilience.

Strengthen resilience in Spokane's food system. The City's support for the Spokane Regional Food Action Plan has laid the groundwork for a more climate-resilient and equitable food system (Spokane Food Policy Council, 2022). Urban farms, CSA pickups, and farmers markets can help increase local food access but face threats from changing precipitation, extreme heat, and flooding (Gruda, 2015). Growing seasons may be shortened or disrupted, and extreme weather could impact harvests or market accessibility. Transportation barriers also pose challenges, especially for low-income households. Urban agriculture initiatives, especially in vulnerable neighborhoods, should be supported with funding, climate-resilient crops, and improved infrastructure. It is also important to consider transportation barriers that may reduce access to local food during extreme weather.

Enhance community gathering places as resilience hubs. Community spaces such as libraries, churches, community centers, and senior centers are critical during climate emergencies and should be prioritized for upgrades to air conditioning, filtration, and accessibility. Transportation barriers can limit access to these hubs, particularly for seniors and those without vehicles. Retrofitting facilities and ensuring connectivity to public transit will be essential. These hubs can provide clean air, cooling, and support services during wildfire smoke, heatwaves, and severe storms. Their ability to serve effectively depends on both their physical condition and how well-connected they are to transportation and community networks.

Protect and adapt Spokane's parks, open spaces, and shorelines. Parks, trails, and natural lands offer shade, cooling, and recreation—key resources for public health during climate extremes. City pools already offer free admission and extended hours during heat events, and Gonzaga University's Center for Climate, Society, and the Environment has mapped regional cooling resources such as splash pads and fountains. These areas should incorporate drought-tolerant and native landscaping, water features, reflective surfaces, and tree canopy to mitigate urban heat. Green stormwater treatment areas should also be considered to address flooding and water quality impacts from runoff. Future park projects should include "floodable" park designs, vegetation thinning for wildfire risk reduction, and landscaping that balances human use and ecosystem health. Golf courses may be re-evaluated for alternative climate-resilient uses or adapted with reduced lawn area, drought-tolerant turf, and lower irrigation demand. Co-management of wildland parks with Tribes could build on the City's existing efforts to improve wildfire resiliency.

Expand and manage the City of Spokane's tree canopy for cooling and air quality. Spokane's urban forest provides vital climate adaptation benefits, including temperature regulation, air quality improvement, and stormwater mitigation. Priorities from the 2022 Parks and Natural Lands Master Plan include planting in heat-vulnerable neighborhoods and expanding access to splash play and drinking water. Species selection particularly native species and maintenance planning should reflect changing climate conditions.

Reinforce trail systems and restore shoreline habitats. Shoreline trails and recreational assets may require adaptation through elevated pathways, improved drainage, and erosion controls. Habitat restoration—such as replanting riparian vegetation, restoring wetlands, and improving fish passage—can help protect biodiversity while maintaining recreational access. Collaboration with the Department of Ecology will also be needed to ensure that waterway protection regulations allow enough flexibility for fire mitigation work in riparian areas.

5.4 Infrastructure

Climate Impacts

Sectors and Indicators							Climate Risk and Vulnerability			Overall Risk and Vulnerability	
Energy											
✓ Energy Infrastructure	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Very High	**Risk:** High
✓ Consumption/Demand	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Low	**Vulnerability:** Very High	**Risk:** Very High
Transportation											
✓ Access to transit	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Moderate	**Risk:** High
Solid Waste Management											
✓ Recycling Centers		✓		✓	✓		**Exposure:** Moderate	**Sensitivity:** Moderate	**Adaptive Capacity:** Moderate	**Vulnerability:** High	**Risk:** Moderate
Water and Wastewater Infrastructure											
✓ Water Distribution Pipes		✓		✓	✓		**Exposure:** High	**Sensitivity:** Moderate	**Adaptive Capacity:** Low	**Vulnerability:** High	**Risk:** High
✓ Wastewater Treatment Plant		✓		✓	✓		**Exposure:** Moderate	**Sensitivity:** High	**Adaptive Capacity:** Very Low	**Vulnerability:** Very High	**Risk:** Very High
Stormwater											
✓ Green Stormwater Infrastructure		✓		✓	✓		**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Very Low	**Vulnerability:** Very High	**Risk:** Very High

Rising Temperatures & Extreme Heat | Wildfires | Smoke | Heavy Precipitation | Flooding | Drought & Reduced Snowpack

Key takeaways

- Higher summer temperatures and wildfire risk have already resulted in more **frequent power outages** and **strain to energy infrastructure**.
- Lower streamflows in the Spokane and Clark Fork Rivers could **impact hydropower generation capacity**.
- Debris from storms and ice or snow buildup can cause **damage to powerlines**.
- Higher demand for energy in summer and winter is expected as the climate changes, which could **increase energy costs** and **impacts people's ability to cool and heat homes and buildings in affordable and safe ways**.
- Extreme heat can make active transportation like walking, biking, and rolling **less safe** and **damage roads**, **bridges**, and **rail infrastructure**. Wildfire can also have **impacts on transportation** in certain parts of the city.
- Extreme precipitation can impact **driving safety** and **lead to flooding** that affects a range of transportation infrastructure and the ability for people to **safely evacuate during events**.
- The Spokane International Airport is affected by climate events like **flooding**, **heat** and **smoke leading to flight disruptions**.
- Climate disruptions are likely to occur to **waste** and **recycling operations**.
- Water and wastewater infrastructure could be impacted by **flooding**, **wildfire heat**, and **storms** as well as **power outages**.
- Increased precipitation could strain the City's **stormwater infrastructure**, increasing risks to **flooding** and **combined sewer overflow** into the Spokane River.

Who is most at risk?

- Residents and businesses in areas with lower quality and less resilient infrastructure
- Low-income residents
- Individuals with health conditions
- Residents in aging housing
- Residents who rely on electricity for health or medical devices
- People without a vehicle and/or limited access to public transportation
- Areas with lots of impervious surfaces

Map of Storm Events and Wastewater Facilities

Critical infrastructure assets range from energy installations to transportation and water systems. As in other cities, infrastructure in the City of Spokane—especially aging infrastructure—may be threatened by climate impacts like extreme heat, flooding, and wildfires. (placeholder) The map below shows areas where there is a likely change in the magnitude of 2-year storm events that may become more frequent and cause flooding and runoff affecting stormwater and wastewater facilities.

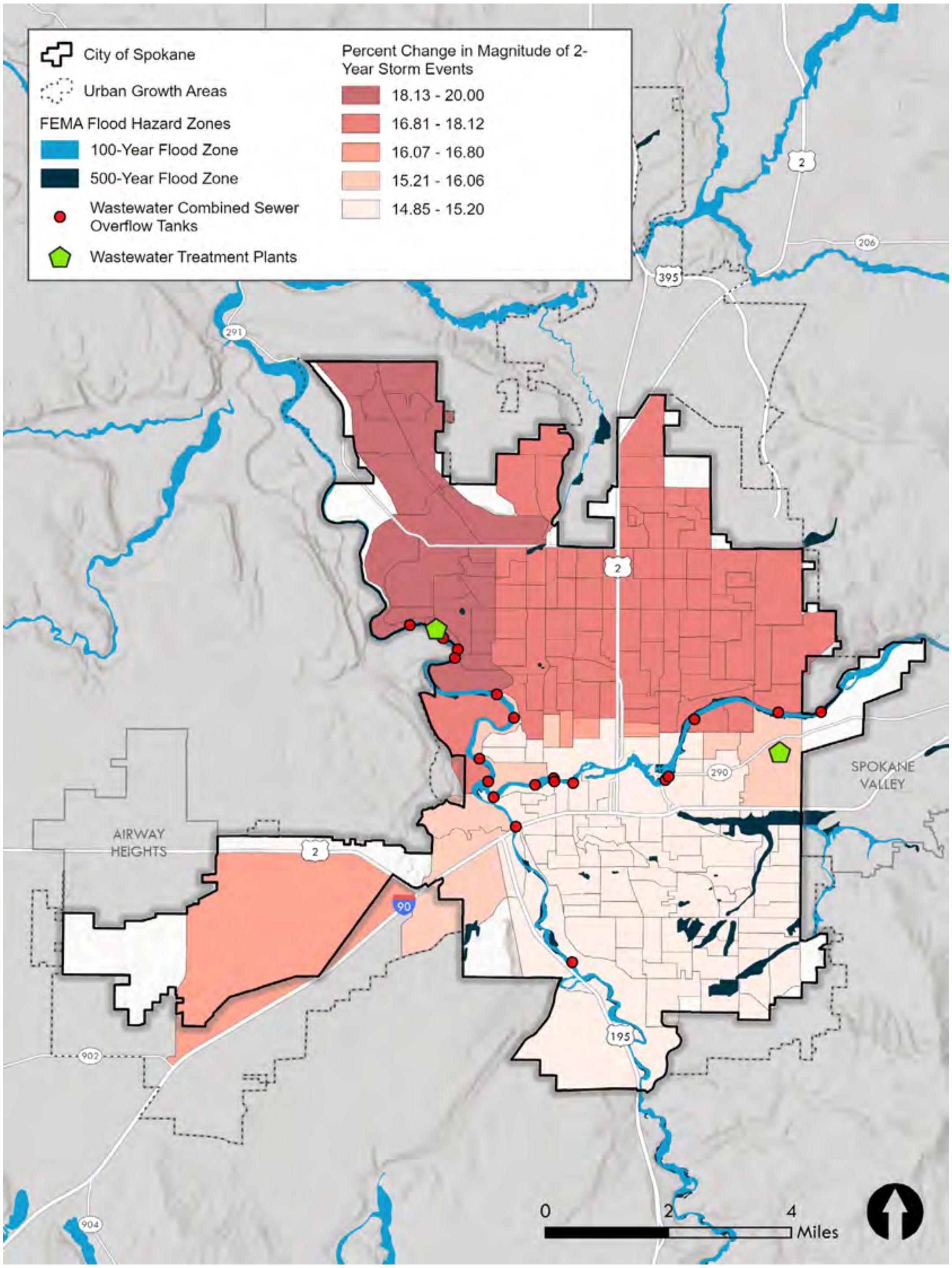


Exhibit 57. City of Spokane CVI, Storm Events, Flood Hazards, and Wastewater Facilities

Infrastructure

Sector Summary

Critical infrastructure assets range from energy installations to transportation and water systems. As in other cities, infrastructure in the City of Spokane—especially aging infrastructure—may be threatened by climate impacts like extreme heat, flooding, and wildfires. Residents and businesses located in areas with lower quality and less resilient infrastructure may bear more extreme climate impacts and have fewer options during extreme events. For example, residents in areas with poor quality biking and walking infrastructure may not be able to use those non-driving modes. At the same time, some infrastructure, like solar power with battery storage or stormwater systems, can enhance the adaptive capacity during climate events.

Energy

Energy supply and infrastructure are essential to the City's resilience, as the city's energy system supports public health, safety, and economic stability. However, these systems face increasing risks from a changing climate. Recently, the City has experienced more frequent power outages and strain to the energy infrastructure due to higher average summer temperatures and increased wildfire risk. The City's energy supply is primarily provided by Avista Utilities (Avista), which has reported an increase in climate-related service disruptions, as well as infrastructure/equipment failures during heat waves and wildfires near critical transmission mains (Avista, 2024).

Avista and the Bonneville Power Administration (BPA) own transmission lines and substations on the outskirts of the city boundary, which are connected to the Avista transmission system. The Bonneville Power Administration (BPA) provides electricity from the federal power grid to Avista (Spokane, 2017).

Avista owns and operates eight hydroelectric developments on the Spokane and Clark Fork Rivers, five natural gas-fired generating facilities, and one biomass plant. During winter and summer peaks, hydropower accounts for over half of Avista's system capacity. However, on an annual basis, natural gas-fired generation can produce more energy than hydroelectric energy because it is not constrained by river conditions (Avista, 2025). As climate hazards increase, hydropower generation capacity will be limited by water availability within the Spokane and Clark Fork Rivers. At the same time, rising temperatures and increased droughts will also increase reliance on natural gas and other energy sources (Avista, 2025; Spokane, 2017).

Additionally, Avista and other utilities are required to comply with Washington State's Clean Energy Transformation Act and make progress towards greenhouse gas-free energy by 2045. To meet regulatory compliance, utilities may need to continue investing in renewable energy infrastructure. While the transition to clean energy has long-term benefits and builds energy resilience, rates may likely rise for customers to support the infrastructure investments. However, utilities may plan for gradual transitions or short-term waivers to avoid significant rate increases.

> Another concern was the rising cost of utilities, which prevents many individuals from using air conditioning during heat waves. Some reported that people in their communities choose to go without cooling during extreme heat events, increasing the risk of heat stroke and dehydration. Additionally, power outages have created challenges for medication storage, particularly for those relying on insulin, leading to serious health risks. *TEW 1 Meeting Summary*

The effects of climate-related energy disruptions disproportionately impact the City's most vulnerable residents, including low-income individuals and individuals with health conditions. Extreme weather events can impact residents living in aging housing, as poor insulation increases their susceptibility to extreme temperatures and higher energy bills. Limited financial resources may prevent individuals from obtaining or using air conditioning during extreme heat events, increasing the risk of dehydration or heat injury, or heating during cold weather events, increasing the risk of cold-weather-related injury. Power outages during extreme weather events also pose life-threatening risks for individuals who rely on electricity for their health, medical devices, as well as cascading challenges for the City's water and wastewater utility infrastructure (Avista, 2025; Spokane, 2017).

Supply (energy grid, utilities, and fuel)

The City's energy supply is sourced from local generation and external supplies. The Upriver Dam is owned and operated by the City. The dam generates hydroelectric power used to power the municipal water system and excess power is sold to Avista (Spokane, 2023). The City also operates a Waste-to-Energy (WTE) Facility, processing municipal solid waste to produce electricity. The Upper Falls and Monroe Street Hydroelectric Developments are owned and operated by Avista, and are supplemented by natural gas and other sources (Avista, 2025). However, climate impacts are expected to disrupt energy generation and fuel availability. Reduced snowpack will lead to lower streamflows, decreasing hydroelectric output, and stressing water-dependent energy sources (Spokane, 2021). Decreased hydropower reliability may increase reliance on fossil fuels. Additionally, energy infrastructure is vulnerable to damage from wildfires, heightened by drought conditions and extreme temperatures (Avista, 2024).

Energy Infrastructure (powerlines, substations, and energy transmission and distribution systems)

The physical infrastructure that supports the City's energy system, including powerlines, substations, and transmission and distribution networks, is highly vulnerable to climate hazards. Extreme heat increases strain on powerlines and substations, raising the likelihood of equipment failure and power outages. Equipment failure during extreme heat or high wind conditions can also increase the risk of igniting fires, compounding the increased threat to public safety and surrounding infrastructure. Increasing temperatures drive peak energy demand for air conditioning, further straining transmission capacity and increasing the risk of service disruptions (Spokane, 2021).

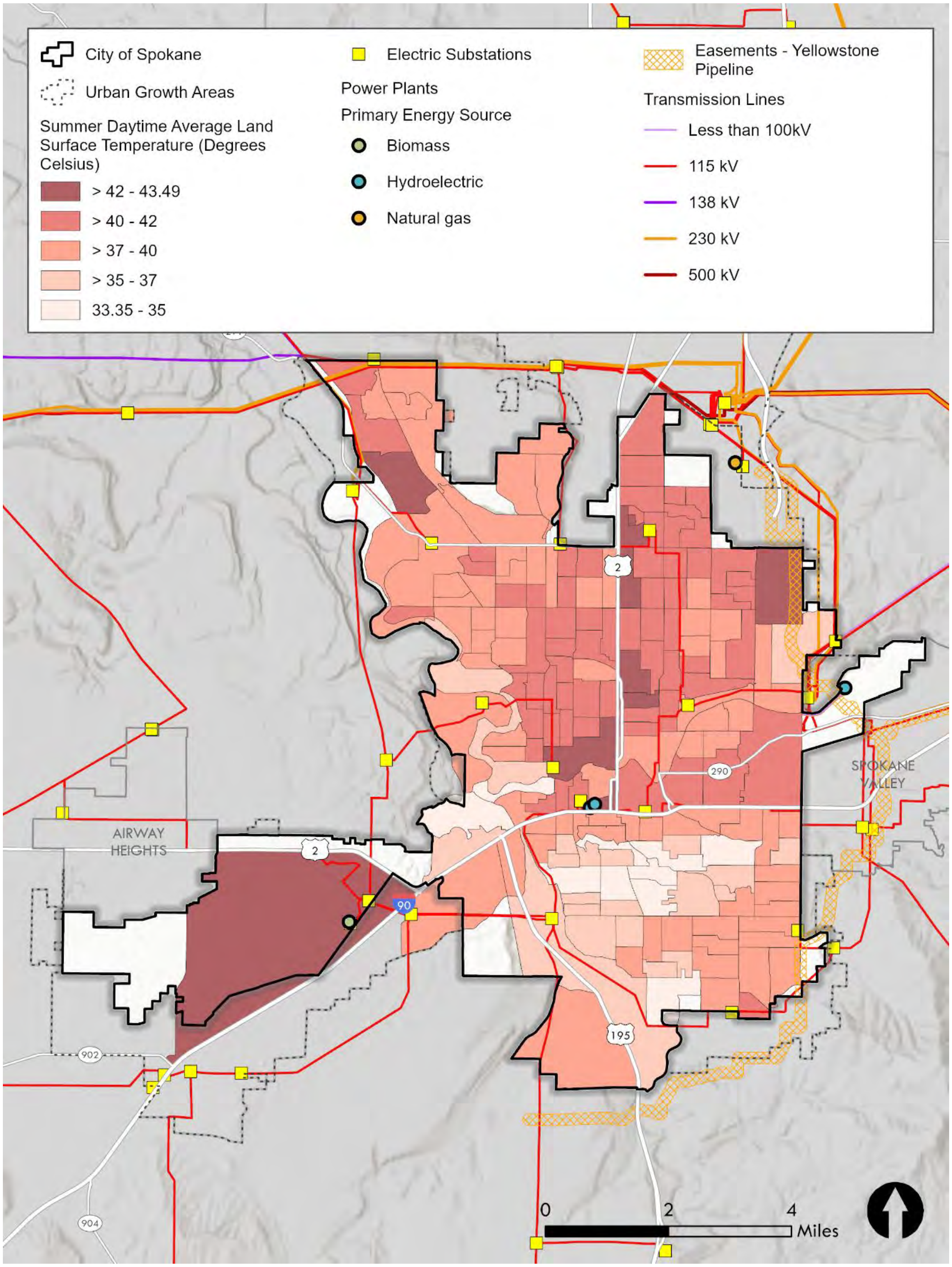
Substations located in North Indian Trail, Balboa/South Indian Trail, Northwest, and Minnehaha face high overall exposure to climate risks. See Exhibit 58.

In particular, Avista's larger transmission lines (230 kV and 500 kV) intersect near the Northwest and Northeast neighborhoods, increasing their susceptibility to climate-related wildfires and high fire danger days. See Exhibit 58.

Energy infrastructure is vulnerable to increasingly severe weather and wind events. Fallen trees, branches, and ice or snow buildup can cause powerlines to sag or collapse, leading to more power outages. Increase temperature and drought conditions also elevate wildfire risks, which can result in widespread power outages. While new developments are increasingly using underground powerlines to improve system resilience, most older neighborhoods in Spokane have above-ground infrastructure, which makes them more vulnerable to impacts during severe weather events. As an effort to reduce outages and improve public safety, Avisa continues its Strategic Underground Program to move overhead lines underground in high-risk areas (Avista, 2025).

Avista has implemented a Public Safety Power Shutoff (PSPS) program in high-risk areas to reduce the risk of wildfire ignition from electrical equipment, which involves planned, proactive outages that temporarily shut off power during extreme fire danger conditions (Avista, 2024). While PSPS events are part of important efforts to prevent starting new wildfires, the disruptions in this critical service may increase the vulnerability to heat exposure and hardships for medically dependent or other vulnerable populations. Planning for these consequences is important to ensure community resilience for future climate conditions.

Exhibit 58. City of Spokane Climate Vulnerability Index: Summer Daytime Average Land Surface Temperature (Celsius) and the Distribution of Energy Facilities Across the City of Spokane



Sources: See Appendix B. Climate Vulnerability Index Methodology. BERK 2025.

AGENDA

Consumption/Demand

Changes in climate are expected to alter the City of Spokane's energy consumption patterns via increased demand for cooling in the summer and heating in the winter. Rising temperatures will drive higher electricity usage for air conditioning, particularly in residential areas. This increased demand could lead to energy shortages, price surges, and greater financial burdens on low-income households (Avista, 2024). Equally, winter temperature fluctuations may also increase heating needs, further straining the energy grid. Households that rely on electricity for heating, rather than natural gas, may experience higher utility costs, further exacerbating energy insecurity among the City's vulnerable residents (Spokane, 2021). Increased use of natural gas for heating would lead to higher greenhouse gas emissions as well, further exacerbating local air pollution.

"Infrastructure challenges were another major focus, with participants highlighting road damage due to extreme weather as an increasing issue. Seasonal shifts in temperature and precipitation are making it harder to predict and manage road maintenance needs, leading to more frequent damage and costly repairs." ***TEW 1 Meeting Summary***

Transportation

The City of Spokane's transportation system includes critical infrastructure such as highways, roads, bus networks, sidewalks, bike facilities, and freight routes, as well as the Spokane International Airport. These networks support multimodal access across the city, as well as provide economic commerce to the region. Spokane is connected to the region by Interstate 90, which bisects the city, as well as US 2 and US 195 and the future US 395, and multiple State Route highway systems, all of which are operated by the Washington State Department of Transportation (WSDOT). The Spokane Transit Authority (STA) provides transit service to the city, including fixed route bus service, paratransit, and rideshare programs.

Driving personal vehicles is the primary mode of transportation for most Spokane residents, with about 87% of all trips taken via personal vehicle (Household Travel Survey, 2022). According to the 2023 American Community Survey 5-year estimates, 96% of workers in the City of Spokane have a vehicle available for commuting (American Community Survey 5-Year Estimates, Table B08141, 2023), and of the nearly 92,000 workers who did not work from home, 91% commuted by personal vehicle (American Community Survey 5-Year Estimates, Table B08141, 2023). Personal vehicles are also one of the largest sources of emissions within the transportation sector (Fast Facts on Transportation Greenhouse Gas Emissions, 2022). The City of Spokane has undertaken recent planning efforts to mitigate transportation emissions and increase resiliency by encouraging multimodal travel, such as developing a Bicycle Priority Network to support safe, comfortable, all-ages bicycle routes connecting people to key destinations across the city (Bicycle Priority Network, n.d.).

Access to multiple travel modes can help community members reduce transportation-related greenhouse gas (GHG) emissions and vehicle-miles-traveled (VMT). Multimodal infrastructure also provides critical access and evacuation options during natural disasters and emergencies. It can also influence community vulnerability or adaptive capacity of a community to respond to climate events.

Of the projected climate impacts facing the city, the transportation sector is most vulnerable to disruptions caused by extreme heat, flooding, and wildfires. These three types of events can cause delays or damage to transportation infrastructure and the risk of these hazards is expected to increase over time.

Extreme Heat and Transportation. Spokane is prone to extreme heat events, evidenced by the 2021 heat dome that struck in late June through early July and resulted in the death of at least 19 residents of Spokane County (Heat Wave 2021, n.d.). The average summertime temperatures (Jun-Aug) are projected to increase by 11°F by 2099 (See **Climate Hazards and Impacts**). The transportation network can face challenges during extreme heat events, including pavement buckling, driver/pedestrian/bicycle safety, rail buckling, and bridge stress (U.S. Bridges and Extreme Weather, n.d.). It can also affect airport operations. Areas at risk for exposure to extreme heat include locations prone to the urban heat island effect, which increases the risk of damage to pavement, rails, or bridges. The areas with elevated summer daytime average land surface temperatures include Central City, Downtown, and West Plains, and some areas of Northeast and Northwest Spokane (see **Social Services** section for more information). These areas overlap, in some instances, with the areas in Spokane that have the highest rates of people living in poverty and areas with higher rates of poor physical health populations. People living in poverty may lack access to a vehicle or be more reliant on walking, biking, and public transit. Reliance on public transit can lead to limited accessibility and an increased risk of heat-related illness while traveling outside or waiting at bus stops that do not have covered shelters during extreme heat events. During these extreme heat events, the City provided fare exemptions for those accessing weather relief centers using Spokane Transit Authority buses (City of Spokane News, 2024).

Precipitation, Flooding, and Transportation. Spokane has tracked an average of 17.6 inches of rainfall annually from 1981-2010. During this time, there has been a slight increase in rainfall. In the future, it is expected that fall, winter, and spring precipitation will increase, while summer precipitation is expected to decrease (See **Climate Hazards and Impacts**). Precipitation events can reduce visibility while driving which could contribute to vehicle crashes. Slick pavement can also be a barrier for non-motorized modes. Flooded areas, including those resulting from clogged storm water drains, can prevent transit, rail, and personal vehicles from passing and block walking, rolling, and biking facilities as well as bus stops. Precipitation can also preclude people from utilizing walking, rolling, biking, or taking transit, particularly if the transit stops do not include a covered shelter. Flooding can also impact airport operations.

During extreme precipitation events, flooding is expected to occur along the Spokane River, Hangman Creek, as well as in South Hill regions. There are seven bridges across the Hangman Creek and 15 bridges across the Spokane River that could be damaged and/or blocked by river flooding. In the South Hill, flood hazard zones encompass residential communities, as there is a large 500-year flood zone along E 5th Ave, E 6th Ave, and E Hartson Ave from Liberty Park to S Carnahan Rd. However, these residential areas in South Hill that lie within the 500-year flood zone feature a gridded street network, which can provide adaptive capacity by improving additional connectivity options if one street is flooded and impassable.

How can Spokane experience both flooding and drought?

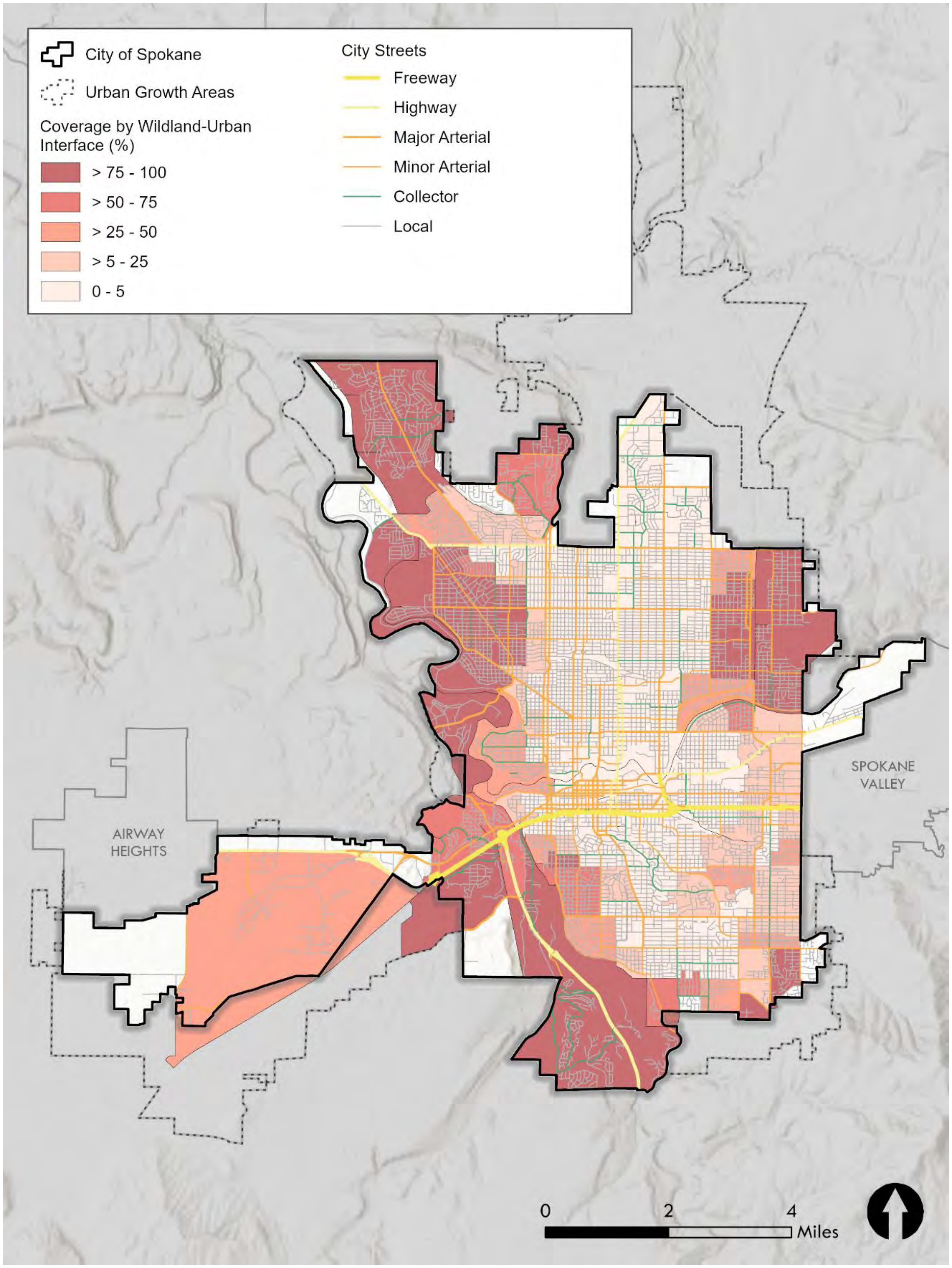
The decrease in precipitation during the summer can contribute to drought conditions despite increases during other parts of the year. During rain events with large volumes of rainfall, much of the precipitation runs off creating flood conditions. This flood water is not able to seep into the ground to replenish aquifers.

Wildfire Risk and Transportation. The City of Spokane is surrounded by forests, which puts the City at higher risk of impacts from wildfires and wildfire smoke. Much of Spokane County is considered under moderate drought in current conditions. The increase in precipitation during fall, winter, and spring may not be enough to replenish aquifers given the reduced snowpack, keeping the area in drought conditions, which can exacerbate the risk and severity of wildfires (See **Climate Hazards and Impacts**). As summertime precipitation decreases and temperatures rise, the amount of dead vegetation will increase, heightening the likelihood of wildfires over time (See **Climate Hazards and Impacts**). Wildfires can damage infrastructure and disrupt connectivity in its path, and resulting smoke can increase PM 2.5 in the air and deteriorate the air quality. This reduces the feasibility and health benefits of non-motorized travel due to the health impacts of breathing in wildfire smoke, including the feasibility of accessing critical destinations and evacuation route options.

The outer edges of the City contain high levels of wildland-urban interface (see Exhibit 59), which poses wildfire risks to communities, including neighborhoods in Northwest Spokane, around the Spokane River, from the Northern City limits to the junction with the Hangman Creek as well as the full extent of the Hangman Creek. Transportation systems may be strained should evacuation become necessary in denser neighborhoods, particularly in Northwest and Southwest Spokane as well as in the residential area bordered by N Assembly St, W Rowan Ave, N Belt St, and W Euclid Ave (see Exhibit 59). Key highways and arterials pass through areas with high levels of wildland-urban interface conditions, which can pose as a challenge for fire-related evacuation (see **Emergency Management**, Transportation & Evacuation section). The wildland-urban interface also contains trail facilities along the Spokane River and Hangman Creek that can face poor air quality and become damaged as a result of fire conditions. The Northwest corner of the City that falls within the high level of wildland-urban interface coverage features many commercial and retail locations, restaurants, and several grocery stores, which may become inaccessible should fire conditions erupt.

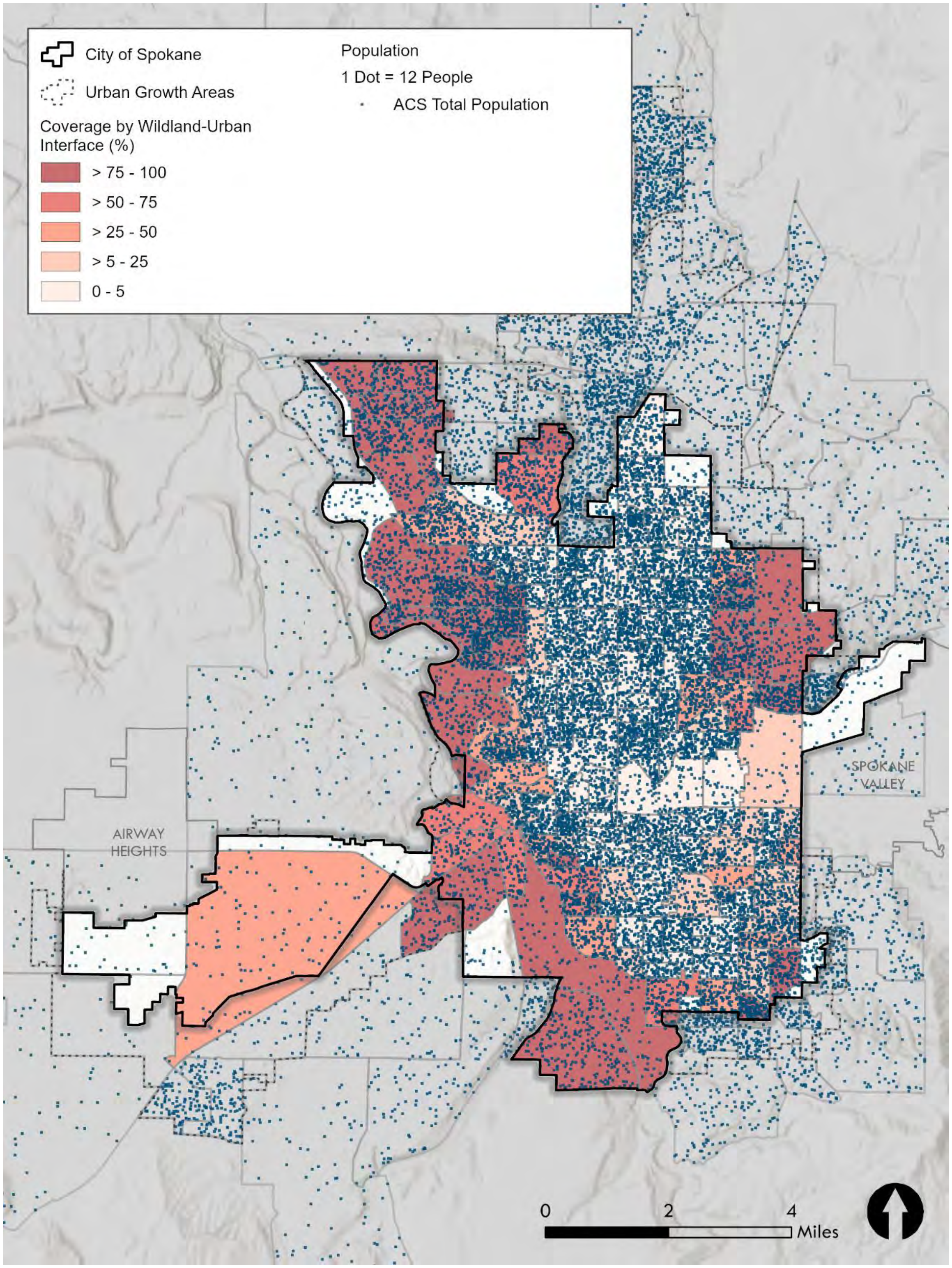
The presence of a gridded street network or parallel transportation routes can help people evacuate if a given route is impassable, including the Centennial Trail and Ben Burr Trail. This includes duplicity between the street network and bike/pedestrian networks. There are several trails and bike facilities that provide duplicity to the street network within the areas with high rates of wildland-urban interface coverage on the west side of the City. The area in the northwest has fewer parallel bike routes aside from the Children of the Sun Trail that runs to the east of N Market St.

Exhibit 59. City of Spokane Climate Vulnerability Index: City Streets and Wildland Urban Interface Coverage



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Exhibit 60. City of Spokane Climate Vulnerability Index: Population Density and Wildland Urban Interface Coverage



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Other climate events and transportation. While cold weather events are projected to become less frequent in Spokane, cold weather can disrupt the transportation network in Spokane. The number of days with minimum temperatures below 32 °F are expected to decrease by the end of the century (See **Climate Hazards and Impacts**). “Snow and ice reduce pavement friction and vehicle maneuverability, causing slower speeds, reduced roadway capacity, and increased crash risk” (Weather Events: Snow and Ice, n.d.). Some vehicle drivers utilize studded snow tires to improve friction on icy street conditions; however, these tires can damage the roads and create additional maintenance needs (Studded Tire Damage to Asphalt, 2021). Bus systems, in particular, face challenges navigating ice along streets with steep slopes. During extreme cold, winter storms, or snow events, transit service may be disrupted or cancelled. The neighborhoods on the west side of the City, adjacent to the Spokane River from the northern city limits to the junction with the Hangman Creek as well as the full extent of the Hangman Creek, face higher percentages of area covered by steep slopes. These areas would be most exposed to mobility challenges related to cold temperatures. Additionally, freeze-thaw cycles can also cause damage to the asphalt streets and shared-use paths, requiring additional maintenance to maintain quality (Ud Din, Mir, & Farooq, 2020).

The transportation system also faces challenges related to windstorms, particularly through blocked corridors. Wind can cause trees, branches, and debris to fall and cause road closures due to obstructions (FHWA, 2024). The same types of obstructions can block pathways for those walking and rolling on sidewalks and other pedestrian facilities, particularly in areas with street trees. This was evident during the 2015 windstorm, where Spokane faced strong wind gusts that caused widespread power outages and infrastructure damage . In Spokane, the South Hill area has the highest rates of tree canopy coverage, which may indicate increased risk of tree limbs falling on the street network.

Solid Waste Management

The City of Spokane's waste management infrastructure, including recycling centers, transfer stations, landfills, and the Waste-to-Energy (WTE) Facility, play a critical role in maintaining environmental quality and overall public health. These facilities process and dispose of the City's waste, which include trash, recycling, and household hazardous waste.

Critical components of the Spokane Regional Solid Waste System (SRSWS) is administered as a department of the City and the solid waste system consists of five primary facilities to serve residential and commercial customers: a waste-to-energy (WTE) facility, a transfer station in Spokane Valley (Valley Recycling & Transfer Station), a transfer station in unincorporated northern Spokane County (North County Recycling & Transfer Station), and two landfills, which are both closed to the public. The WTE Facility, constructed in 1991 within the City of Spokane City Limits, processes approximately 250,000 short tons of waste annually and can generate about 150 gigawatt hours of electricity per year.

According to the Spokane Climate Vulnerability Index, the WTE Facility has low exposure to climate hazards (Climate Vulnerability Index, Spokane, 2017).

These facilities are crucial for managing the SRSWS's waste, especially considering the increasing population and waste generation rates. Climate hazards, such as flooding, heavy snowfall, or extreme heat, can disrupt waste collection services by making roads impassable, delaying service schedules, or creating unsafe conditions for the City's waste management crews. Neighborhoods with limited infrastructure, including limited to no stormwater management infrastructure, to address extreme weather impacts, may experience longer delays in service restoration.

Vulnerable populations may disproportionately experience the negative impacts of climate hazards that disrupt the City's waste management system, as vulnerable populations may have fewer resources, such as transportation or financial means, to manage accumulated waste during service disruptions. Extended disruptions in waste collection services due to extreme weather could contribute to an increase in illegal dumping, further impacting public health and safety. See Exhibit 61. Illegal dumping of waste near homes, vacant lots, or public spaces increases the possibility of exposure of residents to hazardous materials and increased vermin activity. Individuals who may rely on access to clean public spaces would also be at higher risk of exposure to unsanitary conditions with the increased risk of illegal dumping.

Recycling Centers

The SRSWS's recycling centers are key to the city's efforts to reduce waste and promote sustainability. These facilities are vulnerable to climate risks, particularly from increasing temperatures and an increased risk of drought, and face increased operational strain under extreme heat conditions. Higher seasonal temperatures can reduce the efficiency of recycling processes and prolonged and increased heat can cause certain materials to degrade, further complicating the recycling process (Spokane, 2017).

Transfer Stations and Landfills

Transfer stations are vital components of SRSWS's waste management system and the City relies on these facilities to temporarily store waste before transport to final disposal sites, including landfills. Rising temperatures increase the degradation rate of organic waste at these facilities, resulting in higher levels of leachate and additional measures to prevent environmental contamination. Transfer stations and landfills are vulnerable to increased severe precipitation events, rising water levels could overwhelm containment systems and cause harmful waste leakage into the surrounding environment. Increased risks of drought further decrease the availability of water for optimal landfill operations, including leachate control, dust suppression, and maintaining necessary moisture levels in waste piles (Spokane, 2014, Spokane, 2017; Spokane County, 2021).

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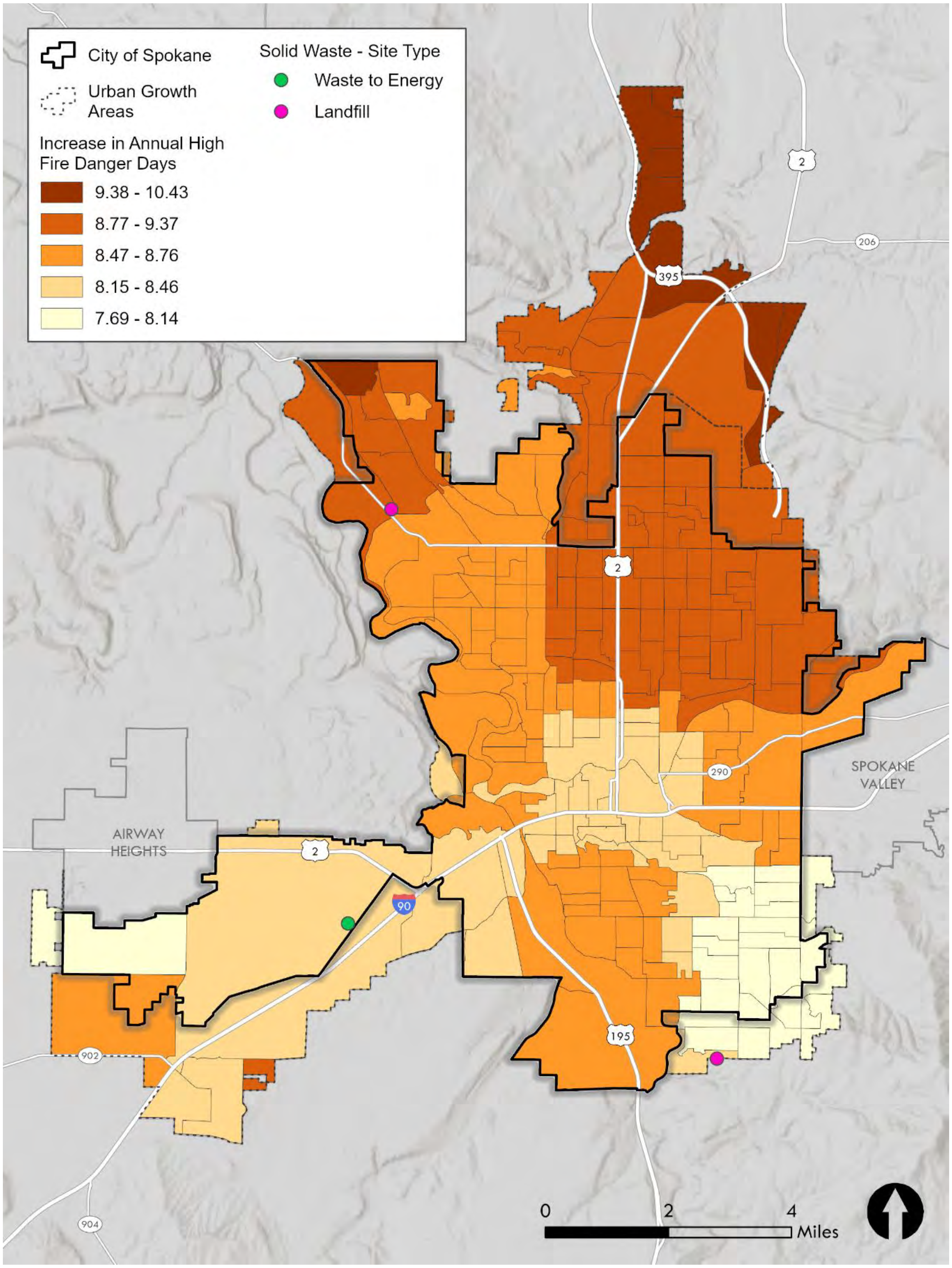
SRSWS's landfill in Balboa/South Indian Trail faces a particularly high increase in annual high fire danger days. Generally, the City's Northwest neighborhoods are more exposed to overlapping climate hazards, such as increased wildfire risk, which increases the vulnerability of adjacent solid waste infrastructure (See Exhibit 61).

Exhibit 61. City of Spokane Climate Vulnerability Index: Projected Change in High Fire Danger Days and the Distribution of Solid Waste Facilities



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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Waste-to-Energy Facility

The SRSWS's WTE Facility converts waste into electricity, as waste delivered to the transfer stations is transported to the WTE Facility for incineration. Increasing temperatures and intense heat waves could affect the facility's energy efficiency, as the WTE Facility requires significant cooling to maintain efficient processes and will put additional strain on electrical systems to maintain temperatures. Furthermore, water shortages may affect the cooling systems used by the facility, limiting operational capacity. (Spokane County, 2021). Additionally, increased moisture content of waste, such as from increased precipitation events, can lead to "wet trash," requiring more supplemental natural gas to maintain proper combustion temperatures at the WTE Facility, contributing to higher GHG emissions.

Water and Wastewater Infrastructure

Water and wastewater facilities, including pipes, pump stations, aquifers, water treatment facilities, wastewater treatment facilities, and a combined sewer system, are essential to the City's health, economy, and environment. These facilities provide clean and reliable water while safely managing wastewater for residents, businesses, and industries.

Water and wastewater infrastructure face growing challenges from a changing climate, making it crucial to protect and maintain these systems in order to provide service and long-term sustainability. This is particularly important for the City's critical services that depend on reliable service and vulnerable populations who may be disproportionately affected by water and wastewater service disruptions.

Drinking Water Infrastructure

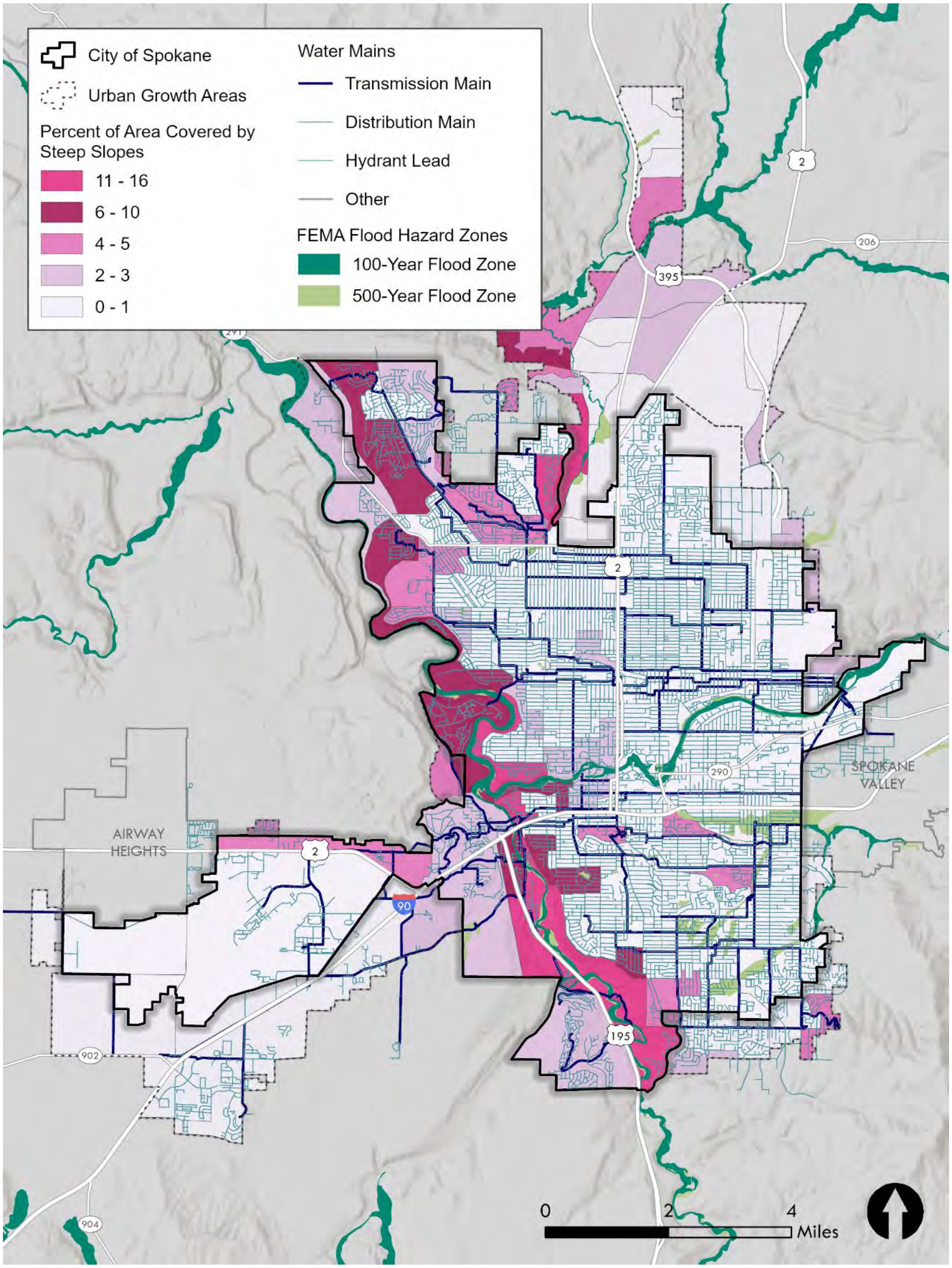
The City's Water and Hydroelectric Service Department has been operating its water system since 1883 and provides approximately 180 million gallons of drinking water daily to a water service area population of approximately 250,000 people in Spokane County. The City's sole water source for its system is the Spokane Valley/Rathdrum Prairie (SVRP) Aquifer. The water system consists of eight well stations that draw water from the SVRP Aquifer, 25 booster pump stations, 34 water reservoirs, and over 1,100 miles of water pipe. This critical infrastructure faces heightened exposure to climate hazards. Due to the high quality of water from the SVRP Aquifer, each well is equipped to disinfect the drawn water, reducing the need for additional water treatment (Spokane, 2023) (see Ecosystems and Water Resources for more details regarding the City's water supply).

Water Distribution Pipes

The City's water distribution system relies on miles of water transmission and pipe mains. However, many of these systems are aging and may be increasingly vulnerable to climate-induced stressors. See Exhibit 62.. As of 2023, the City has approximately 180 miles of water transmission and pipe mains installed prior to 1940 (Spokane, 2023a). Extreme heat due to fire presents a significant risk by causing the expansion and contraction of pipes, which accelerates wear and increases the likelihood of system failures.

Severe flooding can also lead to ground movement, causing misalignment, cracking, or even complete breakage or transmission of pipe mains, straining the integrity of the system's pipe network or disrupting water delivery across the city. According to the City's Climate Vulnerability Index, water infrastructure, particularly in Audubon/Downriver, Balboa/South Indian Trail, Bemiss, East Central, Hillyard, Minnehaha, North Indian Trail, and Northwest, faces significant exposure to climate risks based on impact drivers. Older infrastructure in these neighborhoods are more susceptible to damage, including cracks and failure, during events like extreme heat and flooding. Slope instability further elevates susceptibility, and in extreme cases, shifting soils can physically displace or rupture water mains, leading to main damage. Generally, neighborhoods in Spokane's Northwest and Northeast quadrants face the highest climate vulnerability related to water infrastructure due to the combined effects of the aging system, increased flood exposure, and local geotechnical risks (City of Spokane, 2025).

Exhibit 62. City of Spokane Climate Vulnerability Index: Flood Hazards, Steep Slope Coverage, and the Distribution of Drinking Water Mains.



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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Water Pump Stations

Pump stations are vital components of the City's water infrastructure. The City relies on pump stations to maintain water pressures and transport water to higher elevations within the system. However, these facilities are increasingly vulnerable to a range of climate hazards. Severe storms present an increasing threat, as power outages may disrupt the ability of pump stations to function and compromise the reliability of water and wastewater services. Flooding is another critical risk, particularly for stations located in low-lying areas or near water bodies. Inundation can lead to water ingress, damaging electrical components and mechanical systems, hindering the functionality of these crucial facilities. Potential delays or halting of water service can lead to public health consequences, including limited access to potable water, reduced fire flow capabilities, and increased vulnerability for critical facilities and vulnerable populations.

Wastewater Infrastructure

Additionally, the City's wastewater system serves over 250,000 residents in the Spokane Metropolitan Area and consists of the Riverside Park Water Reclamation Facility (RPWRF). The RPWRF treats wastewater flows from the City of Spokane, Spokane County (including some unincorporated areas and parts of Spokane Valley), City of Airway Heights (currently treating and discharging its own flow), and Fairchild Air Force Base. The City's wastewater system includes a combined sewer system, which collects both wastewater and stormwater within the collection system (Spokane, 2024).

Disruptions in wastewater service disproportionately impact the City's most vulnerable populations and the impacts of wastewater service disruptions vary across these populations. Individuals experiencing homelessness often rely on public facilities for sanitation and personal hygiene, increasing their vulnerability when access is disrupted or those facilities become inaccessible during outages. Similarly, individuals with limited mobility or special medical needs depend on reliable wastewater service to maintain sanitary conditions. Limited financial resources and reduced access to alternative facilities increase vulnerability to wastewater service disruptions.

Wastewater Collections and Conveyance

The City's wastewater collection system consists of 27 sewer lift stations, 17 permitted combined sewer discharge points to the Spokane River, and approximately 900 miles of collection pipes. This system includes three types of collection pipes – sanitary sewer only pipes, combined sewer and stormwater sewer pipes, and separated stormwater sewer pipes that collect stormwater separately from sanitary sewage (CH2MHill, 2014). (see Ecosystems and Water Resources for more details regarding the City's stormwater system). The City's sanitary sewer and combined sewer and stormwater collection systems channel flow to the Riverside Park Water Reclamation Facility (RPWRF) for treatment.

Similar to the City's drinking water distribution mains, the City's wastewater collection system faces increasing vulnerability to climate-induced hazards, such as extreme heat, flooding, and ground movement. Aging infrastructure is more susceptible to damage, and these hazards increase the risks for pipe deterioration, infiltration and inflow concerns, and service disruptions. (see Water Distribution Pipes for more additional discussion of climate risks to the wastewater main network). See Exhibit 67.

Wastewater Treatment Plant

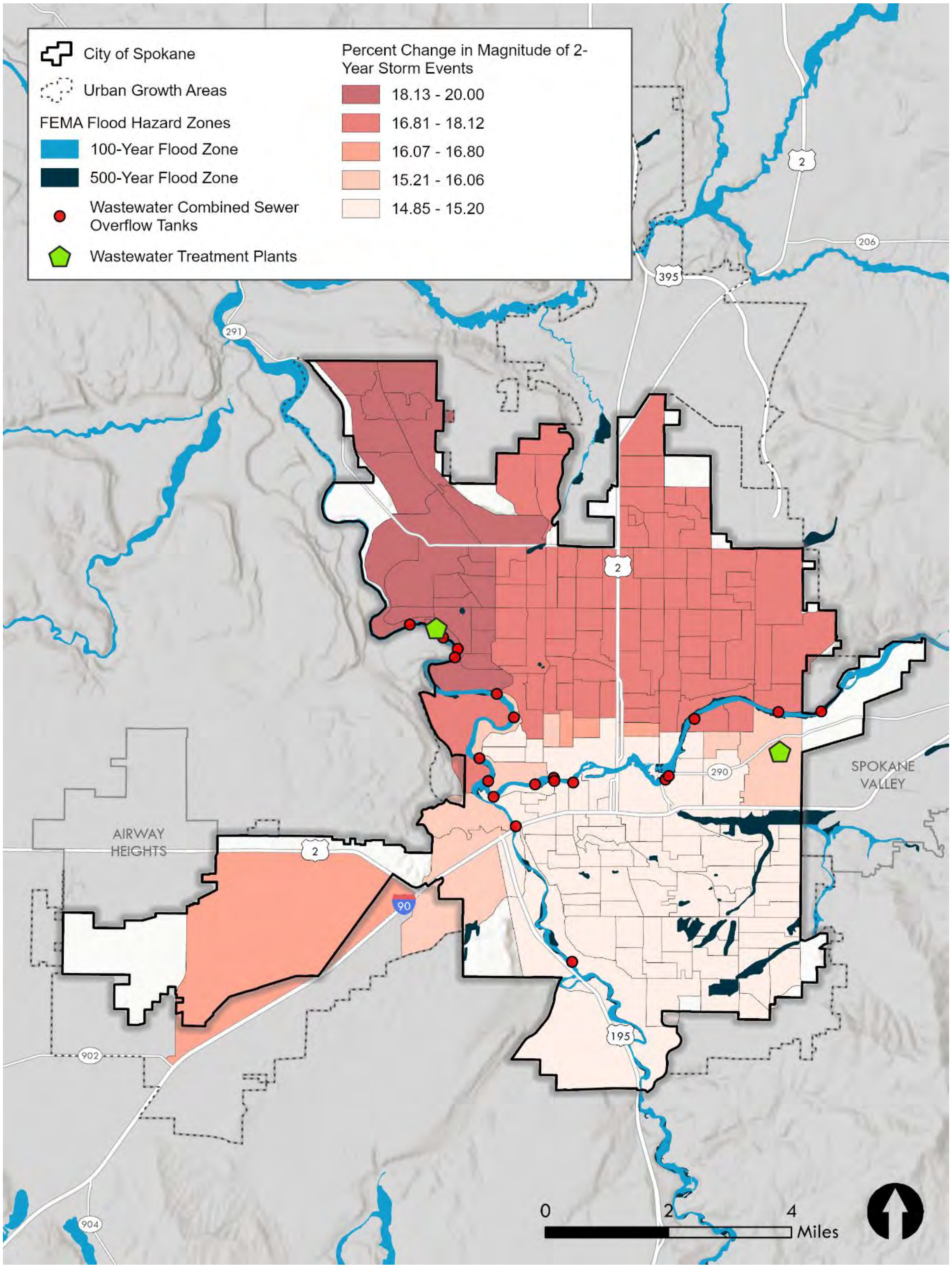
The Riverside Park Water Reclamation Facility (RPWRF) serves as the City of Spokane's primary wastewater treatment plant. The facility is considered a Class IV treatment under normal operating conditions, with the exception of significant storm events. The facility processes approximately 34 millions of gallons (MGD) per day of wastewater, with a peak design capacity of 150 MGD. During major precipitation events, wastewater and stormwater flows into the facility can surge to up to 120 MGD, placing significant strain on the facility. The increased stormwater inflow and flooding poses a significant threat to the RPWRF, as heavy storms and high-water levels may overwhelm the facility and disrupt its ability to effectively process inflows.

Hydraulic overloading of the facility, which can result in over 100 million gallons per day, results in occasional bypasses of partially treated wastewater. These bypasses are regulated as treated combined sewer overflow (CSO) events and receive primary clarification and disinfection. Since 2001, nine treated CSO events have occurred from the facility, with the most recent event in January 2009. Rising temperatures also present a challenge for the RPWRF, as the elevated temperatures may hinder the biological treatment processes critical for wastewater treatment.

Combined Sewer Tanks

As the frequency and intensity of heavy storm events increase, the likelihood of CSO events also rises. Direct bypasses from the facility into the Spokane River pose environmental and public health risks. To mitigate the frequency of CSO discharges into the Spokane River and manage extreme stormwater volumes, the City has constructed 26 underground CSO tanks and three interceptor protection tanks ranging from 7,000 gallons to 2.4 million gallons designed to temporarily hold combined wastewater overflows and then meter the combined wastewater back to the treatment facility when the storm surge subsides. Implementation of these tanks helps buffer the impacts of extreme stormwater volumes, as well as protects facility operations and water quality in the Spokane River by preventing the direct overflow of partially treated wastewater to the river (Spokane, 2024).

Exhibit 63. City of Spokane Climate Vulnerability Index: Projected Change in Extreme Precipitation, Flood Hazards, and the Distribution of Wastewater Facilities.



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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Stormwater

The City of Spokane's stormwater infrastructure is a critical component of the City's efforts to manage stormwater runoff, protect water quality, and mitigate potential flooding. However, climate impacts present significant challenges to the City's stormwater system, as increasing temperatures and extreme weather events threaten the effectiveness of the City's stormwater infrastructure and facilities.

Stormwater Swales Prove Effective

Before the City's Cochran Basin Stormwater system was fully online in November 2024, the engineered system effectively diverted stormwater into swales that ran along the Spokane River during a large weather event. This early success highlights the swales' role in reducing pollution and protecting the river, showcasing the value of green stormwater infrastructure in managing stormwater during weather events.

The Eastern Washington Phase II Municipal Stormwater Permit (Phase II Permit), which was reissued in August 2024 and has an effective period through July 2029, authorizes the City to discharge stormwater to surface waters and groundwaters of the state from the City's Municipal Separated Stormwater Sewer System (MS4). The boundary area regulated by the Phase II Permit includes the entire incorporated area within the City's municipal boundary, except areas that the City manages stormwater in its combined sewer and stormwater system. The combined sewer and stormwater system is regulated under a separate National Pollutant Discharge Elimination System (NPDES) waste discharge permit and managed accordingly (Spokane, 2025). (See Infrastructure for more details regarding the City's combined sewer and stormwater system infrastructure).

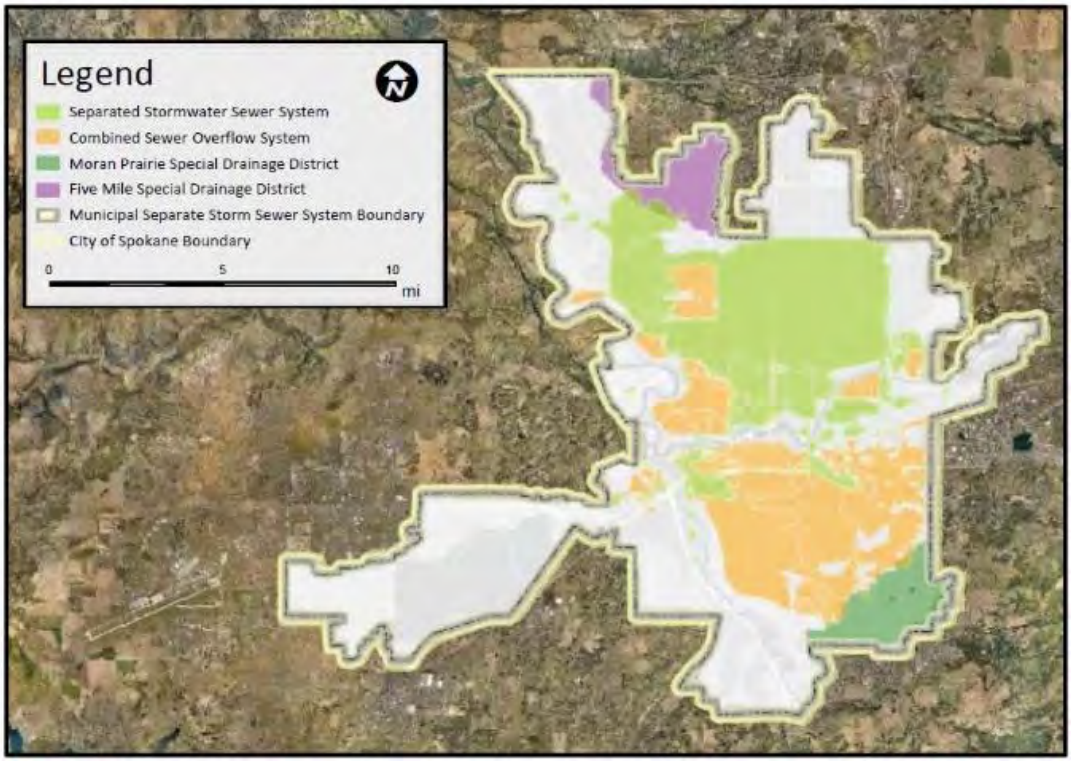
The City's MS4 system consists of stormwater conveyance, catch basins, stormwater outfalls, structural treatment best management practices (BMPs), and underground injection controls. The MS4 system collects and conveys stormwater to treatment facilities, typically bioretention facilities, or to outfalls which discharge directly to the river. This system is roughly located along the Spokane River and in the northern portion of the City.

In addition to the City's separated stormwater sewer system and combined sewer and stormwater system, the City has established special drainage districts (SDDs) where typical infiltration approaches may not be practical. Due to shallow groundwater, intermittent standing water, and steep slopes within the area, the City has established the Moran Prairie and Five Mile SDDs (Spokane, 2025).

The City owns and maintains approximately 3,650 drywells, which are commonly used to capture and dispose of stormwater. Drywells consists of perforated, pre-cast concrete manholes surrounded by gravel backfill that encourages infiltration of stormwater into the high-permeability soils in many parts of the City. The City also owns and operates various swales, typically grass-lined swales with drywell overflows, to also infiltrate stormwater runoff. Additionally, in areas where infiltration of stormwater is not feasible, the City has implemented evaporation facilities to support stormwater management (CH2MHill, 2014; City of Spokane, 2024b).

The effects of stormwater-related risks disproportionately impact the City's most vulnerable residents, including low-income individuals and those living near and within flood zones (See **Error! Reference source not found.**). Extreme precipitation events and f looding pose significant risks to residents in aging housing, which may lead to property damage, or areas with limited to no drainage infrastructure, such as the Hillyard Industrial Area, known as The YARD, which lacks stormwater management infrastructure (City of Spokane, 2017). Communities with limited-to-no green stormwater infrastructure (GSI), which includes natural and engineered systems like swales, bioretention cells, and infiltration ponds, may also face higher risks of localized flooding. However, not all areas are suitable for GSI, as factors like shallow depth to bedrock, high groundwater levels, or poor soil conditions can limit its effectiveness.

Exhibit 64. Spokane Stormwater Management Areas



Source: City of Spokane, 2025

Gray Stormwater Infrastructure

The City's stormwater system relies heavily on gray infrastructure, which includes stormwater conveyances and catch basins to collect and convey runoff to structural treatment BMPs, UICs, or outfalls. Gray infrastructure is vulnerable to increasing precipitation events and higher runoff volumes, which may lead to system strain or system exceedance. Storm drains and underground pipes can become overwhelmed by increased stormwater volumes, leading to backups and localized flooding. Extreme weather events may also increase the risk of CSO events, exacerbating water quality concerns (CH2MHill, 2014; City of Spokane, 2024b).

Green Stormwater Infrastructure (GSI)

The City's uses GSI to improve stormwater management. GSI is sensitive to extreme heat and prolonged drought, which can stress the vegetation and dry out soil, reducing the facility's effectiveness in retaining, absorbing, and filtering stormwater. However, the use of drought-tolerant plants in swales is encouraged, as these plant species can better withstand dry conditions and help maintain functionality during drought periods. In addition, rock-lined swales, which do not rely on vegetation, are another effective strategy that requires less maintenance under drought conditions.

GSI is also vulnerable to heavy rainfall and flooding, as these facilities may exceed their designed capacity, leading to erosion, sediment buildup, and potential system failure. This can also lead to increasing reliance on gray infrastructure, which may also be strained from the buildup of runoff from prolonged precipitation events. Additionally, wildfire damage to GSI can reduce its stabilizing effects in the natural environment, increasing erosion risks and decreasing its ability to manage runoff (CH2MHill, 2014; City of Spokane, 2024b).

Impervious and Pervious Surfaces

The City features several uses of impervious surfaces throughout the City, including roads, rooftops, and parking lots. Impervious surfaces prevent water infiltration into the soil below. To mitigate increased stormwater runoff, the City has initiated an effectiveness study to gain a better understanding of the treatment capacity of permeable pavements on an arterial street in the north part of the City of Spokane. Pervious materials, including permeable pavement, allow stormwater to infiltrate underlying soils.

Impervious surfaces prevent natural infiltration, exacerbating the challenge of declining groundwater recharge. While severe precipitation events lead to an increase in runoff from impervious surfaces, overwhelming stormwater drains and treatment facilities. Pervious surfaces, including permeable pavement, vegetated roofs, and storm gardens, can assist in slowing runoff and reducing strain on gray infrastructure, filling a critical role in capturing and storing stormwater for gradual infiltration into aquifers. Furthermore, impervious surfaces contribute to extreme heat with higher temperatures and droughts, further straining vegetation in GSI (Ecology, 2024; City of Spokane, 2008).

Water Retention and Treatment Facilities

Water retention and treatment facilities, such as swales and detention ponds, play a critical role in stormwater management for the City of Spokane. Elevated temperatures impact water quality in retention basins and treatment facilities by promoting algal blooms, increasing bacterial growth, and reducing oxygen levels. This can lead to reduced efficiency of stormwater treatment and increased pollution risks, requiring additional treatment to maintain water quality standards. Lower snowpack results in reduced groundwater recharge, limiting the ability of retention ponds and treatment of wetlands to maintain consistent water levels, affecting their performance in treating stormwater. However, increased stormwater inflow during extreme precipitation events can overwhelm retention basins and treatment facilities, leading to overflows and decreased water quality. Additionally, post-wildfire runoff can introduce large amounts of sediment and debris, further straining treatment infrastructure (Ecology, 2024; City of Spokane, 2024b).

Adapting to a Changing Climate

This section summarizes the recommended strategies to help the City of Spokane meet the energy, transportation, waste management, and water and wastewater infrastructure needs of the community amid a changing climate. These include measures the City is already advancing or could further address.

Consider expanding local renewable resources. Solar power, wind power, and expanding the City's current WTE Facility can improve the City's ability to maintain power during regional outages. Expanding local renewable resources can offer the City more flexibility as a redundant energy source, which can help critical facilities remain operational during emergencies or extreme weather events. Additional support with energy storage systems will allow the City to support equitable access to resilient energy systems and reduce vulnerability to climate disruptions. Battery energy storage systems (BESS), specifically, are used to store renewable energy to ensure more reliability and better coordination with customer demands if power infrastructure goes down. As they can be built near existing commercial and residential uses, cities have started to address their impacts through zoning codes (Twitchell, J. et al, 2023). In particular, the City's water and wastewater pumping stations, which currently rely on diesel generators for backup power, would benefit from dedicated BESS, reducing the reliance on fossil fuels, lowers GHG emissions, and increasing reliability during extended power outages.

Invest in public infrastructure to improve energy efficiency. Many public facilities, including City-owned buildings, community centers, and event venues, may need to be upgraded to improve energy efficiency and increase climate resiliency. High-efficiency HVAC systems, improved insulation, air filtration systems, and even onsite renewable energy can reduce long-term operational costs, improve air quality, and provide safe indoor spaces during wildfire and extreme weather events. Public buildings may also serve as emergency support shelters during climate events, and it will be critical that they are energy-independent during regional outages.

Plan for complete access to destinations within neighborhoods. Neighborhoods designed to provide access to key destinations within a half mile radius can reduce the

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distances that people travel to access goods and services. Reducing travel distances can reduce VMT and congestion. Strong walking, biking, and rolling infrastructure within complete neighborhoods can provide health benefits through the promotion of an active lifestyle and community connections. Walking, biking, and rolling networks within neighborhoods with key destinations may give people the opportunity to reach resources, access critical destinations, and face fewer roadblocks that may result from climate events.

Enhance parallel walking, biking, rolling, and transit networks to ensure equitable access. During a climate event, people may need to rely on modes of transportation that do not involve a personal vehicle, particularly if evacuation routes are highly trafficked or streets are blocked by debris. This can be a challenge, particularly for vulnerable communities, including those with disabilities and older residents. Enhancing parallel walking, biking, and rolling networks alongside streets and catering towards all ages and abilities non-motorized users can improve the evacuation capacity of the city.

Consider necessary changes to transit service during weather events. Should an extreme weather or heat event occur, transit would be required to change operating procedures, including rerouting and schedule changes. Transit providers can plan ahead for these conditions by developing internal operations plans for each type of weather event and sharing these plans with the community. Sharing information with the public regarding transit use under various climate event scenarios can improve outcomes and ensure transit needs are met amid the increasing frequency of weather events.

Maintain and enhance strategies that provide access to cooling centers during extreme heat events. Currently, Spokane Transit Authority offers fare exceptions to riders going to and from cooling centers when temperatures reach or exceed 95 degrees. When a passenger boards a bus and indicates that they do not have fare payment and are traveling to a cooling area, STA operators allow them to ride for free. This practice remains in effect for same-day return trips during evening hours after the temperature drops back below 95 degrees. There are cooling areas accessible by most STA routes. As heat events become more frequent in the area, the City of Spokane can support the community by providing accessible transit to cooling centers.

Consider expanding low-emission energy recovery from waste. The Waste to Energy (WTE) facility plays a key role in diverting waste and generating local electricity. Investing in biomethane recovery, methane capture, and composting programs reduce greenhouse gas emissions, produce energy, and allow for more effective organic waste management. As extreme weather events increase, using waste streams for clean energy and soil amendment can continue being a critical strategy for reducing environmental impacts and landfill strain.

Invest in upgrading gray and green infrastructure. The City's water system faces increasing risks from climate change impacts and may not be designed for extreme drought or flooding events. Upgrades to the City's gray infrastructure may be needed to ensure the systems can handle more intense rainfall events and fluctuating capacity needs. Integrating GSI can help absorb excess runoff to reduce pressure on the CSO system. Where GSI is used, widespread incorporation of drought-tolerant plants should be prioritized to maintain system performance during prolonged dry periods and extreme heat events. Considerations for these systems should include capacity limits and support for long-term maintenance.

Consider strategies for a climate-resilient Spokane International Airport. This could include integrating resiliency projects in the airport master plan or a separate resilience management plan (ICAO, n.d.).

Minimize runoff. Increase the capacity of stormwater systems to manage increases in precipitation and higher peak river flows, incentivize natural drainage practices on private property, and encourage the use of permeable pavement where feasible. Incorporation of alternative green infrastructure, such as rock-lined swales, can also help minimize runoff, require less maintenance than traditional vegetated swales, and can be a practical alternative in areas where vegetation may be difficult to maintain. Minimizing runoff supports the health of local ecosystems as well as the City's water resources.

5.5 Ecosystems and Water Resources

Sectors and Indicators	Rising Temperatures & Extreme Heat	Wildfires	Smoke	Heavy Precipitation	Flooding	Drought & Reduced Snowpack	Exposure	Sensitivity	Adaptive Capacity	Vulnerability	Risk
Wetlands, Fish and Wildlife	✓	✓	✓	✓	✓	✓	High	Very High	Low	High	High
Geologically Hazardous		✓		✓			High	High	Low	High	High
Groundwater Supplies	✓			✓		✓	High	Very High	Low	High	Very High
Water Storage	✓			✓		✓	High	Very High	Low	Very High	Very High
Streams				✓	✓		Moderate	Very High	Low	High	Moderate

Column groups: Climate Impacts (icon columns); Climate Risk and Vulnerability (Exposure, Sensitivity, Adaptive Capacity); Overall Risk and Vulnerability (Vulnerability, Risk).

Rising Temperatures & Extreme Heat | Wildfires | Smoke | Heavy Precipitation | Flooding | Drought & Reduced Snowpack

Key takeaways

- **Wetlands** citywide are likely to be impacted by summer drought and winter precipitation and flooding, impacting **water quantity**, **quality**, **biodiversity**, and **ecosystem services**.
- **Invasive species** could have more opportunities to proliferate due to changes in local conditions.
- **Wildlife and habitat** could be stressed from extreme precipitation and changes to water regimes and seasonal changes could make finding food more difficult.
- **Landslides** could become more likely due to extreme precipitation, particularly after fire.
- **Groundwater** supplies could be impacted by **warmer temperatures**, **drought**, and **reduced snowpack**, affecting City operations and broader community impacts.

Who is most at risk?

- People living near flood zones
- Low-income residents
- Areas without drainage infrastructure

Map of Aquifer and Extreme Heat Days

This section addresses critical areas in the City of Spokane including wetlands, fish and wildlife habitat, geologically hazardous areas, and streams. These assets would be affected by all types of climate-related impacts such as extreme heat, drought, flooding, and wildfire. This section also addresses water supply, including groundwater, affected by drought and higher demand as warmer temperatures occur.

The SVRP Aquifer faces increasing pressures from the impacts of a changing climate. The increasing frequency of warmer temperatures and reduced snowpack heightens the risk of drought, which can slow the replenishment of the aquifer and increase pressure on extraction. The map below shows the potential change in the number of higher heat days. The aquifer is shown on top.

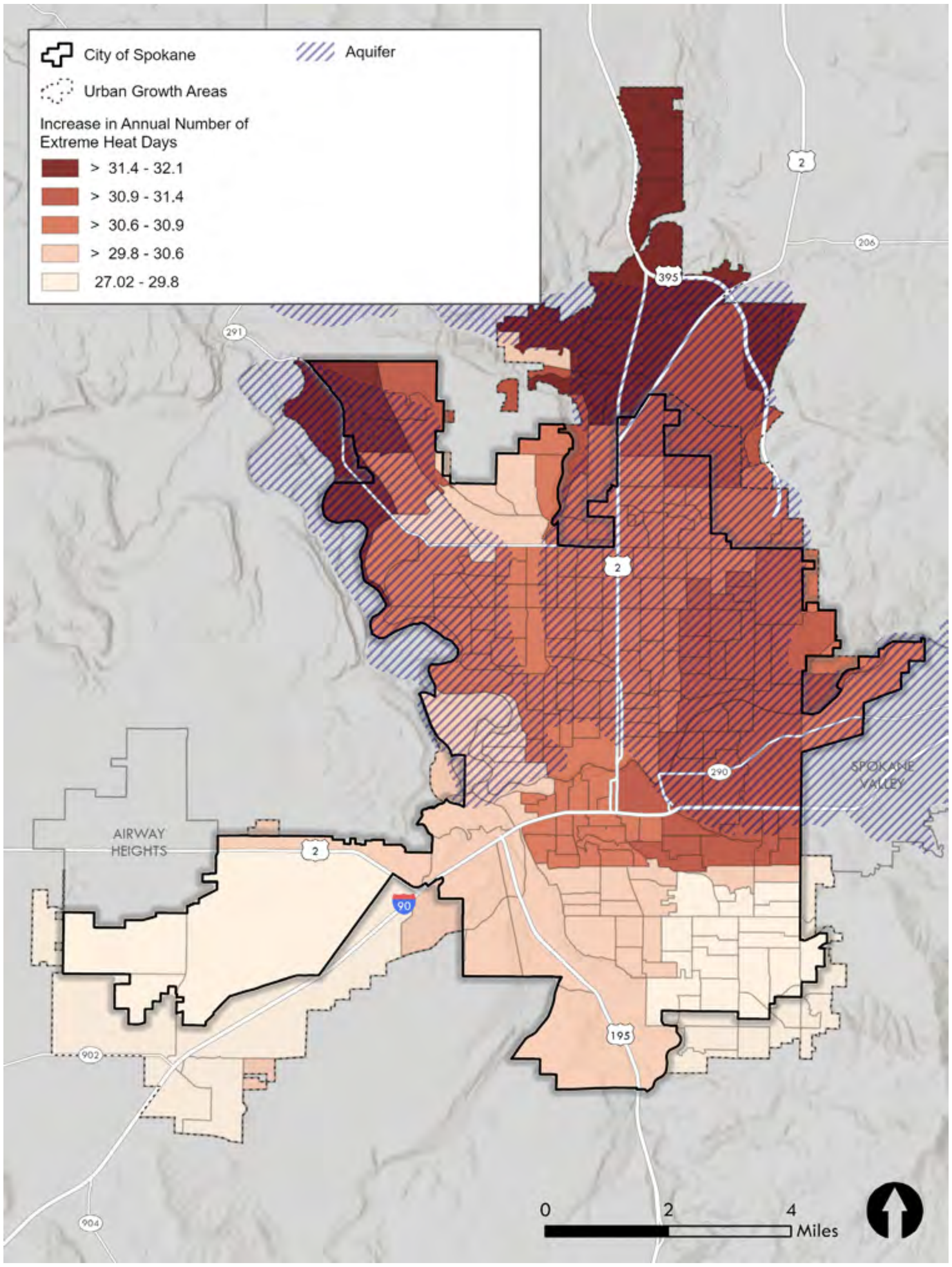

Exhibit 65. City of Spokane CVI, Increase in Annual Number of Extreme Heat Days and Aquifer

Ecosystems and Water Resources

Sector Summary

This section addresses critical areas in the City of Spokane including wetlands, fish and wildlife habitat, geologically hazardous areas, and streams. This section also addresses water supply, including groundwater. The analysis includes specific attention to the Spokane River and its tributaries and the Spokane Valley-Rathdrum Prairie (SVRP) Aquifer as these are unique assets and critical to the City's climate resilient future. The City's assets in this section are not equitably distributed across Spokane. The Spokane River, and its bordering wetlands, runs east to west through the center of the city. Most other streams and wetlands are located in the south half of the city The Northwest and South Spokane areas have the most areas with landslide potential, while the Northeast includes most of the wellhead protection areas.

Critical Areas

Critical areas wetlands, streams, and geologically hazardous areas are mapped in Exhibit 66. Frequently flooded areas are described in **Climate Hazards and Impacts**, with the rest of the critical areas addressed below.

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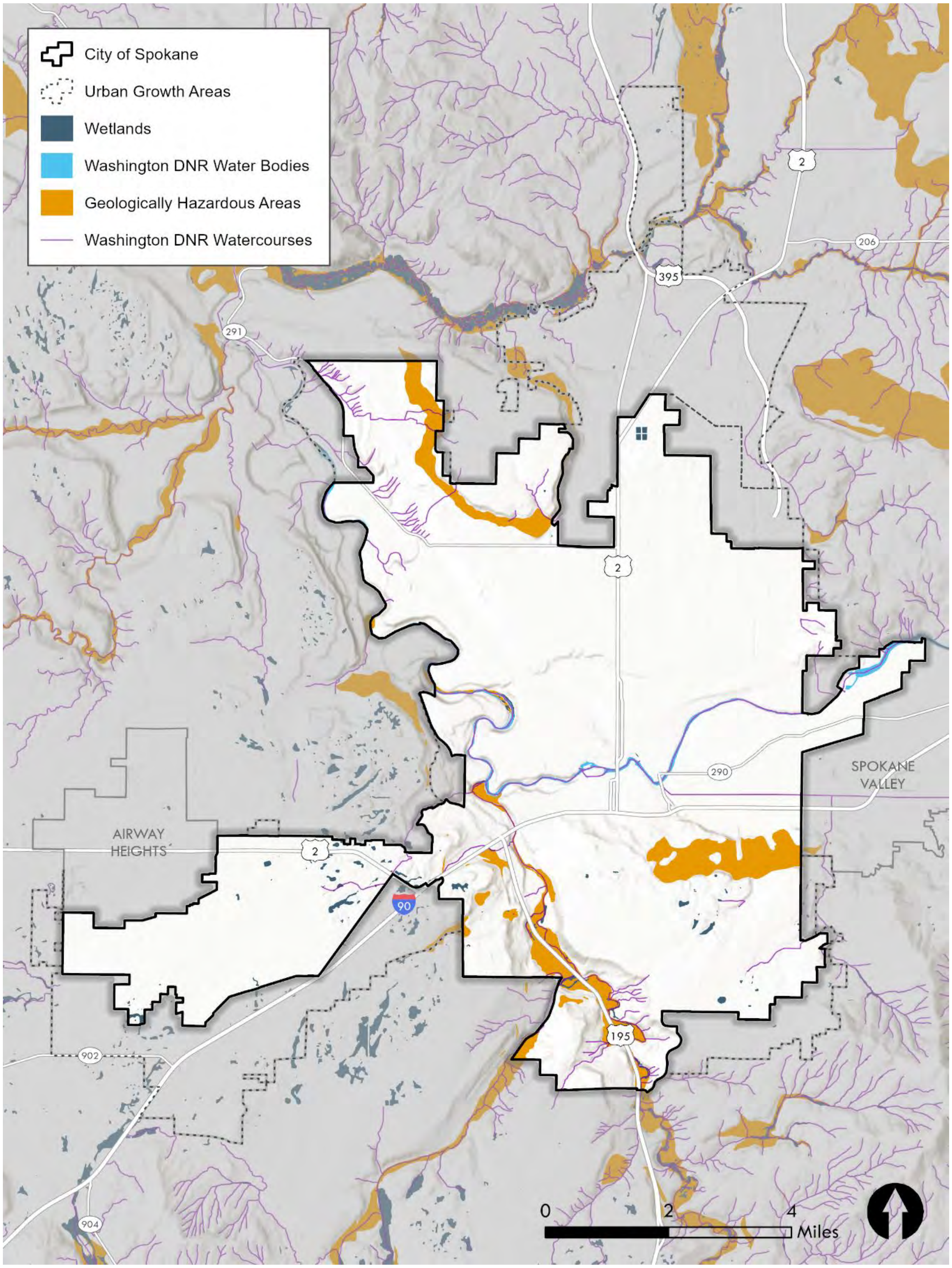
Exhibit 66. City of Spokane Climate Vulnerability Index: Wetlands, Geologically Hazardous Areas, and Surface Waters in and around the City of Spokane



Sources: Washington State Department of Natural Resources, 2021; City of Spokane, 2025; BERK, 2025.

Wetlands

Wetlands in the City of Spokane are located primarily in higher-elevation areas in the South Hill and South Spokane, in the West Plains region near the airport, or are riverine wetlands associated with the Spokane River and Hangman Creek, as shown in Exhibit 66. They are mapped as having emergent, scrub-shrub, and forested habitats. Wetlands are vulnerable to changes in water regime, such as less water in the summer and more in the winter, more flooding or high-water events, or lower groundwater table. Wetland plants and wildlife may not adapt to changes in conditions and provide opportunities for invasive species. Wetlands may also dry out, resulting in a loss of functions such as flood attenuation, water filtration, and wildlife habitat.

Fish and Wildlife and their Habitat

The City of Spokane is home to extensive inland shorelines along the Spokane River and Hangman Creek and their associated wetlands, floodways, and the one-hundred-year floodplain (City of Spokane, 2021).

Within the city, terrestrial wildlife is primarily urban-adapted species such as birds, squirrels, bats, and racoons. The Spokane River, which flows west through the middle of the city, supports Summer Steelhead Trout, Eastern Brooke Trout, Brown Trout, Westslope Cutthroat, Rainbow Trout and Mountain Whitefish (Northwest Indian Fisheries Commission, 2025). Hangman Creek, which flows north into the Spokane River, supports Summer Steelhead, and Rainbow Trout. Redband Trout, a subspecies of Rainbow Trout, have a particularly strong local association with Spokane. As climate changes, these riverine systems face increasing threats from flooding, erosion, water quality degradation, and altered habitat conditions. Rising winter temperatures and decreased snowpack will shift river flows, leading to higher winter water levels from increased rainfall and lower summer flows, especially during drought conditions (Halofsky, Wondzell, & Christensen, 2024). These changes could severely degrade fish and bird habitats. Warmer water temperatures, for example, will further stress native cold-water species like Redband Trout, affecting their migration and spawning patterns (Spokane Riverkeeper, 2025).

The Spokane River and Hangman Creek corridor along the western boundary of the city are considered "biodiversity areas and corridors" by the State. These areas provide habitat for state priority species such as northwest white-tailed deer, mule deer, Yuma myotis, and Townsend's big-eared bat. The portion of the Spokane River that flows through the middle of the city lacks riparian habitat and thus provides limited habitat for terrestrial species.

Throughout the city are pockets of shrubsteppe habitat, primarily limited to parks or slopes such as near the East Slope Five Mile Prairie area in the Northwest area of the city, Beacon Hill in the Northeast of the city, and the eastern portion of South Hill and South Spokane. Just outside the city are additional biodiversity areas and corridors supporting additional wildlife, such as Rocky Mountain elk, which occur in the Dishman Hills area.

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Stress from extreme temperatures or changing water regimes make plants and animals more susceptible to disease and competition from invasive species, such as zebra mussels. Wildlife may not adapt to new habitats in the event of fire, flood, or drought. Additionally, seasonal changes may make finding food more difficult. Higher temperatures and drought, low oxygen, poor water quality, and low flows affect the ability of water to support fish and wildlife.

Geologically Hazardous Areas

Geologically hazardous areas include both erosion and landslide hazard areas. Exhibit 66 shows landslide hazard areas in the South Hill and South Spokane including along Hangman Creek. A landslide hazard area is also mapped along the East Slope Five Mile Prairie in the Northwest area of the city. Slopes can be more susceptible to erosion and landslides during high-precipitation events. Fire may remove vegetation, or drought may result in low soil moisture making geologically hazardous areas more vulnerable to erosion and landslide risks (WSDOT, 2011). Landslides have already affected Spokane: in 2021, Peaceful Valley, located on the south side of the Spokane River, experienced a landslide that threatened power utility infrastructure and the South Gorge Trail (The Spokesman-Review, 2021)

Spokane County has developed a Hazard Mitigation Plan that focuses on a range of hazards like landslides as well as earthquakes, wildfire, droughts, and severe weather. (Spokane County Emergency Management, 2020)

Water Supply

The City of Spokane is one of many water purveyors in Washington and Idaho that use the Spokane Valley Rathdrum Prairie (SVRP) Aquifer as a water source for their water systems (see Infrastructure for more details regarding the City's water infrastructure). The City relies on groundwater as its sole drinking water source is the SVRP Aquifer. The Spokane River is hydraulically connected to the SVRP Aquifer during some seasonal conditions, and water transfers from the river to the aquifer or from the aquifer to the river (City of Spokane, 2023a).

Additionally, wastewater system facilities situated near flood hazard zones face higher risks from increased stormwater flow from heightened precipitation and flooding events. The City's Riverside Park Water Reclamation Facility (RPWRF) and the separated stormwater system discharge to the Spokane River. The City has approximately 17 CSO permitted outfalls located within the 100-year or 500-year flood zone that face increasing risk of inundation due to flooding. Additionally, the system's lines can also experience backups during flooding events, exacerbating flooding and the possibilities of water quality impacts (CH2MHill, 2014; Vulnerability Map, 2025).

Groundwater Supplies

The SVRP Aquifer faces increasing pressures from the impacts of a changing climate. The increasing frequency of warmer temperatures and reduced snowpack heightens the risk of drought, which can slow the replenishment of the aquifer and increase pressure on extraction. Rising temperatures accelerate water demand, placing additional strain on well stations where groundwater levels are at risk of experiencing decline when water demand is high. Lower groundwater levels may also impact operational capacity of well stations, requiring modifications at several of the City's well stations to ensure operational efficiency (GSI, 2024). In recent years, earlier spring runoff, higher evapotranspiration rates, and late-summer groundwater declines across the SVRP system have been observed. These seasonal shifts have reduced aquifer recharge and contributed to higher well drawdown rates during high temperatures and prolonged drought events (U.S.G.S., 2016).

During drought years, historical data indicate reduced river flows and lower groundwater levels within the SVRP Aquifer, leading to more frequent water use restriction for both residential and agricultural purposes. Lower aquifer levels decrease the City's ability to maintain its groundwater pumping capacity. As higher annual average temperatures and risk of droughts increase, demand will likely increase (HDR, 2023 and Hoffman, Ray Street, & Well Electric, 2021).

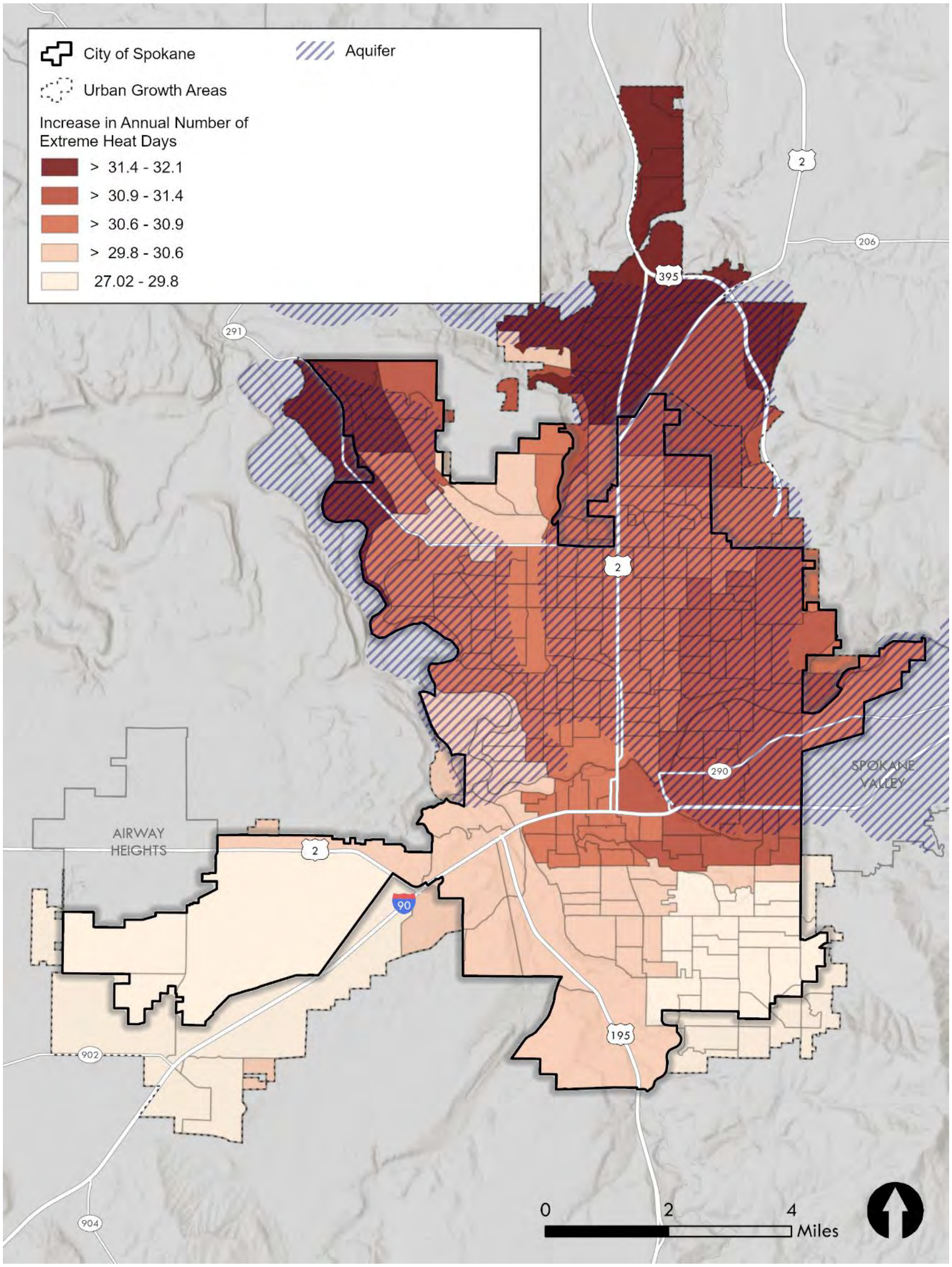
Changes to seasonal precipitation, such as reduced snowpack, limits runoff that feeds into the Spokane River, further limiting groundwater recharge to the SVRP Aquifer. Warmer winters are further decreasing snow accumulation, weakening the aquifer's ability to replenish during crucial recharge months (GSI, 2024; City of Spokane, 2023b).

Water Storage

Water storage plays a vital role in ensuring the City of Spokane's ability to maintain a reliable and consistent water supply, particularly during times of high demand, drought, or other climate-induced disruptions. Rising temperatures contribute to higher demand, necessitating more frequent refilling to maintain adequate reserves (See Exhibit 67). At the same time, reduced snowpack levels mean less water flows into the SVRP Aquifer, further limiting water availability for the City's system storage and exacerbating water shortage during summer months (GSI, 2024).

Drought conditions exacerbate these challenges by slowing the natural replenishment of sources available within the SVRP Aquifer, leading to increasing depletion of water storage availability. This not only increases the draw from the City's water storage but also heightens the risk of water shortages during critical times, particularly as the City faces more extreme climate events (GSI, 2024; City of Spokane, 2023b).

Exhibit 67. City of Spokane Climate Vulnerability Index: Projected Change in Extreme Heat Days and the SVRP Aquifer Across the City of Spokane.



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

Surface Water

There are two major surface water systems within the city: Spokane River and Hangman Creek. Each of these systems also has numerous tributaries draining into them. The city does not have lakes within city boundaries, but does have several ponds, which would likely meet the definition of a wetland rather than a lake. See Critical Areas above for more details on the City of Spokane's watercourses.

Hangman Creek has already been impacted by water quality issues due to urbanization, agriculture, and deforestation (Washington State Department of Ecology, 2025). Water quality concerns in Hangman Creek can create additional problems downstream in the Spokane River and Lake Spokane. Hangman Creek is also in an area prone to fire, which puts it at risk of flooding, erosion, and sediment deposit. As Spokane experiences more extreme precipitation in shorter windows of the year, runoff and sediment will be increasing concerns for surface water. A growing risk of wildfire in the area is also a threat.

Adapting to a Changing Climate

This section summarizes the recommended strategies to help the City of Spokane meet the water supply needs of the community amid a changing climate. These include measures the City is already advancing or could further address.

Protect critical aquifer recharge areas. The City's sole drinking water source is the Spokane Valley Rathdrum Prairie (SVRP) Aquifer, which is increasingly at risk from seasonal precipitation and drought patterns. Protecting these critical aquifer recharge areas is essential to maintaining long-term groundwater supply, and may include implementing land use policies, enhancing pollution protection, and increasing stormwater management. Considerations may include expanding the implementation of green stormwater infrastructure (GSI), as well as water retention and treatment facilities, to allow more water to naturally infiltrate into the groundwater supplies after precipitation events.

Implement community-based water use efficiency. Demand for water use will likely increase for urban landscapes and agricultural use. Incentives for rainwater harvesting and high efficiency irrigation technologies, in addition to irrigation practices, such as drip irrigation systems and time-of-day water policies, can help residents and agriculturalists adapt to water stress and increase water use efficiency. Outreach campaigns and education can support water use shifts and empower communities to continue conservation practices.

Consider a "One Health" approach to habitat management. The concept of One Health is to optimize the health of people, animals, and the environment. Collaboration between environmental experts and human health experts is central to this approach and the City could create opportunities for that collaboration internally and with external partners.

5.6 Community Design, Land Use, and Economic Development

Sectors and Indicators	Rising Temperatures & Extreme Heat	Wildfires	Smoke	Heavy Precipitation	Flooding	Drought & Reduced Snowpack	Climate Risk and Vulnerability			Overall Risk and Vulnerability	
Building Stock Age											
	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Low	**Vulnerability:** High	**Risk:** Very High
Industrial, Recreation/Tourism, Businesses											
	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Moderate	**Risk:** High
Tree Canopy, Heat Islands, and Redlining											
	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** High	**Adaptive Capacity:** Low	**Vulnerability:** Moderate	**Risk:** High
Affordability and Availability											
	✓	✓	✓	✓	✓	✓	**Exposure:** High	**Sensitivity:** Very High	**Adaptive Capacity:** Low	**Vulnerability:** High	**Risk:** Very High

Rising Temperatures & Extreme Heat | Wildfires | Smoke | Heavy Precipitation | Flooding | Drought & Reduced Snowpack

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Key takeaways

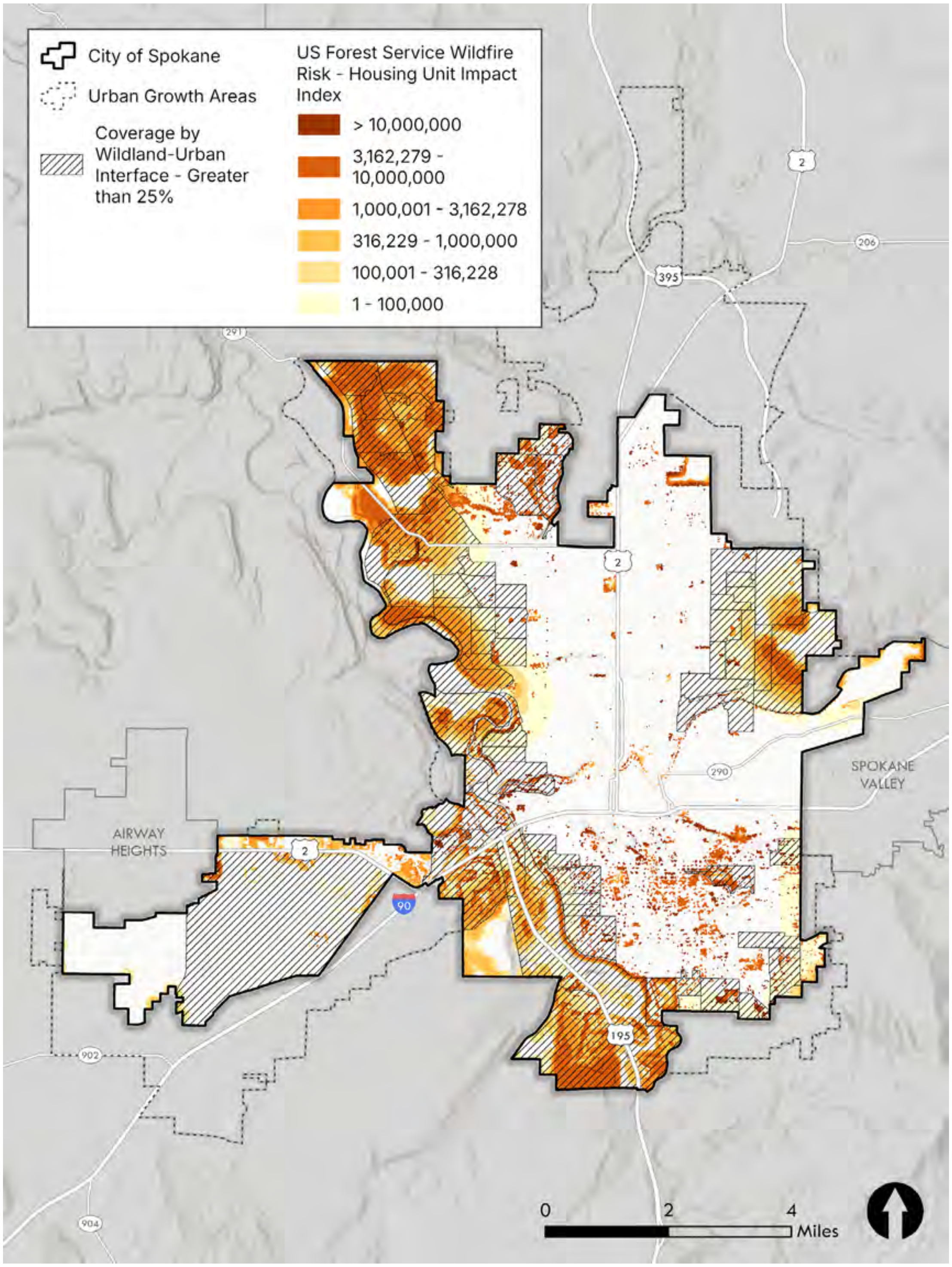
- Extreme heat, flooding, and wildfires could **damage buildings**.
- Greater demand for electricity during extreme heat raises the **risk of power failures**.
- **Older buildings** are less equipped with ventilation and air conditioning and are more **dangerous during extreme heat** and **smoke events**.
- Some major facilities are located near the Spokane River and are susceptible to **flood hazards**.
- **Businesses** could be impacted by **increasing costs**, **infrastructure** and **supply chain disruption**, and **worker health impacts**.
- Some **industrial areas** in Spokane may be particularly susceptible to **flooding**.
- **Recreation and tourism industries** could be particularly impacted by **landscape degradation**, **heat**, and other changes.
- Increased pressure on **household costs** could lead to health impacts for **lower income households** and **greater displacement risk**.

Who is most at risk?

- Residents of older housing stock
- Areas with a lack of greenspace and trees
- Areas with more impervious surfaces
- Outdoor workers
- Households with lower incomes
- Communities and areas facing displacement risk
- Residents and businesses in flood hazard areas and wildfire hazard areas

Map of Fire Risk and Housing Units

This section identifies buildings, housing, employers, neighborhoods, and industries as they intersect with climate hazards and adaptive capacity. Older housing stock in the city is particularly unsafe during heat and smoke events, whereas buildings in flood and wildfire hazard areas are susceptible to physical damage. The map below illustrates a key risk to Spokane's primary land use in the city – wildfires and housing units at risk in the wildland urban interface. Lands in Northwest, Northeast, and South Spokane are vulnerable.



City of Spokane CVI, Wildland Urban Interface and Housing Unit Impact Index

Community Design, Land Use, and Economic Development

Sector Summary

The City of Spokane is comprised of 29 unique neighborhoods with their own histories, distinct land use mixes, and communities. Residents of different neighborhoods experience a disproportionate distribution of environmental benefits and burdens. Economically, the City of Spokane serves as the major hub for the Inland Northwest, particularly for service industries, wholesale and retail trade, medical industries, education, and entertainment. This section identifies buildings, housing, employers, neighborhoods, and industries as they intersect with climate hazards and adaptive capacity. Older housing stock in the city is particularly unsafe during heat and smoke events, whereas buildings in flood and wildfire hazard areas are susceptible to physical damage. Business costs are likely to increase due to insurance premiums and energy costs. Certain parts of the city, such as Northeast Spokane, are particularly vulnerable to heat due to lack of greenspace.

Buildings

Climate impacts have significant effects on the built environment, including damage to infrastructure, disruptions in the production and distribution of goods and services, and threats to quality of life and human health (United States Environmental Protection Agency, 2025). At the same time, buildings themselves are major contributors to a changing climate, responsible for 37% of global carbon emissions and 34% of energy use. Additionally, they contribute to resource depletion, pollution of air, water, and land, and the loss of biodiversity (United Nations Environment Programme, 2022). Spokane's 2019 Community Emissions Inventory shows that energy accounts for 49% of community greenhouse gas emissions with residential uses making up 27% and commercial and industrial uses making up 22%. (City of Spokane, 2024)

The City of Spokane is experiencing growth, ranking 24th among the top metropolitan areas in the US for expansion, based on one-way migration trends across the country. Notably, Spokane is the only city in Washington to appear in the top 25 (Lockridge & Reyes, 2025) (Lockridge & Reyes, U-Haul Growth Metros and Cities of 2024: Dallas Top Metro for In-Migration, 2025). On a broader scale, Washington state ranks 7th nationwide in net gains from one-way movers (Lockridge, 2025). While this growth indicates a potential demand for new construction, the city also has a substantial inventory of historically preserved and older buildings. The city's historic structures, shaped by periods of rapid growth and the Fire of 1889, reflect the city's social, economic, and architectural history. In recent years, the city has seen growth and development, with efforts focused on urban revitalization and historic preservation (City of Spokane, 2017).

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According to building footprint data from the City of Spokane (City of Spokane, 2025), Exhibit 69 provides a breakdown of the square footage across various building types throughout the city.

Exhibit 69: Building Square Footage

Building Type	Area (sq ft)	Percent
Single-Family	127,321,781	52%
Commercial or Retail Facility	50,096,391	20%
Multi-Family	20,834,909	8%
School or University	6,778,838	3%
Government or Military Facility	3,321,920	1%
Mobile Home Park*	2,323,585	1%

* The original data source does not provide definitions for the various building types. According to RCW 46.04.302, "'Mobile home' or 'manufactured home' means a structure, designed and constructed to be transportable in one or more sections, and is built on a permanent chassis, and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities that include plumbing, heating, and electrical systems contained therein. The structure must comply with the national mobile home construction and safety standards act of 1974 as adopted by chapter 43.22 RCW if applicable. Manufactured home does not include a modular home. A structure which met the definition of a 'manufactured home' at the time of manufacture is still considered to meet this definition notwithstanding that it is no longer transportable."
Source: City of Spokane, 2025

The City of Spokane reviews and approves commercial and multi-family plans for new construction, remodels, revisions to approved permits, change of use, and certificates of occupancy. It also reviews new construction, additions, interior remodeling, fencing, and demolition of detached single-unit home, duplex, and accessory buildings. Among the several codes adopted by the City is the 2021 International Wildland-Urban Interface Code (City of Spokane), which establishes provisions for the safeguarding of life and property from the intrusion of wildfire (International Code Council, 2020).

The city's buildings are vulnerable to a range of climate-related hazards, including extreme heat, flooding, and wildfires. Rising annual average temperatures, with particularly higher summer and winter temperatures, coupled with more frequent and sustained heatwaves, pose significant risks to both residents and workers.

Older buildings tend to be less insulated and energy-efficient compared to newer structures built under more stringent codes (Power, 2008). For the purposes of this analysis, older buildings are defined as those built before 1960. As a result, increased cooling demands during the summer and extreme heat events may negatively impact the health and comfort of occupants in older buildings. Furthermore, the heightened demand for electricity during extreme heat events raises the risk of power failures. In addition to rising cooling demands during the summer, winter heating needs have also emerged as a concern among Spokane residents. Respondents to the Community Climate Planning survey reported sharp increases in energy costs and growing challenges related to affordability.

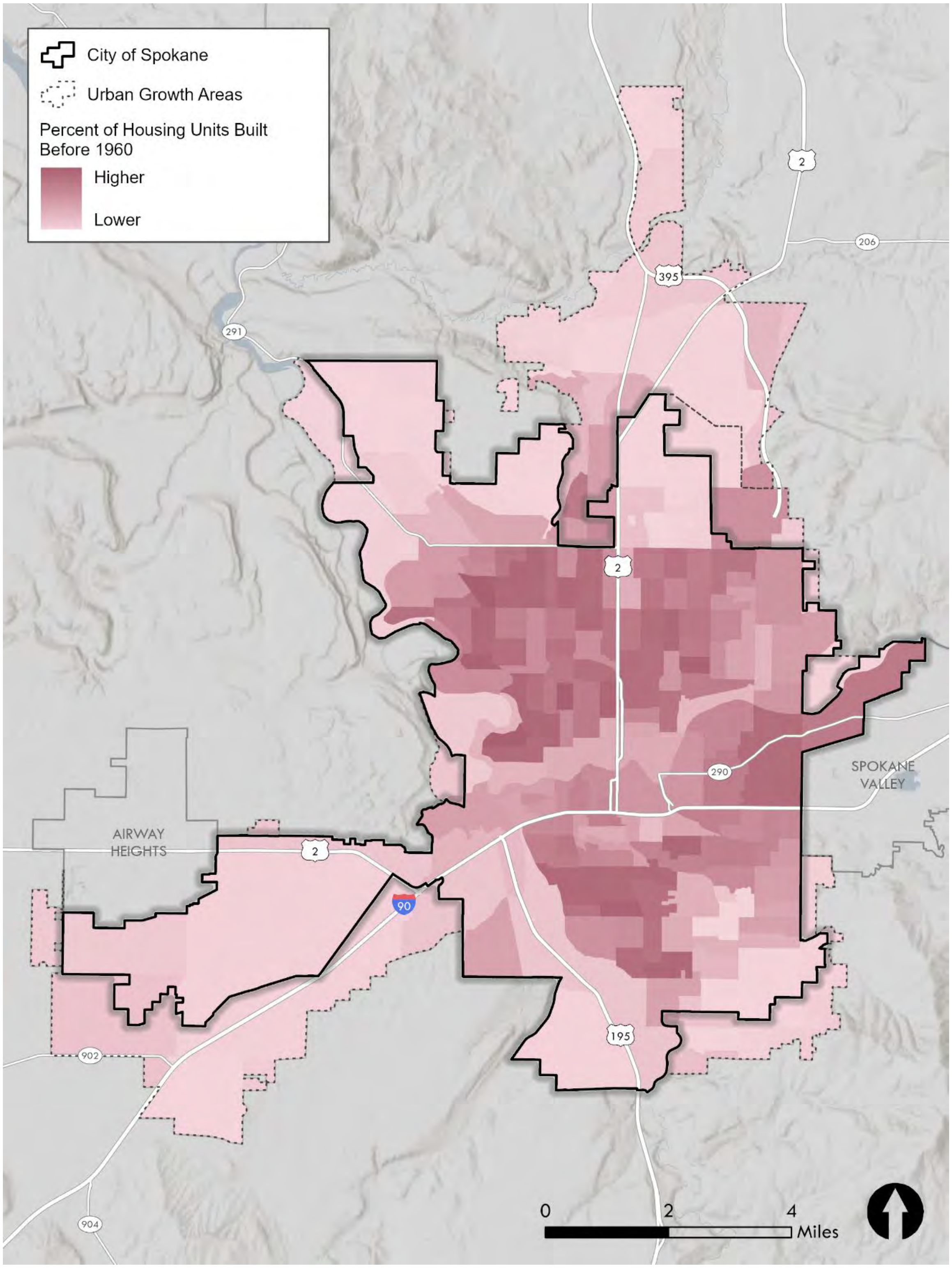
Older buildings are also less likely to have ventilation or air conditioning systems, which are essential not only for maintaining indoor air quality during smoke events, but also for managing indoor temperatures during extreme heat. Older windows, in particular, tend to be less airtight and more prone to leakage, making these buildings especially vulnerable to the infiltration of polluted air during and after wildfire events, as well as to heat loss or gain year-round.

In the United States, affordable housing is often supplied through the gradual filtering of older properties to lower-income occupants, but these aging properties frequently expose occupants to deteriorating and unsafe living conditions (Myers & Park, 2020; Liu, McManus, & Yannopoulos, 2022). Millions live in older units falling into disrepair, even becoming uninhabitable (Ludden & Peñaloza, 2024). While lower-income homeowners spend a larger share of their income on maintenance, they invest significantly less overall than higher-income households, often prioritizing urgent repairs and disaster recovery over long-term improvements. Without resources for routine upkeep or essential replacements, many are left in unstable and unhealthy housing (Joint Center for Housing Studies, 2021). In contrast, higher-income households living in older units are often better positioned to afford the upkeep and upgrades that aging homes require.

Aging housing infrastructure was identified as a concern by Tribal and urban Native community members, particularly in urban areas where older buildings lack adequate ventilation and reliable cooling systems. One proposed solution is to establish designated cooling and clean air shelters to support vulnerable populations, such as Elders and individuals with pre-existing health conditions, during extreme climate events. There is also interest in upgrading HVAC systems in community centers and public facilities, enabling them to serve as emergency relief sites.

A considerable proportion of the city's housing stock, specifically 47.9% of occupied units, was constructed prior to 1960, reflecting the prevalence of an aging housing inventory (United States Census Bureau, 2022). **Error! Reference source not found.** shows the b lock groups across the city with a higher concentration of housing units built before 1960.

Exhibit 70. Percent of Housing Units Built Before 1960



Sources: American Community Survey 5-year estimates, 2018-2022; BERK, 2025.

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Increased stormwater and riverine flooding, driven by higher precipitation levels in winter, further threatens Spokane's built environment, particularly in neighborhoods such as East Central, Southgate, Lincoln Heights, and Grandview/Thorpe, as well as areas along the Spokane River and Hangman Creek.

Additionally, wildfires and smoke present a serious risk to building safety, especially for those situated in the wildland-urban interface along the city's periphery, where direct damage may occur.

"I would like to stay in Spokane, but I'm concerned about wildfire risk especially – where to buy and how to make the property more fire resistant...."
- Community Climate Planning Survey Respondent

Major Facilities

Large-scale facilities serving essential public functions act as both economic and community hubs. As climate risks rise, these facilities may face significant repair costs, higher insurance premiums, and disruptions that could impact not only community events but also the local economies and livelihoods that rely on them.

The Spokane Public Facilities District (SPFD) was established in 1989 by the Washington State Legislature as an independent taxing authority and district. Its boundaries align with those of Spokane County. According to the Legislature's definition, the SPFD was authorized to "acquire, construct, own, and operate sports and entertainment facilities, along with contiguous parking facilities" (Spokane Public Facilities District).

The SPFD has set sustainability goals that emphasize energy efficiency and environmental responsibility. These goals include integrating sustainability principles into the planning, construction, maintenance, and operation of its facilities; reducing reliance on non-renewable energy sources; and upholding a high standard of indoor air quality (Spokane Public Facilities District).

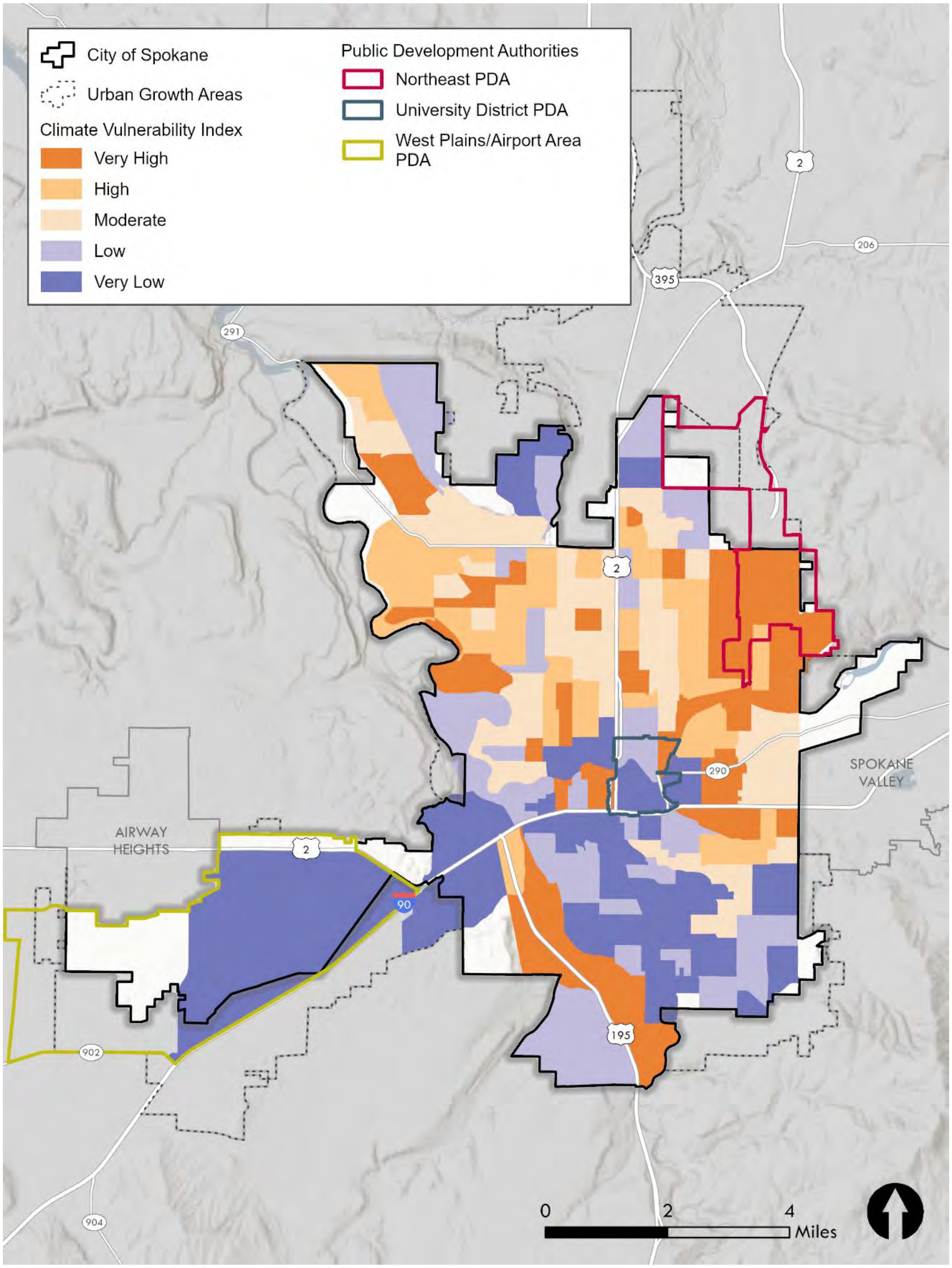
The SPFD is responsible for overseeing a range of facilities, including the Spokane Veterans Memorial Arena, Spokane Convention Center, First Interstate Center for the Arts, The Podium Powered by STCU, and ONE Spokane Stadium. These facilities are located near one another, in the central part of the city, along the Spokane River. These spaces are located in areas of high land surface temperature and PM 2.5 exposure, indicating that they are particularly vulnerable to the compounded effects of heat stress, air pollution, and related health risks.

The City of Spokane has three Public Development Authorities (PDAs): the West Plains/Airport Area PDA, University District PDA, and Northeast PDA. The West Plains/Airport Area PDA, established in 2017, supports the City, Spokane County, and

Spokane International Airport in improving local economic conditions through an interlocal agreement. The University District PDA, active since 2012, focuses on revitalizing the University District and boosting economic development in the area (Municipal Research and Services Center, 2025). The Northeast PDA, in operation since 2011, facilitates redevelopment and public benefit projects to drive economic growth and job creation within The YARD geographic region (City of Spokane).

Both the University District PDA and Northeast PDA intersect areas with high and very high climate vulnerability. The University District PDA, situated near the Spokane River, is especially vulnerable due to its proximity to flood hazard zones, compounded by a concentration of residents living in poverty and with disabilities. Meanwhile, the Northeast PDA covers areas with elevated land surface temperatures, a wildland-urban interface, and increased exposure to particulate matter. Additionally, this district faces a higher percentage of residents experiencing poor physical and mental health, further exacerbating its climate vulnerability.

Exhibit 71. City of Spokane Climate Vulnerability Index with Public Development Authorities



Sources: City of Spokane, 2024; BERK, 2025.

Businesses

Changing climate patterns can create challenges for companies in all industries. Increasingly frequent and severe weather events can damage infrastructure, disrupt supply chains, and hinder transportation. Drought conditions may drive up the cost of raw materials and affect production capacity. Market volatility tied to climate impacts can introduce uncertainty in resource pricing, energy costs, and insurance premiums. Additionally, some products and industries face the risk of obsolescence as environmental conditions shift (Cho, 2019). Labor productivity and worker well-being can also be adversely affected, particularly among those regularly exposed to extreme weather conditions (Weinstock, 2022).

The City of Spokane is a key regional hub in the Inland Northwest, which spans parts of Washington, Idaho, Montana, and Oregon. Its market area also reaches into Canada. The city's strategic position as a distribution center is supported by an international airport, a major rail hub, an interstate highway, and its proximity to the Columbia and Snake River systems. The top industries employing residents include educational services, health care, and social assistance (26.9%); retail (11.8%); and professional, scientific, management, administrative, and waste management services (11.7%) (United States Census Bureau, 2022).

A large proportion of its residents are highly educated, as 32.7% of the population have a bachelor's degree or higher (United States Census Bureau, 2022). The City of Spokane houses two community college campuses and five major universities with thousands of students (City of Spokane).

Concerns about the economic impacts of climate hazards, particularly those related to extreme heat and wildfire smoke, are already emerging among local residents as a concern for future development.

> **"I'm worried about the impact if the climate gets too hot and dry. Not only will we have to deal with more fires but crop failure, drought and everything else. This will definitely have an economic impact on the area."**
> *- Community Climate Planning Survey Respondent*

Industrial Areas

Climate risks, including extreme heat and flooding, pose threats to industrial areas by potentially disrupting operations, damaging infrastructure, and straining critical resources. This is particularly crucial for facilities that manufacture, use, handle, or store hazardous substances, as climate-related hazards could damage the facilities and release harmful chemicals into surrounding communities (United States Government Accountability Office, 2022).

Manufacturing ranks as the fifth largest industry in the City of Spokane, employing over 7,000 workers (United States Census Bureau, 2022). According to the city's current zoning, the largest light and heavy industrial zones are primarily located in the Northeast and eastern regions, as well as around the airport. Additionally, smaller industrial areas are scattered throughout other parts of the city. Given the spatial distribution of industrial zones in the City of Spokane, some utilities-related operations are located near flood hazard areas along the Spokane River in the Logan neighborhood, heightening their vulnerability to climate events. Furthermore, workers in climate-exposed sectors, such as manufacturing, transportation, and warehousing, may experience reduced working hours, job losses, or furloughs due to unsafe working conditions or infrastructure shutdowns (United States Environmental Protection Agency, 2025).

Recreation and Tourism Businesses

The City of Spokane is a destination for both outdoor enthusiasts and urban explorers. The area offers a diverse range of recreational activities, from hiking, fishing, and skiing to cultural experiences like performances and art exhibits. Additionally, visitors and residents can enjoy the vibrant local scene with wineries, breweries, and a strong sports culture, making it a hub for both adventure and leisure. Arts, entertainment, recreation, accommodation, and food services is the fourth largest industry in the City of Spokane, with over 12,000 workers employed (United States Census Bureau, 2022)**.**

Businesses that depend on outdoor recreation are particularly vulnerable to climate hazards such as extreme heat, drought, flooding, and wildfires. Between 2012 and 2022, 66 days failed health standards in the Spokane area due to wildfire smoke, which limited the number of days safe for outdoor activities. (Spokane Regional Health District, 2023)**.**

In the Community Climate Planning Survey, over 50% of respondents noted changes to their recreational activities when asked how they had been personally affected by extreme weather and climate hazards.

"I have a young family, and we simply can't safely go outside at those times. We rely on going outside for our health and for recreation but cannot do this during the extremely hot and smoky days. It is the duration of multiple days/weeks in a row we find especially impactful."
- Community Climate Planning Survey Respondent

"I'm an avid snow sports enthusiast. Winters have gotten shorter, snowfalls have lessened, the quality of the snow has changed. This not only impact my recreation, but summer runoff as well as the economy

(mountain sports and resorts areas, retail, state park passes) and area ecosystems."- *Community Climate Planning Survey Respondent*

Accommodation, food services, and retail trade may suffer from changing tourism patterns due to natural landscape degradation and increased temperatures, leading to fewer tourists, reduced revenues, and fewer outdoor activities (International Economic Development Council, 2022).

Events hosted in the area, such as Bloomsday, Hoopfest, and Pig Out in the Park, may be increasingly susceptible to disruptions from hazards like extreme heat and wildfire smoke, highlighting the need to factor climate-related risks into the planning of outdoor public gatherings (Pacific Northwest Climate Impacts Research Consortium , 2022). Recent evidence suggests these challenges are already impacting local events (KHQ, 2024; Martinez, 2023).

Additionally, flooding events can lead to economic loss by damaging property and infrastructure, including power systems and roads. Prolonged exposure to extreme heat can negatively impact workers' health, increasing the risk of injury and reducing productivity and earnings. Recurring climate events, such as heatwaves or flooding, may extend periods of unemployment, intensifying financial strain.

Climate change is creating more demand for warm-weather recreation with increasing temperatures, increasing the negative effects of fire and smoke on recreation, and decreasing opportunity for snow-based recreation and for anglers targeting cold-water fish species.

- USDA Climate Hub, Northwest

Major employers and local and independent businesses

According to a list published by the Spokane Journal of Business (Allen, 2023), the largest employers in Spokane County include the Fairchild Air Force Base, Providence Inland Northwest Washington (primarily in city limits), the State of Washington (offices in the city include offices associated with the Department of Revenue, State Auditor, and Department of Ecology), Spokane Public Schools (in city limits), and Amazon. These organizations are ordered by the number of full-time equivalent employees, highlighting the significant role they play in the local economy.

Health care services added the most jobs between 2002-2022 in the city limits. Other sectors adding employment in that timeframe include construction and resources, leisure and hospitality, education, and government as well as manufacturing (US Census Bureau, 2024).

Small businesses also contribute greatly to the City of Spokane's economic landscape, with over 10,000 businesses in the City of Spokane employing fewer than ten people (City of Spokane). There are several local and state resources available to support businesses at all stages of growth. One such resource is StartUp Spokane, which was created in 2012 and acquired in 2023 by Spokane Public Library to serve as a liaison for business events, resources, and networking. Additionally, the US Small Business Administration (SBA), the City of Spokane, and the AHANA Multi-Ethnic Business Association have partnered to address accessibility, equity, and inclusion issues for multi-ethnic small businesses and entrepreneurs in the Spokane area (City of Spokane).

Small businesses, lacking the capital and resources of large corporations, are particularly vulnerable to lasting economic damage from a single extreme weather event. Most small businesses operate from a single physical location and generate the majority of their revenue within a few miles of their front doors. As a result, they face greater risks from technological and telecommunications failures, employee absences, power outages, supply chain disruptions, and rising insurance costs (Reynolds, 2013).

That said, while smaller businesses often bear the brunt of climate-related disruptions, all businesses are at risk. The costs of insurance may be exacerbated, as businesses face higher premiums to protect against climate-related risks. Additionally, rising energy costs, particularly for building cooling, may put extra strain on companies. Adapting older buildings to meet new climate resilience standards, such as updating HVAC systems to better manage temperature and air quality control during extreme heat or smoke events, can be costly. Furthermore, disruptions in supply chains may become more common due to extreme weather events, making it harder for businesses to maintain consistent operations and meet demand.

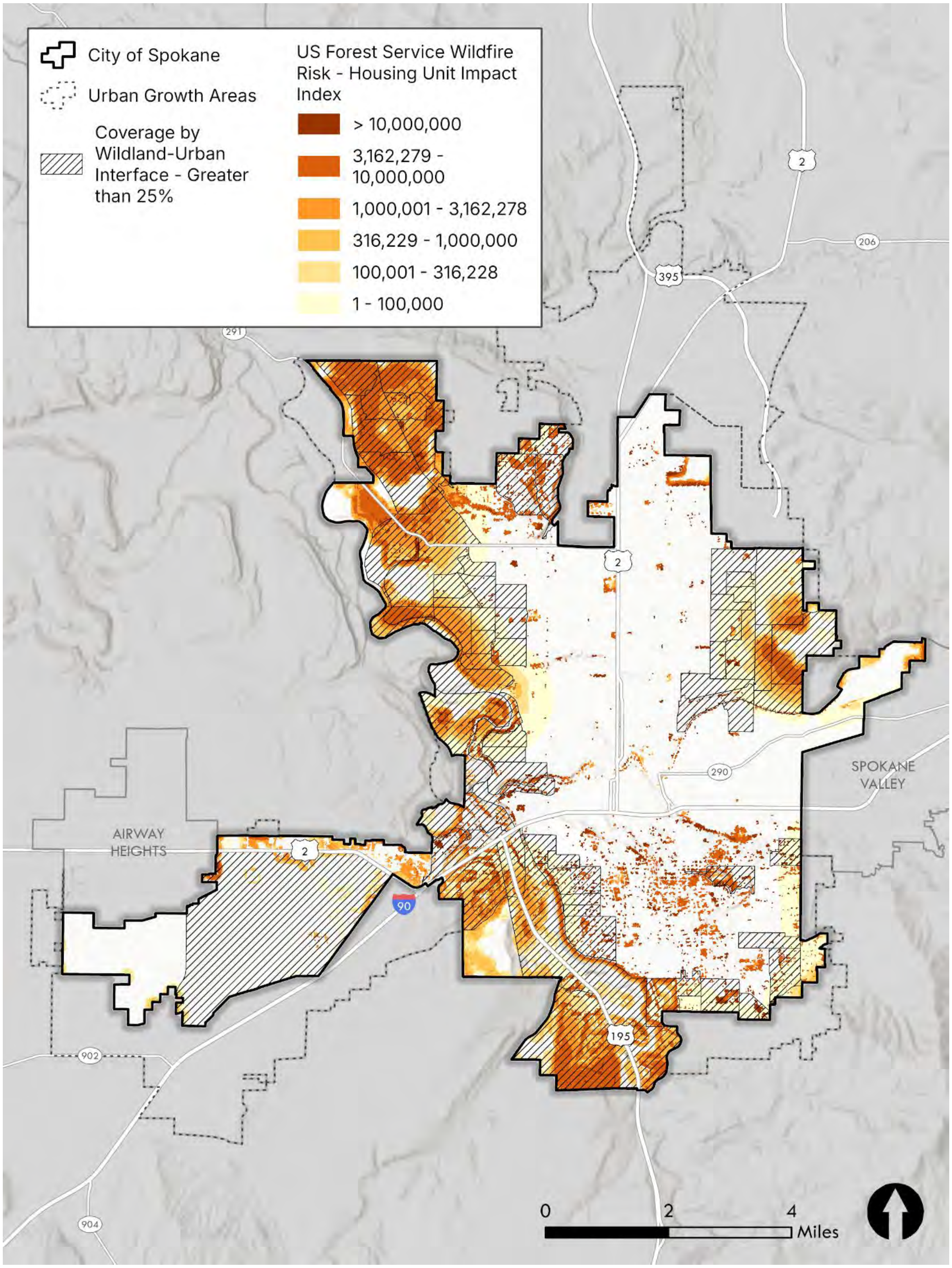
Although commercial and retail areas are spread throughout the city, they tend to be concentrated along major transportation corridors, the Spokane River, and near key assets like the airport. Several of these business clusters fall within zones of high or very high climate vulnerability, including areas along the river in the Riverside neighborhood, sections of I-90, US-2, Monroe Street, and Northwest Boulevard, as well as the Northeast part of the city in neighborhoods such as Hillyard.

Neighborhoods

> Urban development patterns significantly influence local and regional environments, and these patterns can exacerbate the local effects of climate change. Depending on the type of built environment, both urban growth and land-use change have impacted and will continue to impact surface and ambient air temperature, local and regional humidity, wind patterns, precipitation, flooding, and dispersion of air pollutants… **(Chu, 2023)**

Across the city, Spokane has experienced increases in annual average temperatures exacerbated by high impervious areas, especially on the north side of the city. (Gonzaga Institute for Climate, Water & Environment, 2024) There have also been increases in poor air quality (PM2.5), especially along roadways and railways, which is further exacerbated by extreme heat. (Washington Department of

Ecology, 2023). Fires have occurred along city edges per Exhibit 26. Climate Vulnerability Index: Blocks with Wildland Urban Interface 25%+ and US Forest Service Housing Impact Index



Sources: See Appendix B. Climate Vulnerability Index Methodology; BERK 2025.

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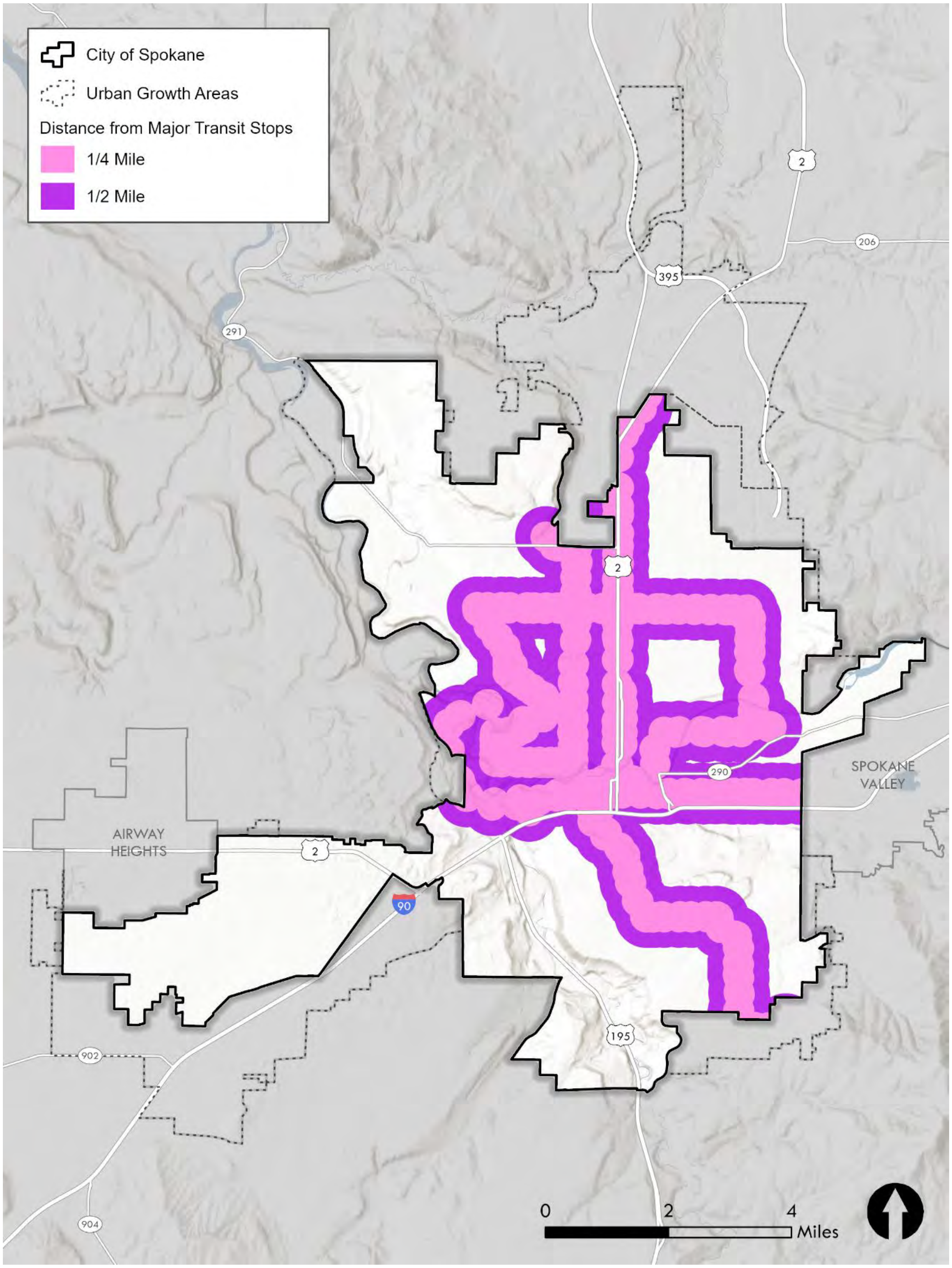
Exhibit 27, and many areas have wildland urban interface up to one mile inside city boundaries as shown in the CVI exposure indicators. (City of Spokane Fire Department, 2023) Extreme heat and changes to temperatures that can affect drought and wildfire risk are anticipated to increase per Exhibit 16 and could affect people's ability to move or play in or outside of their neighborhoods.

Changes to climate affect neighborhoods across the City of Spokane differently depending on the type of exposure and the quality of the built environment. Extreme heat events combined with a lack of greenspace and predominance of impervious areas such as in Northeast Spokane are shown with a higher vulnerability in Exhibit 8. This area has less than the city's average street trees and more people lack access to a vehicle, exposing residents to extreme heat or wildfire smoke. See CVI adaptive capacity indicators.

Neighborhoods in the central and north portions of the city, and some in the south, have relatively better access to transit per Exhibit 72. Areas with less access to centers and transit include the West Hills/Latah Valley area and West Plains near the airport. Many of the transit access areas have less tree canopy cover or shade structures, leaving transit riders exposed during extreme heat events. (The Lands Council, 2023)

Exhibit 72. Major Transit Service and Lands within a Quarter and Half Mile



Source: City of Spokane, 2025.

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More frequent and intense extreme precipitation events and more frequent flooding can damage homes, businesses, and infrastructure. For more discussion please see the **Infrastructure** section.

Tree Canopy, Heat Islands, and Redlining

Neighborhoods with more trees and less impervious surfaces tend to be cooler and more resilient to flooding as described in **Urban Forest**. The historical redlining of Black and other minority neighborhoods, where residents were denied access to financial services like mortgages and loans, is linked with more intense urban heat islands and exposes residents to more risk due to extreme heat than other communities. Households in these areas may also have less access to resources to retrofit their homes or make repairs. Redlined neighborhoods in the City of Spokane included East Central, West Central, and Hillyard, as well as parts of Logan and Chief Gary Park neighborhoods. See Exhibit 73, Exhibit 74, Exhibit 75, Exhibit 76, and **Urban Forest**.

Exhibit 73. Blocks with Vulnerable Communities Most at Risk of Extreme Heat

Neighbor-hood	Census Block Group	Exposure: Heat	Sensitivity: Health	Adaptive Capacity: Housing	Population Over 65	Percent BIPOC
Logan	530630018002	Very High	Very High	Low	14.4%	23.6%
Emerson-Garfield	530630024002	Very High	Very High	Low	26.2%	11.3%
Chief Gary Park	530630145001	Very High	Very High	Low	16.2%	44.6%
East Central	530630145003	Very High	Very High	Very Low	4.3%	21.5%

Source: BERK Consulting, Inc. 2025.

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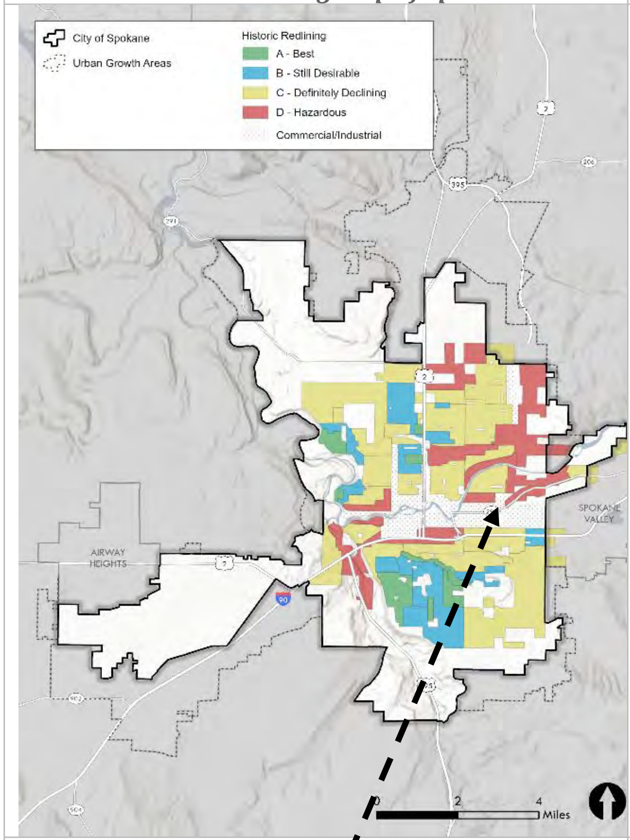
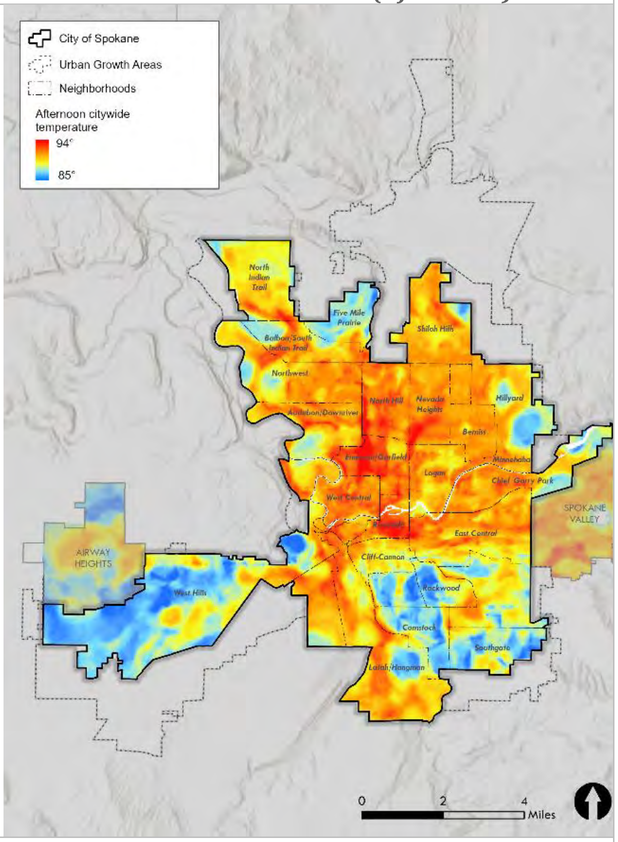
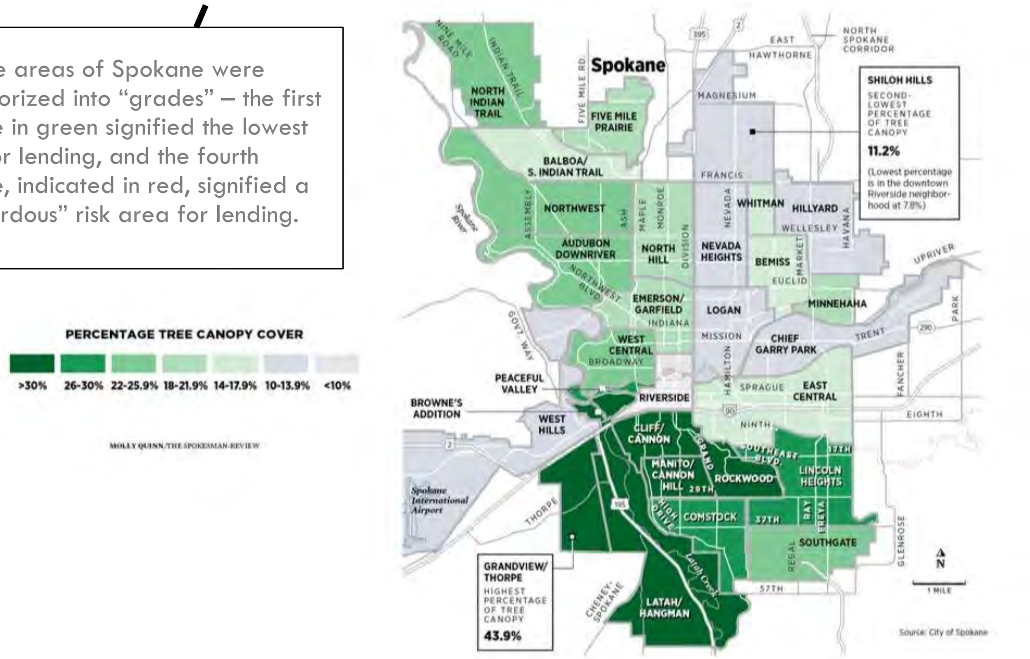
Exhibit 74. 1938 Redlining Map of Spokane	Exhibit 75. Urban Heat Islands (Afternoon)
	
Sources: City of Spokane Housing Action Plan, 2021; Digital Scholarship Lab, University of Richmond.	Source: (Gonzaga Institute for Climate, Water & Environment, 2024); BERK, 2025

Exhibit 76. Tree canopy Cover by Neighborhood in City of Spokane

Above areas of Spokane were categorized into "grades" – the first grade in green signified the lowest risk for lending, and the fourth grade, indicated in red, signified a "hazardous" risk area for lending.



Source: (The Lands Council, 2023)

Housing

The City of Spokane's housing availability and affordability is likely to be affected by climate hazards due to increasing energy costs and damage to buildings.

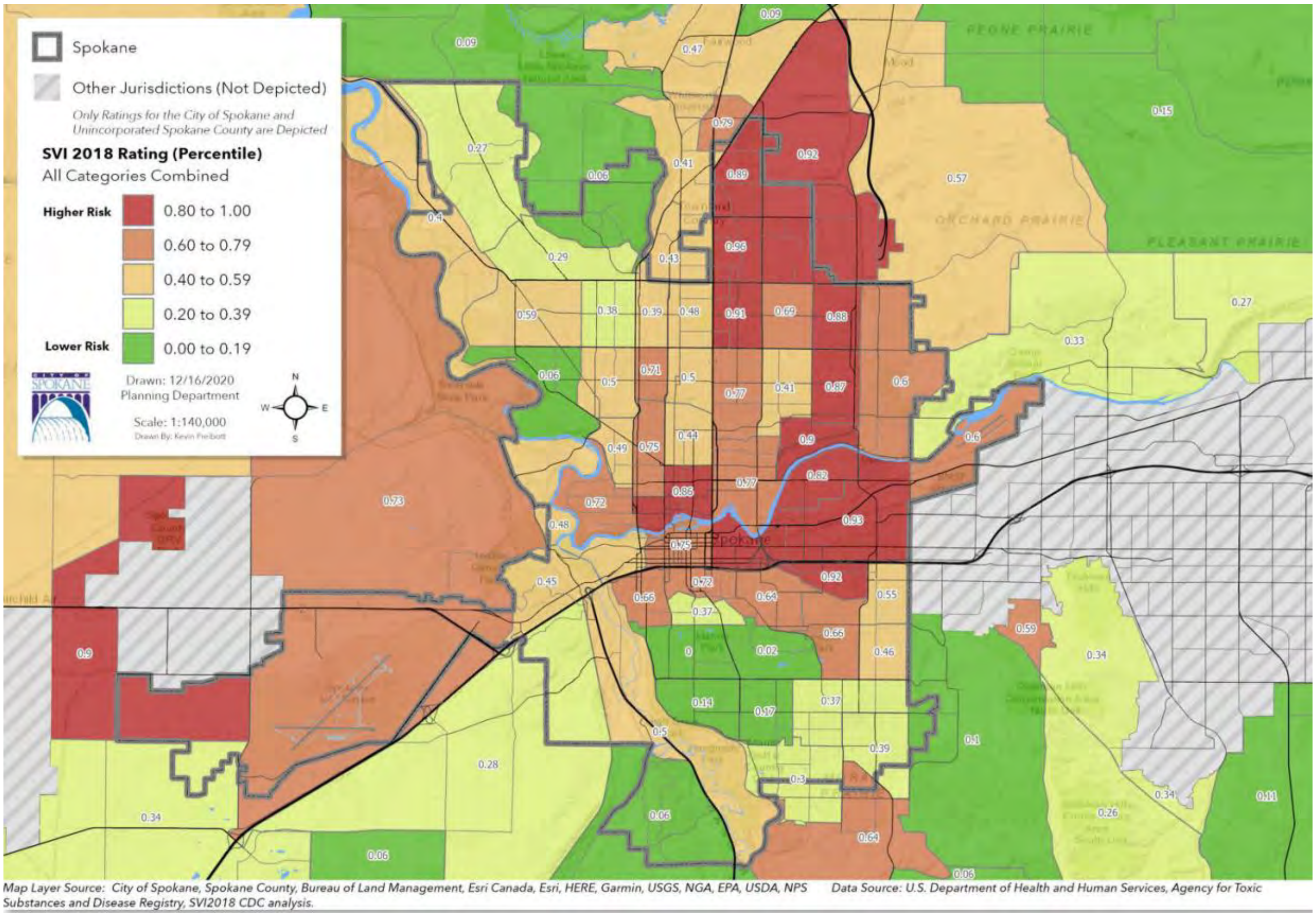
There are a total of 102,198 housing units in the City of Spokane (Washington OFM, 2024). 65% of these are single-unit homes, 34% are in buildings with two or more units, and the remaining are mobile homes. As described in Buildings, the total square footage of single-unit homes is more than six times that of multiunit buildings. Most of the residential areas of the city are zoned low density Residential 1, which allows for detached and attached single-unit homes and middle housing types. Multiunit and high-density zones are generally found near the city center, along major road corridors, and around the local colleges and universities. Almost half of the city's total housing stock was constructed prior to 1960 (see Exhibit 70**Error! Reference source not found.**).

Approximately 71% of the city's existing housing units are estimated to be affordable to households making less than 80% AMI (Spokane County, 2025). Some of these housing units are subsidized by organizations like the Spokane Housing Authority, which manages ten apartment buildings, including eight in city limits (Spokane Housing Authority, 2024). Other units in Spokane, such as older units and those in areas with less public and private investment, can also be affordable when rented or sold at market-rate.

Displacement risk is an issue in the City of Spokane, with many of the residential areas in the Northeast part of the city considered to be especially high risk of displacement (See Exhibit 77). According to the City's Housing Action Plan, nearly 2 in 5 households in the City of Spokane are cost burdened, including half of all renters (City of Spokane, 2021). Displacement risk is highest for census tracts in Northeast Spokane and close to downtown, where much of the city's historic redlining occurred (City of Spokane, 2021).

According to the City's 2024 point-in-time count, a total of approximately 2,000 people are experiencing homelessness in the City of Spokane (City of Spokane, 2025). People experiencing homelessness, particularly those who are unsheltered, are more exposed to extreme heat and smoke than the rest of the population.

Exhibit 77. Displacement Risk Compared to Housing Density



Source: Spokane Housing Action Plan, (2021)

Per Spokane County's Housing Allocation process, the City of Spokane is expected to see growth of more than 22,359 housing units between 2020 and 2046 (Spokane County, 2025). 69% of these units will need to be affordable to households making less than 80% of the area median income (AMI) in order to meet local housing needs as the city grows. There is also a projected need for 1,000 additional emergency housing beds.

Heat and smoke events in the City of Spokane have already put pressure on households due to the costs of air conditioning or lack of cooling. Many households cannot afford to buy an air conditioner and are therefore put in danger of heat-related illness during heat events. Others may have cooling systems but cannot afford the energy costs to run them for long periods. Poor building energy efficiency can make these costs especially difficult to manage. In Spokane, running an average air conditioning system continuously could cost around $4 to $6 per day or $28 to $42 for one week.[7] This is of high concern for Tribal and urban Native communities in the City of Spokane, who have reported community members going without cooling in heat events, increasing their risk of heat stroke and dehydration. Older buildings in the city often do not have adequate ventilation and cooling at all, exposing residents to unsafe air in heat and smoke events. Community survey results suggest that heating in winter is also a concern in terms of energy costs.

"Increases in cost of heating and cooling is significantly affecting our fixed income as retirees."
- Community Climate Planning Survey Respondent

"The hardest part for me is that there tends to be a high upfront cost to conservation. We live in an old house, which means we would have to make high-cost updates to increase the energy efficiency at home."
- Community Climate Planning Survey Respondent

Housing was identified as a significant concern, particularly in urban settings where many older buildings lack adequate ventilation and cooling systems. During extreme heat or wildfire smoke events, many residents lack safe, clean indoor air, making them more vulnerable to health issues.
- Tribal Engagement Group

Power outages and planned blackouts due to extreme heat have occurred in the past. This affects households' ability to use air conditioning and, as reported in engagement with Tribal communities, has also created challenges for medication storage, particularly for those relying on insulin.

Some populations are more likely to experience housing insecurity than others, including LGBTQIA individuals, who often have higher rates of poverty, lower rates of homeownership, and higher rates of homelessness (Williams Institute, 2020). Single-parent households also may experience financial pressure that affects housing security. A living wage in Spokane, which takes into account costs of housing, childcare, and other expenses, for one adult and one child is approximately $40 per hour working full time, compared to $22 per hour for a household of two working adults and one child (MIT, 2025). Single-parent or single-caregiver households are more than three times as likely to

[7] Based on an HVAC system at a power of 5 kW and 30% capacity, or a window unit at 6000 BTE/hour at 100% capacity, and price of $0.11 to $0.15 per kWh

be headed by women: 4% of households in Spokane have a female householder, children, and no partner present, whereas slightly over 1% have a male householder, children, and no partner present (U.S. Census Bureau, 2023). Impacts to household dynamics can also result from heat and smoke events. Events that require people to stay indoors can increase household stress, and where there is an unsafe or abusive domestic relationship in the household, this can put people in danger, particularly women, children, and LGBTQIA individuals who are more often victims of violence at home (Datzberger et. al, 2024; Human Rights Campaign, 2025; Spotlight Initiative, 2025).

The city's housing stock is likely to be affected by climate-related hazards over the next twenty years. Increases in the number of extreme heat days are likely to increase household energy costs for cooling, which could especially impact households that are already housing cost-burdened. As housing costs increase and displacement risks increase, a particular risk in Northeast Spokane, more people may move to lower-quality buildings without proper ventilation and air conditioning, increasing their exposure to heat and smoke. Others may experience housing instability or short or long-term homelessness, putting pressure on shelters, emergency housing, and supportive housing.

Increased impacts from flooding could impact the city's housing stock by damaging buildings, especially in East Central, Southgate, Lincoln Heights, and Grandview/Thorpe, and in areas along the Spokane River and Hangman Creek. Fire could also damage housing in the event of fires in the wildland-urban-interface at the city edges. Based on input from the Spokane Fire Department, ember showers also pose a high risk a mile or more from the wildland-urban-interface, putting large sections of the City at risk Damage to housing units from climate events could put even more pressure on the city's housing stock and affect its ability to meet housing needs as the city grows. Costs associated with repairs and increased energy use could also have affordability and displacement impacts.

In the broader context, Spokane may also experience in migration as climate impacts intensify in other parts of the country and Spokane's water source remains relatively stable, putting further pressure on the housing stock and other resources.

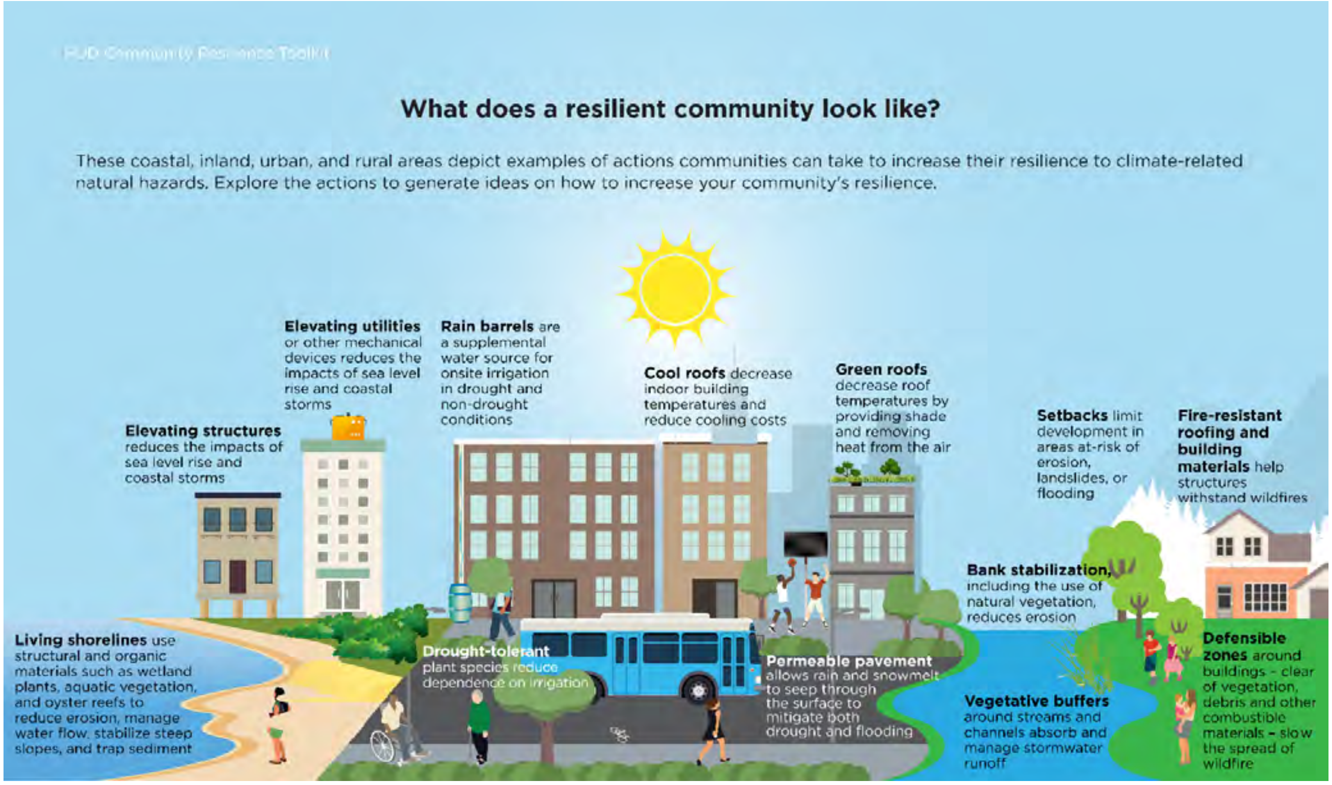
Adapting to a Changing Climate

The City could expand or add strategies to support more resilient community design, land use, and economic conditions.

Elements of Resilient Neighborhoods

Elements of resilience in community design, land use, and economic development include responding to and avoiding hazards, making efficient use of infrastructure and access to services, reducing demand for energy, and respecting natural systems. See Exhibit 78.

Exhibit 78. Resilient Community Design



Source: (US HUD, 2023)

Areas of the City of Spokane with high heat or fire/air quality exposure, high environmental sensitivity, but high adaptive capacity include:

Exhibit 79. Blocks with High Exposure and High Environmental Sensitivity but High Adaptive Capacity

Block Group	Neighbor-hood	Index Exposure	Index Sensitivity	Index Adaptive Capacity	Vulnerability Index	Positive Drivers
530630008001	Balboa / S Indian Trail	High	Very High	Very High	Moderate	Socio-economics, Housing, Transportation
530630008002	Balboa / S Indian Trail	Very High	High	Very High	Moderate	Same as above
530630009006	Northwest	Very High	High	High	High	Same as above plus Employment Moderate Tree Canopy

Block Group	Neighbor-hood	Index Exposure	Index Sensitivity	Index Adaptive Capacity	Vulnerability Index	Positive Drivers
530630106011	Northwest	Very High	Very High	Very High	High	Health, Socio-economics, Employment, Housing Moderate tree canopy
530630106033	N. Indian Trail	Very High	High	Very High	High	Same as above plus Environment including moderate tree canopy

Source: BERK Consulting, Inc. 2025.

Suggested Business, Housing, and Community Adaptation Efforts for Spokane

While there are areas of the City with greater resilience shared above, there are many areas of Spokane that lack resilience due to historical inequities and systemic challenges impacting the built environment like low tree canopy, urban heat island, and transportation-related pollution. Adaptation efforts supportive of resilient buildings, businesses, neighborhoods and housing include the following.

Retrofit existing buildings for cooling, air filtration, and energy conservation. New construction will be subject to energy codes, but existing buildings built prior to new standards are important to address for livability and comfort. As described under *Human Well-Being and Emergency Management*, offering air purifiers, heat pumps, and air conditioning systems supports human health. The City and other entities have recently taken some actions to assist retrofits. In 2024, the City of Spokane City Council voted to regulate that landlords can no longer ban tenants from installing air conditioning units unless it would violate building codes or cause unreasonable damage (see Section 10.57.170 Portable Cooling Devices).

Participants want to see enforcement of building codes and accountability for business practices that harm the environment. ~Climate Justice Focus Group, May 7, 2025

A “Spokane Connected Communities Project” from the U.S. Department of Energy will demonstrate a mix of grid interactive efficient buildings (GEBs). Activities of the project include planning and outreach as well as the development, deployment, and field testing of hardware (e.g. equipment controls, HVAC systems, solar PV, EV charging stations, battery storage, etc.) in the Spokane area (US Department of Energy, 2022). The City Department of Community, Housing, and Human Services also administers a Single Family Rehabilitation

Program that supports homeowners to complete various projects, including energy efficiency improvements (City of Spokane, 2025). Since almost 48% of the city's housing units were built prior to 1960, additional incentives and programs to retrofit buildings will assist community resiliency to extreme heat and wildfire smoke. Based on prior surveys by the Gonzaga Climate Center, home-based efforts are likely to be more welcomed by residents than resilience hubs (Vogel, 2023).

Incentivize or require green and cool roofs to reduce building temperatures and cool pavement in place of conventional dark pavements. The City of Spokane could further incentivize or require green roofs, cool roofs, or cool pavements in new developments and when implementing street improvements. Using green roofs where plants are grown on rooftops can result in temperatures that are 56°F lower than those of conventional roofs and reduce nearby air temperatures by up to 20°F. Green roofs can be installed on residential, commercial, or industrial buildings and can be installed in extensive (plants/vegetation) or intensive formats (park-like and with trees). Spokane has several areas where green roofs are referenced in the municipal code:

- Recommends but does not require green roofs in the Hamilton Form Based Code area (Section 17C.123.070).
- Under shoreline regulations, particularly the Downtown, Campus, and Great Gorge Districts, specific pervious standards of 10% to 20% are required and green roofs along with at grade plantings or permeable paving are offered as options to achieve the requirement (Section 17E.060.810, Section 17E.060.820, Section 17E.060.830, Section 17E.060.840).

Cool roofs are made of solar reflectance materials that remain cooler than traditional materials. (US EPA, 2025) A reflective roof could save energy in buildings with air conditioning, or improve comfort and safety in buildings without air conditioning. A cool roof covering could be installed during new construction, or when existing roofing is replaced. Some programs provide standard minimum values of solar reflectance and thermal emittance. (US Department of Energy, Undated) An example program identifying standards for high-reflective roofs and other ways to reduce heat islands is LEED. (U.S. Green Building Council, 2025)

Standard dark pavements absorb over 80-95% of sunlight, releasing it at night. Cool pavements absorb less heat such as reflective (high albedo) or permeable pavements. (WSP USA, 2019). The City of Spokane's stormwater management regulations requiring best management practices and permeable pavements are an example of cool pavement (Washington State Department of Ecology, 2019). With the extensive street system built over decades and existing parking lots serving commercial, industrial, and multifamily areas, addressing existing heat islands with reflective or permeable pavement will take time (Wen, H. and Chaney, P., 2015).

Prioritize tree canopy, cool corridors, and built shade installation on streets, public lands, and public and private parking lots. The Lands Council has a goal of planting 200 street trees each year with Northeast Spokane as a priority district, which has an average of 13% canopy coverage compared to 20% average citywide. (The Lands Council, 2023)

Cool corridors are prioritized locations along streets where trees are installed to promote pedestrian comfort, such as along streets with transit access and populations that have less access to vehicles.

Built shade involves shade structures or canopies installed in open spaces and play areas, in association with transit shelters, or solar carports, to protect people from heat. (City of Phoenix, 2024).

Collaboration with schools is also an opportunity to add tree canopy and other cooling features to schoolyards, which can reduce heat exposure for the school and immediate surroundings.

A 65 to 600 ft wide buffer may reduce particulate pollution by 40 to 75 percent although many factors will affect pollutant removal

Improve site and building design and install treed buffers along highways and roadways to improve local air quality. Addressing right-of-way treatments (treed buffer) and abutting site and building design (placing buildings further from highways, installing air filtration) can reduce exposure to air pollution due to high volume roadways, which could improve adaptive capacity both for day-to-day pollution exposures and increasing risks of climate impacts. *"Lower air temperature due to trees and other vegetation can reduce emissions of many temperature-dependent pollutants."* (Bentrup, 2008) (City of Bellevue, 2023)

Improve wildfire protection plans with more accurate risk maps, enhanced codes, and right tree, right place concepts. The City of Spokane estimates it has 4,200 acres of unimproved forestry property needing fuels reduction. The City's Community Wildfire Protection Plan currently involves:

- Wildland Urban Interface Code, adopted 2021,
- Wildland Resource Planner, hired 2022, who focuses on fuel reduction on untreated landscapes, education on home ignition zones, and public outreach and education .throughout the city.
- Wildland Fuels Reduction Program, with a Community Wildfire Defense grant and partnerships with Washington Department of Natural Resources, allowing fuels reduction on approximately 1,400 acres as of spring 2025, according to the Spokane Fire Department. Some of the treatment areas are inside the city limits and other areas abut the city limits. (Spokane Fire Department, 2025)

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Other local efforts include direct work with homeowners associations to encourage them to participate in the national FireWise program and the state Wildfire Ready Neighbor Program ,and sharing information about the Department of Natural Resources Cost Share Program, which offsets the cost of tree thinning. There is also a home hardening program through the Spokane County Conservation District. With more resources, the Spokane Fire Department could support more outreach, connecting more people to existing programs. The City's ongoing participation in the Spokane County Wildfire Mitigation Commission also helps identify opportunities for regional collaboration. Fuels reduction proposals could be coordinated with Tribes to both reduce fuels and improve cultural access. See **Cultural and Natural Resources**. A Forest Management Plan that looks to long-term management and funding could also support better fire resiliency.

Through the City staff Climate Technical Advisory Committee meetings and review, it was identified that more can be accomplished to strengthen understandings of risks and policy and code responses through:

- Improving the accuracy of wildland urban interface (WUI) mapping to also consider topography, direction, and fuel loads. The WUI should reflect risk within 1-2 miles of boundaries due to risk of embers moving along tree tops.
- Reviewing WUI code adopted in 2021 compared to newer codes.
- Considering right tree, right place concept for rights-of-way and on private property in programs and codes. For example, in rights-of-way, deciduous trees are not as combustible as pine trees, though pine trees are more drought-resistant. Additionally, trees may increase risk to homes and property in extreme weather, such as wind or winter storms. These issues could be factored into the SpoCanopy street tree program and the CoolCanopy backyard program on private property.

Adjust outdoor worker schedules and workloads for City Employees. A recent study found that adjusting work schedules to cooler hours of the day and reducing workloads from moderate to light levels can reduce the number of unsafe workdays and earnings at risk due to extreme heat, particularly if the two strategies are combined. (Licker, 2022) A local example includes that the City of Spokane has moved solid waste pick to earlier in the morning when there is extreme heat. The State of Washington now has year-round Outdoor Heat Exposure rules that have tiered standards starting at temperatures of 80°F, encouraging cool-down rest periods, shade, air conditioning, and cool drinking water. At above 90°F, employers must require a 10-minute paid cool down rest period every two hours. At above 100°F, they require for breaks is 15 minutes. (Washington State Department of Labor & Industries, 2024)

Encourage green jobs. The City can incentivize green jobs that provide environmental benefits and living wages through its economic development programs and zoning. This could include jobs related to renewable energy, energy efficiency, green construction, and others.

Climate solutions should include green jobs, especially for young people, canopy/tree planting, and increased transit. ~Climate Justice Focus Group, May 7, 2025

Green jobs are appealing, but must offer economic stability to be viable options. ~ Youth Focus Group, April 28, 2025

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Considerations for Comprehensive Plan

The intent of this climate risk and vulnerability assessment (CRVA) is to identify elements of the community vulnerable and at risk of impacts due to a changing climate as well as identify measures the City and community are taking to adapt to climate change. The CRVA can help the City further develop meaningful policies and strategies rooted in scientific evidence as well as by Spokane residents' lived experiences.

Exhibit 80 details opportunities to leverage existing strategies or develop new strategies to adapt to climate change impacts related to the findings of this CRVA including findings of community engagement. The strategies are organized by Sector. Strategies are drawn from authors' recommendations based on scientific and professional literature, existing activities by the City or State agencies that could be leveraged, the December 2023 Commerce Climate Planning Guidance (Washington State Department of Commerce, 2023), particularly the Climate Policy Explorer, the City of Spokane Climate Policy Audit, and other sources. The relevant exposure is noted. Co-benefits of the strategy are also noted.

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Exhibit 80. Matrix of Adaptation Strategies

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Human Well-Being and Emergency Management				
Public Health, Emergency Management Transportation	Expand access to cooling centers and hazard shelters Maintain and enhance strategies that provide access to cooling centers during extreme heat events	Extreme heat, Wildfire smoke	Prioritize, develop, and maintain mobility hubs in transportation-efficient locations — especially in overburdened communities experiencing a scarcity of transportation alternatives. (Climate Policy Explorer Measure)	▪ Enhances resilience. ▪ Improves air quality. ▪ Improves public health & wellbeing. ▪ Promotes economic development. ▪ Promotes equity & justice. ▪ Protects water quality. ▪ Provides cost savings. ▪ Supports housing supply & diversity.
Public Health, Emergency Management	Enhance air quality monitoring and public alert systems	Wildfire smoke	Develop and implement notification alerts in multiple languages within the community to reduce risk exposure to wildfire smoke and particulate matter. (Climate Policy Explorer Measure)	▪ Promotes equity and justice ▪ Provides cost savings ▪ Improves public health & well-being ▪ Improves air quality ▪ Builds community knowledge

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Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Public Health *+Buildings*	Implement community-based health interventions to build resilience	Extreme heat, Wildfire smoke	Develop and maintain a program to distribute cooling units and install heat pumps, prioritizing households with residents (e.g., low-income seniors) most vulnerable to extreme temperature events. (Climate Policy Explorer Measure)	▪ Promotes economic development ▪ Promotes equity and justice ▪ Provides cost savings ▪ Improves public health & well-being ▪ Improves air quality
Public Health	Invest in green infrastructure to reduce the impacts of extreme heat	Extreme heat	Increase tree canopy cover to boost carbon sequestration, reduce heat islands, improve stormwater infiltration, and improve air quality, prioritizing overburdened communities. (Climate Policy Explorer Measure, amended)	▪ Enhances resilience ▪ Promotes economic development ▪ Promotes equity and justice ▪ Provides ecosystem services ▪ Improves public health & well-being ▪ Protects water quality ▪ Improves air quality

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Emergency Management	Plan for emergency preparedness and future long-term resilience *Responds to Engagement Input: Language access and communication gaps are major barriers in both emergencies and ongoing climate education.* *~Climate Justice Focus Group, May 7, 2025*	Cross-cutting (multiple exposures)	Enhance emergency preparedness, response, and recovery efforts to mitigate risks and impacts associated with extreme weather and other hazards worsened by climate change. (Climate Policy Explorer Measure) Create evacuation plans and outreach materials to help residents plan and practice actions that make evacuation quicker and safer. (Climate Policy Explorer Measure)	▪ Promotes economic development ▪ Promotes equity and justice ▪ Provides cost savings ▪ Improves public health & well-being ▪ Builds community knowledge

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Cultural and Natural Resources				
Cultural Resources	Center Indigenous knowledge and leadership in climate adaptation Invest in Tribal and cultural infrastructure to improve climate resilience *Responds to Engagement Input: We're not just impacted—we are resilient. We carry knowledge systems that help our people adapt and thrive ~Tribal Engagement Group (TEG)*	Cross-cutting (multiple exposures)	Protect, enhance, and restore ecosystems in order to meet Tribal treaty rights and conserve culturally important consumptive and non-consumptive resources including foods, medicinal plants, and materials that could be adversely impacted by climate change. (Climate Policy Explorer Measure) Work with partners to establish and sustain a native plant nursery and seed bank to support long-term restoration and carbon sequestration efforts. (Climate Policy Explorer Measure)	▪ Sequesters carbon (mitigation) ▪ Improves salmon recovery ▪ Promotes equity and justice ▪ Provides ecosystem services ▪ Protects Tribal treaty rights ▪ Improves public health & well-being ▪ Protects water quality ▪ Builds community knowledge

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Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Food Systems	Strengthen resilience in Spokane's food system *Responds to Engagement Input: Residents support shared solutions like gardens, composting, and mutual aid ~Youth Focus Group, April 28, 2025*	Extreme heat, drought, extreme precipitation	Expand local food security [food action program, urban farms/farmers markets] and the food-related economy to address climate impacts and increase access to healthy, affordable, and climate-friendly foods and community gardens .(Climate Policy Explorer Measure, amended)	▪ Reduces emissions (mitigation) ▪ Sequesters carbon (mitigation) ▪ Promotes economic development ▪ Promotes equity and justice ▪ Provides cost savings ▪ Improves public health & wellbeing ▪ Builds community knowledge
Cultural Resources *+ Human Well-Being and Emergency Management*	Enhance community gathering places as resilience hubs.	Cross-cutting	Develop resilience hubs — community-serving facilities that are designed to support residents, coordinate communication, distribute resources, and reduce carbon pollution while enhancing quality of life. (Climate Policy Explorer Measure)	▪ Promotes equity and justice ▪ Provides cost savings ▪ Improves public health & well-being ▪ Builds community knowledge

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Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Parks, Trails, and Open Space	Protect and adapt Spokane's parks, open spaces, and shorelines	Cross-cutting	Establish a green belt of parks to support connectivity and non-motorized travel between housing, schools, and businesses across a community. Address co-management of parks wildlands with Tribes. (Climate Policy Explorer Measure, amended)	▪ Sequesters carbon (mitigation) ▪ Improves salmon recovery ▪ Provides ecosystem services ▪ Protects tribal treaty rights ▪ Protects water quality ▪ Improves air quality
Shorelines, Parks, Trails, and Open Space	Reinforce trail systems and restore shoreline habitats	Cross-cutting	Identify and plan for climate impacts to valued community assets such as parks and recreation facilities, including relocation or replacement. (Climate Policy Explorer Measure)	▪ Improves air quality. ▪ Improves public health & wellbeing. ▪ Protects water quality. ▪ Provides cost savings. ▪ Provides ecosystem services. ▪ Sequesters carbon (mitigation)

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Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Urban Forest	Expand and manage the City of Spokane's tree canopy for cooling and air quality	Extreme heat	Protect and enhance the climate resilience of urban forests by implementing climate-smart forest management. (Climate Policy Explorer Measure)	▪ Enhances resilience. ▪ Improves air quality. ▪ Improves public health & wellbeing. ▪ Protects water quality. ▪ Provides ecosystem services.
Infrastructure				
Energy	Consider expanding local renewable resources	Cross-cutting	Maximize renewable energy sources for the supply of electricity and heat to new and existing buildings. (Climate Policy Explorer Measure)	▪ Enhances resilience. ▪ Improves air quality. ▪ Provides cost savings.
Energy	Invest in public infrastructure to improve energy efficiency	Cross-cutting	Ensure that energy infrastructure — including generation and transmission — is able to accommodate renewable energy opportunities and to withstand and recover quickly from the impacts of extreme weather and other natural hazards worsened by climate change *[Note: City role could be through land use regulations and permitting]*	▪ Improves public health & wellbeing. ▪ Promotes economic development. ▪ Promotes equity & justice.

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Transportation *+ Community Design*	Plan for complete access to destinations within neighborhoods	Cross-cutting	Implement complementary, mixed land uses versus traditional zoning, such as locating business districts, parks and schools in neighborhoods to promote cycling, walking, and rolling to reduce driving. (Climate Policy Explorer Measure, amended)	▪ Improves air quality. ▪ Improves public health & wellbeing. ▪ Promotes economic development. ▪ Promotes equity & justice. ▪ Protects water quality. ▪ Provides cost savings.
Transportation	Enhance parallel walking, biking, rolling, and transit networks to ensure equitable access	Cross-cutting	Create a safe, well-connected, and attractive bicycle and pedestrian transportation network to encourage active transportation. (Climate Policy Explorer Measure)	▪ Enhances resilience. ▪ Improves air quality. ▪ Improves public health & wellbeing. ▪ Improves salmon recovery. ▪ Promotes economic development. ▪ Promotes equity & justice. ▪ Protects water quality. ▪ Provides cost savings.

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Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Transportation	Consider necessary changes to transit service during weather events	Cross-cutting	Support transit providers developing plans for each type of weather event and sharing these plans with the City and community. (CRVA Based Suggestion)	- Enhances resilience. - Improves public health & wellbeing.
Waste *+ Energy*	Consider expanding low-emission energy recovery from waste	Cross-cutting	Maximize renewable energy sources for the supply of electricity and heat to new and existing buildings. (Climate Policy Explorer Measure)	- Improves air quality. - Provides cost savings.
Water and Wastewater Infrastructure *+ Buildings*	Invest in upgrading gray and green infrastructure	Extreme heat, extreme precipitation	Develop a policy to allow municipal reclaimed water systems and allow onsite non-potable water systems to reduce water demand in private-sector commercial and residential buildings. (Climate Policy Explorer Measure, adapted)	- Improves salmon recovery. - Protects water quality.

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Transportation: Airport	Consider strategies for a climate-resilient Spokane International Airport.	Cross-cutting	Examples per ICAO International: Consider the potential impact of climate change when developing Master Plans. Develop effective communication channels with all airport stakeholders and local emergency management officials. (ICAO, Undated)	▪ Enhances resilience. ▪
Stormwater	Minimize runoff	Extreme precipitation, flooding	Require the use of green infrastructure and low-impact development to address increased storm intensities and stormwater runoff. (Climate Policy Explorer Measure)	▪ Improves public health & wellbeing. ▪ Improves salmon recovery. ▪ Protects tribal treaty rights. ▪ Protects water quality. ▪ Provides cost savings. ▪ Provides ecosystem services. ▪ Sequesters carbon (mitigation)

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Ecosystems & Water Resources				
Water Supply	Protect critical aquifer recharge areas	Extreme precipitation, drought	Protect and preserve water quality and quantity from drought, extreme heat, and other hazards exacerbated by climate change. Limit impervious areas to allow for groundwater recharge. (Climate Policy Explorer Measure, amended)	▪ Improves public health & wellbeing. ▪ Improves salmon recovery. ▪ Protects water quality.
Water Supply	Implement community-based water use efficiency	Extreme precipitation, drought	Manage water resources sustainably in the face of climate change through smart irrigation, stormwater management, preventative maintenance, water conservation and wastewater reuse, plant selection, and landscape management. (Climate Policy Explorer Measure)	▪ Builds community knowledge. ▪ Improves public health & wellbeing. ▪ Improves salmon recovery. ▪ Promotes equity & justice. ▪ Protects water quality. ▪ Provides cost savings. ▪ Provides ecosystem services.

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Critical Areas	Consider a "One Health" approach to habitat management (optimize the health of people, animals, and the environment)	Cross-cutting	Ensure the protection and recovery of ecosystems to provide healthy habitat in a changing climate. (Climate Policy Explorer Measure)	▪ Improves salmon recovery. ▪ Protects water quality. ▪ Provides ecosystem services. ▪ Sequesters carbon (mitigation)
Community Design, Land Use, and Economic Development				
Buildings, Businesses, Housing *+ Human Well-Being and Emergency Management*	Retrofit existing buildings for cooling, air filtration, and energy conservation Incentivize or require green and cool roofs to reduce building temperatures and cool pavement in place of conventional dark pavements	Extreme heat, wildfire smoke	Ensure that buildings use renewable energy, conservation, and efficiency technologies and practices to reduce greenhouse gas emissions. Examples include upgrading insulation, windows, or other elements in older homes. (Climate Policy Explorer Measure, amended)	▪ Enhances resilience. ▪ Improves air quality. ▪ Promotes equity & justice. ▪ Provides cost savings. ▪ Improves public health & wellbeing.

Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Community Design	Prioritize tree canopy, cool corridors, and built shade installation on streets, public lands, public and private parking lots *Responds to Engagement Input: Heat is isolating youth from outdoor activities, recreation, and social-emotional outlets. ~Youth Engagement Focus Group, April 28, 2025*	Extreme heat	Increase tree canopy cover to boost carbon sequestration, reduce heat islands, and improve air quality, prioritizing overburdened communities. (Climate Policy Explorer Measure) Maximize tree canopy[or solar canopy] coverage in surface parking lots. (Climate Policy Explorer Measure, amended)	▪ Enhances resilience. ▪ Improves air quality. ▪ Improves public health & wellbeing. ▪ Promotes economic development. ▪ Promotes equity & justice. ▪ Protects water quality. ▪ Provides ecosystem services
Buildings, Community Design	Improve site and building design and install treed buffers along highways and roadways to improve local air quality	Extreme heat	Consider treed buffers along highways and freeways to reduce temperature, remove air pollutants, and enhance energy conservation of buildings. (Bentrup, 2008)	▪ See above.
Buildings, Community Design	Improve wildfire protection plans with more accurate risk maps, enhanced codes, and right tree, right place concepts	Wildfire risk/smoke	Provide private forestland owners and residents living in Wildland-Urban Interface (WUI) areas information about fire prevention (e.g., Firewise) practices, and support application of such practices via building code provisions. (Climate Policy Explorer Measure)	▪ Builds community knowledge. ▪ Improves public health & wellbeing. ▪ Promotes equity & justice. ▪ Provides cost savings.

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Sector / Sub-Sector	Strategies/Ideas for Implementation	Exposure	EXAMPLE Climate Policy Explorer Measure or other Policy Source	Co-Benefits
Businesses	Adjust outdoor worker schedules and workloads for City Employees	Extreme heat, wildfire smoke	Protect the health and well-being of outdoor workers exposed to extreme heat and other climate-exacerbated hazards. For example, Scheduling heavy routine outdoor work during cooler times of day, scheduling breaks, providing shade elements, etc. (Climate Policy Explorer Measure, amended)	▪ Builds community knowledge. ▪ Improves public health & wellbeing. ▪ Promotes equity & justice.

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Appendix

Appendix A. Engagement Summaries

[Pending, see Community Engagement Summaries available at https://my.spokanecity.org/planspokane/climate-planning/.]

Appendix B. Climate Vulnerability Index Methodology and Risk

Appendix

Appendix A. Engagement Summaries

See Community Engagement Summaries available at https://my.spokanecity.org/planspokane/climate-planning/.

Appendix B. Climate Vulnerability Index Methodology and Risk

Spokane Climate Vulnerability Index

Indicators Description

Draft: May 15, 2025

Spokane is addressing Climate planning in its Comprehensive Plan to meet recent Growth Management Act (GMA) requirements in HB 1181. As part of that effort the City is preparing a Climate Risk and Vulnerability Assessment (CRVA). Climate vulnerability is defined as the combination of **exposure** to a changing climate, the inherent **sensitivity** of people or environments to a changing climate, and the **adaptive capacity** of the community and place to cope with the impacts of a changing climate.

To support the CRVA a Climate Vulnerability Index (CVI) has been developed to share geographical information. The Spokane CVI considers over 30 indicators of climate vulnerability and summarizes multiple sets of data into one measurement; the index allows for an "apples-to-apples" comparison across the community. The index identifies which census block groups are more or less vulnerable to extreme heat or extreme precipitation, ***relative*** to other areas in Spokane. The focus on comparing block groups within Spokane to each other differs from indices that compare census tracts or block groups in Spokane to others in the state (e.g., Washington State Department of Health Disparities Map) or the nation (e.g., EJScreen). The methodology to develop the CVI considers literature and studies about the effect of a changing climate on land, buildings, ecosystems, human health, economies, and more.[1]

The data include different climate hazard exposures, socioeconomic and health information, and built and natural environment data across the community. It also includes assets – people, places, and infrastructure that could be exposed to different climate related hazards.

[1] See for example: Yu, J. e. (2021). Geospatial indicators of exposure, sensitivity, and adaptive capacity to assess neighbourhood variation in vulnerability to climate change-related health hazards. *Environmental Health*, 20:31.

Administrative Boundaries

Exhibit 1. Administrative Boundaries – Layer List

Spatial Layer	Description	Source
Percent of Block Group Area within city limits	Blocks with 0%, 0-50%, and 51-100% inclusion in city limits. Allows for the calculation of index scores for city limits only (blocks with at least 50% inclusion in city limits) or full study area (city and urban growth area (UGA) combined).	US Census Bureau – block boundaries BERK – calculated share in city limits
Neighborhoods	Neighborhoods in Spokane	City of Spokane

Population and Race/Ethnicity

Population density is shown with 1 dot equaling a certain number of people (the map scales the people per dots based on the level of zoom). Population is based on the 2022 5-Year American Community Survey. Since population density will differ today and in the future based on the growth trends and potential policies of the Comprehensive Plan, population density can be an overlay on top of other layers. It can assist with policy development and resource prioritization.

Race and ethnicity is also provided along with block group information available when right clicking a block group. The data is based on the 2020 Decennial Census. See Exhibit 5. Adaptive Capacity Indicators – Layer List which includes Black, Indigenous, and People of Color (BIPOC) populations. These communities may have cumulative exposures to pollution and health and social disparities that can affect these communities' capacity to adapt to climate hazards. The BIPOC indicator is part of the Adaptive Capacity sub-index. Having the race/ethnicity data available outside of the index allows a person exploring the information to turn the information on top of other spatial information about assets, exposure, sensitivity, or other feature.

Population and race/ethnicity are represented for full block groups whether fully or partially in the city limits in order to accurately represent population density.

Critical Assets

Assets include communities, places, and infrastructure that could be exposed to different climate related hazards.

Exhibit 2. Critical Assets – Layer List

Spatial Layer	Source
Tribal Assets	
Locations of Tribal Importance	American Indian Community Center. Spokane Tribal Gathering Space, plaza adjacent to City Hall. Snxw Meneʔ (sin-HOO-men-huh). Rededicated to the Spokane Tribe in 2016. Formerly known as Canada Island.
Tribal Areas of Interest	Shows areas of interest for multiple tribes. These areas can be reviewed individually or overlapping. These are from the Department of Archaeology and Historic Preservation WISAARD map.
Public Facilities	
Airports	WSDOT
Public Schools	Washington State
Levees	Washington State Department of Ecology
Environmental Resources	
10-Year Wellhead Protection Areas	Washington State Department of Ecology
Aquifer	City of Spokane (Water Dept)
Hazardous Geology-Landslide Potential	This layer is a selection of geologic formations identified by Washington State Department of Natural Resources and adopted into the Spokane County Critical Area Ordinance as having a high susceptibility for landslides.
Wetlands	City of Spokane based on National Wetlands Inventory
City of Spokane Shoreline Jurisdiction	City of Spokane
Washington DNR Watercourses	Washington State Department of Natural Resources GIS Open Data

Spatial Layer	Source
Washington DNR Waterbodies	Washington State Department of Natural Resources GIS Open Data
Emergency Services and Medical Facilities	
Emergency Response & Law Enforcement	City of Spokane
Hospitals	Washington State
Clinics	Washington State DOH
Energy Facilities	
Dams	Dams | ArcGIS Hub (USDOT)
Electric Substations	Geospatial Energy Mapper (GEM)
Power Plants	Geospatial Energy Mapper (GEM)
Transmission Lines	Geospatial Energy Mapper (GEM)
Easements-Yellowstone Pipeline	City of Spokane Valley
Key Community Locations	
Parks	City of Spokane
Libraries	Spokane Public Library
Places of Worship	Esri World Geolocator
Food Access (Grocery Stores and Food Banks)	Esri World Geolocator
Restaurants	Esri World Geolocator
Commercial & Retail Locations	Buildings (City of Spokane)
Entertainment Venues	Open Street Map
Transportation Infrastructure	
City Streets	City of Spokane
Bridges – WSDOT	WSDOT - All Bridge and Tunnel Inventory (State & Local)
Bridges – City of Spokane	Bridge | City of Spokane
Sidewalks	City of Spokane
Trails	City of Spokane
Bike Lanes and Paths	City of Spokane
WSDOT Proposed State Highways	WSDOT - Functional Class - Overview
WSDOT State Route Climate Vulnerability	WSDOT

Spatial Layer	Source
Railroad	City of Spokane
Utilities	
Water Main	City of Spokane
Wastewater Treatment Plants	City of Spokane
Wastewater Sewer Overflow (CSO)	City of Spokane
Sewer Gravity Main	City of Spokane
Waste to Energy & Landfills	Entered manually from DOE

Exposure Indicators

Exposure identifies places that could be adversely affected by hazards including extreme heat, flooding, extreme precipitation, wildfire, and air pollution.

Exhibit 3. Exposure Indicators – Layer List

Indicator	Description	Source	Indicator Average in City Blocks
Average Land Surface Temperature	Illustrates Urban Heat Islands. Grid cell values averaged by block group.	LANDSAT8 / BERK Consulting. Heat Severity - USA 2023 - Overview (arcgis.com) (source data for the previous Trust for Public Land heat severity data)	39.2 °C Urban Heat Island Mean
Area within Flood Zone	100- and 500-yr Floodplains; potentially exacerbated by extreme precipitation. Percent area of intersection calculated.	FEMA/City of Spokane https://my.spokanecity.org/projects/floodplain-management-update/ https://www.fema.gov/flood-maps	3.2% of Area within Flood Zone
Area within Urban/Wildland Urban Interface	Percent area of intersection calculated with Interface and Intermix areas.	Washington Department of Natural Resources: DNR WUI Maps	28.3% of Area within Wildland/Urban Interface
Average Ozone Exposure	Ozone Concentration. Grid cell values averaged by block group.	NW-AIRQUEST Regional Background Design Values, 2014-2017 (Hosted on Idaho Department of Environmental Quality's	58.3 ppb Average Ozone Exposure

Indicator	Description	Source	Indicator Average in City Blocks
		Webpage); Washington Ambient Air Monitoring Network, Department of Ecology; Air Emissions Inventory, WA Department of Ecology; National Emissions Inventory, US EPA	
Average PM 2.5 Exposure	PM2.5 Concentration. Grid cell values averaged by block group.	NW-AIRQUEST Regional Background Design Values, 2014-2017 (Hosted on Idaho Department of Environmental Quality's Webpage); Washington Ambient Air Monitoring Network, Department of Ecology; Air Emissions Inventory, WA Department of Ecology; National Emissions Inventory, US EPA	19.05 µg/m3 PM2.5 Exposure
Change in Chance of Extreme Precipitation	Extreme Precipitation - Percent Change in Magnitude of 2-year Storm, RCP 8.5, 2040-2069 vs 1980-2009. Grid cell values averaged by block group.	UW Climate Impacts Group https://data.cig.uw.edu/climatemapping/.	16.7 % Change in Extreme Precipitation Event Magnitude

Sensitivity Indicators

Sensitivity addresses location of people with higher sensitivity to climate risks (due to health or demographic attributes) as well as the location of environmental conditions that predispose an area to be more at risk due to an exposure to climate hazards.

Exhibit 4. Sensitivity Indicators – Layer List

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
Population Under 5 years old	Percent of block group with population under 5 years.	ACS 2022 5-Year estimates for block group, Table B01001.	Children under 5 years of age are likely to experience higher risks for long-term mental health and socioeconomic impacts from climate hazards. They may be more susceptible to asthma, which can be made worse with increasing air pollution.	4.8%
Population Over 65 years old or Older	Percent of block group with population over 65 years.	ACS 2022 5-Year estimates for block group, Table B01001.	Older individuals are more susceptible to the negative health consequences of heat exposure.	16.9%
High Blood Pressure	Percent of tract adult population. Assign each block group the indicator value associated with its parent tract (all block groups within a common tract will have the same value).	CDC Places	Chronic medical conditions can be worsened by climate hazards. Increasing climate hazards can lead to more outdoor air pollutants and increased allergens and asthma, which can especially impact people with asthma and chronic obstructive pulmonary disease (COPD), among other illnesses.	28.3%
Asthma				12.1%
Coronary Heart Disease				5.5%
COPD (Chronic obstructive pulmonary disease)				6.7%
Diabetes				9.5%
Poor Mental Health				18.9%
Poor Physical Health				12.1%
Area within Potential Geologic Hazard	Percent of block group area intersecting hazard area.	City of Spokane	Extreme precipitation in the form of heavy rain and snow events could increase the frequency of landslides.	4.0%

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
Area with Steep Slopes	Percent of block group area intersecting hazard area.	UW DEM files (to cover both city and UGA)	See above. Steep slopes above 40% are considered at risk for landslides.	1.1%
Coverage by Impaired Waterbodies	Percentage of block group intersecting a 303d-listed freshwater stream or water body.	Ecology (303d)	Hazards such as increased stormwater runoff can further affect water quality, affecting people living near bodies of water.	0.33%

Adaptive Capacity Indicators

Adaptive Capacity includes indicators regarding the ability of people, places, and community assets to cope with changing climate conditions.

Exhibit 5. Adaptive Capacity Indicators – Layer List

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
BIPOC Share of Population	Percent of block group population. BIPOC refers to residents who identify as any race other than "White Alone" (e.g., Black, Indigenous, and persons of color) OR who identify as Hispanic/Latino (even if they identify as white).	ACS 2022 5-Year estimates for block group, Table B03002	BIPOC populations may have cumulative exposures to pollution and health and social disparities that can affect these communities' capacity to adapt to climate hazards.	19.7%
Limited English-Speaking Ability	Percent of block group population living in a household where no one	ACS 2022 5-Year estimates for block	Adults with limited English proficiency may not get important information and access to resources in climate	1.4%

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
	speaks English at least "Well."	group, Table B16004	events when information is not provided in a language they speak.	
People Living Alone	Percent of block group households.	ACS 2022 5-Year estimates for block group, Table B11001	People living alone are more likely to die in periods of unusually intense heat. People who live alone may not be checked on regularly during a climate emergency and have a higher risk of mortality compared to others who have social contacts and access to transportation.	34.9%
Population Living in Poverty	Percent of block group population experiencing poverty	ACS 2022 5-Year estimates for block group, Table B17021	Low-income communities tend to have greater sources of environmental risk, including higher ambient air pollution concentrations. Workers with low-income levels may experience more hardship associated with reduced pay from lost labor hours. Lacking financial resources also reduces a person's ability to respond to climate risks (e.g., their ability to rebuild their home, afford health care, or evacuate/relocate to a less risk-prone location)	15.7%
Persons with Disabilities	Percent of block group population with a disability.	2024 EJ Screen	Residents with disabilities may be impacted in several ways due to climate hazards. Emergency warnings may not address the needs of those with low vision, blindness, or hearing loss. Those with	17.1%

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
			mobility difficulties may have trouble getting to safe places during flooding and heat waves. A climate-related disaster may inconvenience and endanger those dependent on transit.	
Cost-Burdened Households	Percent of renter households spending more than 30% of income on housing	ACS 2022 5-Year estimates for block group, Table B25070	Housing cost burden can lead to financial stress and limit a household's ability to afford other essentials, such as healthcare and education.	43.7%
Energy Cost Burden	Percent of gross household income spent on energy costs, calculated by dividing the average housing energy cost by the average annual household income. A household with 6% or greater energy burden is considered to be a high energy burden household.	Energy.gov	Lower-income households may spend more of their income on energy expenses, and may live in poorly insulated housing and results in higher energy demand. Costs to install more resilient forms of energy may be a barrier.	2.3%
No High School Diploma	Percent of Population Age 25 or older with less than a high school degree	ACS 2022 5-Year estimates for block group, Table B15003	Individuals with lower educational attainment are at increased risk of ambient air pollution exposure and associated health effects. There may be barriers to understanding warning information and access to recovery information.	6.9%
College Degree	Percent of block group population	ACS 2022 5-Year estimates	See above.	32.3%

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
		for block group, Table B15003		
Unemployment	Unemployment rate	ACS 2022 5-Year estimates for block group, Table B23025	The potential loss of employment following a disaster exacerbates the number of unemployed workers in a community, contributing to a slower recovery from the disaster.	6.7%
Median Household Income	Median annual income of households in the block group	ACS 2022 5-Year estimates for block group, Table B19013	See poverty above for effects on persons with lower incomes. Those with higher incomes may have more resources to respond to the climate hazard.	$68,295
No Health Insurance	Percent of block group population	CDC Places	People without health insurance may be more vulnerable to the potential health effects of heat exposure, and more impacted economically by seeking emergency services.	8.2%
Outdoor Professions	Percent of jobs in sectors likely to be performed outdoors (NAICS 11, 21, 23)	ACS 2022 5-Year estimates for block group, Table C24030	Outdoor workers are exposed to heat and smoke. They and other people dependent on natural resources may also experience anxiety and consequences to their economic stability from income loss.	6.5%
Poor Housing Condition	Percent of housing units built before 1960	ACS 2022 5-Year estimates for block	Homes built prior to modern building codes were often built without prioritization of energy efficiency, e.g., without insulation and with	53.7%

Indicator	Description	Source	Discussion	Indicator Average in City Blocks
		group, Table B25034	single-paned windows. These can be energy cost burdens to occupants and expensive to retrofit.	
Access to Open Space	Residential properties within a 10-minute walk of park or open space.	Spokane Park Master Plan for in-city. Calculated for UGA.	Access to open space can reduce the rate of chronic diseases, and can improve resilience to climate change.	88
No Access to Vehicle	Percent of block group population without regular access to a vehicle.	ACS 2022 5-Year estimates for block group, Table B25044	A lack of access to a vehicle could limit people's ability to move to safer locations during extreme weather events, access essential resources like food and water, and impede adaptation post impact.	9.9%
Access to Transit	Number of transit stops within the block group.	Spokane Transit	Transit dependent residents may face extreme weather disruptions.	5.6
Tree Canopy	Percent tree canopy coverage	NLCD - National Land Cover Database	Indicators like lack of tree canopy can represent an environmental injustice while also being highly correlated with urban heat islands, a climate impact.	13.7%
Impervious Surface	Percent impervious surface coverage	NLCD - National Land Cover Database	High amounts of impervious surface contribute to urban heat islands, higher energy consumption, elevated emissions of air pollutant, and higher daytime and evening temperatures. Impervious surface may also hinder capacity to adapt to extreme precipitation.	49.5%

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Climate Context Data

Exhibit 6. Planning Source Data – Layer List

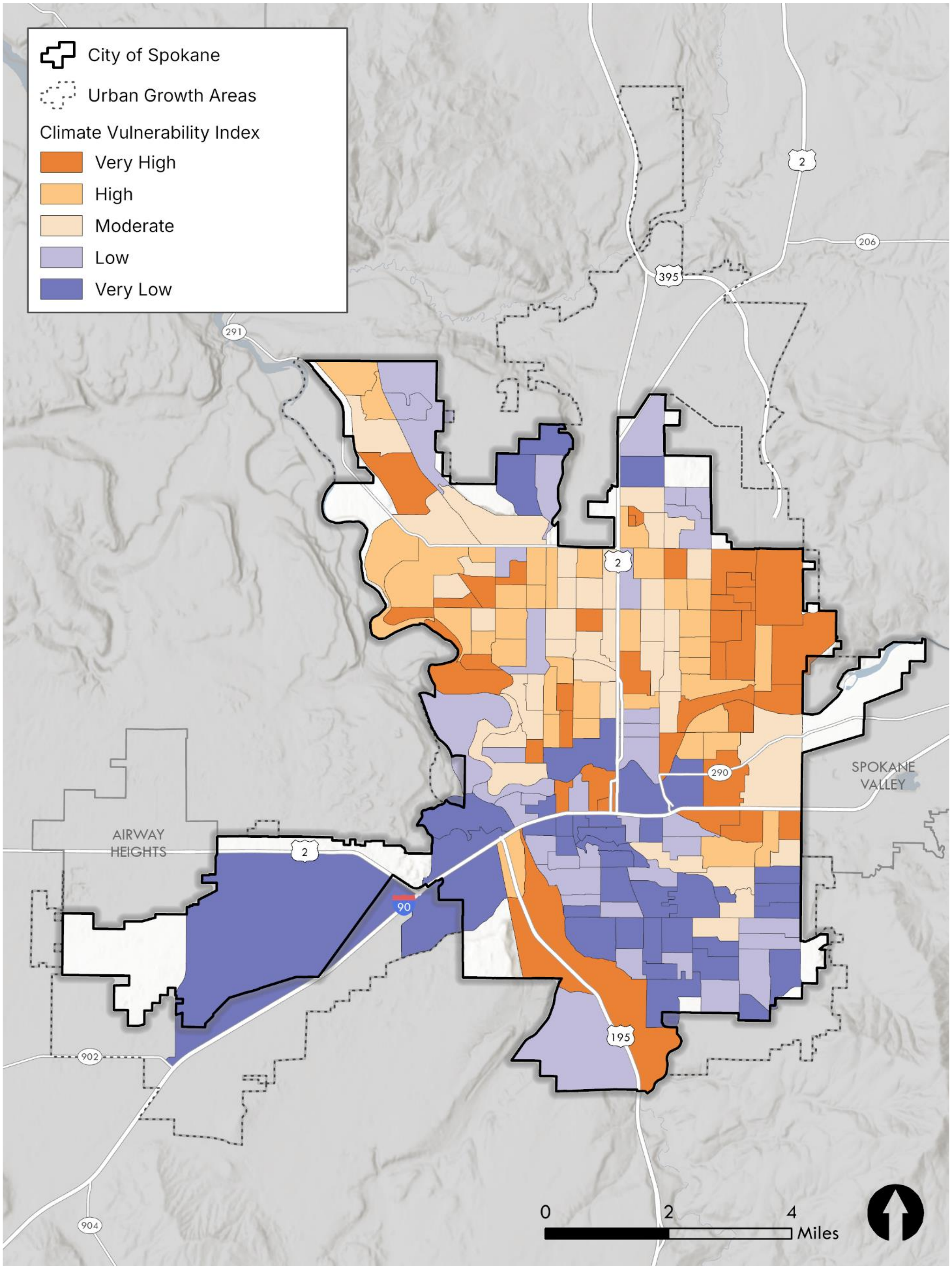
Spatial Layer	Description	Source
Flood Hazards	FEMA 100-Year and 500-Year data.	FEMA and City of Spokane https://my.spokanecity.org/projects/floodplain-management-update/ https://www.fema.gov/flood-maps
Historic Redlining	Redlining is a "ranking system that categorizes neighborhoods as more or less impoverished largely based on the race of the residents. Government maps were created so that banks could determine where it was a "safe" bet to lend money to residents." Areas of Spokane were categorized into "grades" – the first grade in green signified the lowest risk for lending, and the fourth grade, indicated in red, signified a "hazardous" risk area for lending. The historical redlining of Black and other minority neighborhoods is linked with more intense urban heat islands and exposes residents to more risk due to extreme heat than other communities.	Spokane Housing Action Plan, 2021 and City of Spokane GIS Data source, Digital Scholarship Lab, University of Richmond, *Mapping Inequality: Redlining in New Deal America*: https://dsl.richmond.edu/panorama/redlining/
Projected Change in Extreme Heat Days	Change in Days with Maximum Humidex Above 90° F, RCP 8.5, 2040-2069 vs 1980-2009. Assigned value of corresponding grid cell within which the tract falls.	UW Climate Impacts Group https://data.cig.uw.edu/climatemapping/. Due to level of granularity in data and availability of other sources, this layer is not included in the Exposure sub-index.

Spatial Layer	Description	Source
Projected Change in High Fire Danger Days	Change in the number of days per year, relative to 1971 - 2000, with high fire potential based on dry fuels, fuel moisture below the 20th percentile.	UW Climate Impacts Group https://data.cig.uw.edu/climatemapping/. Due to level of granularity in data and availability of other sources, this layer is not included in the Exposure sub-index.
Wildland Urban Interface	Source layer for the Area within Urban/Wildland Urban Interface layer in Exposure.	Washington State Department of Natural Resources, DNR WUI Maps
Wildfire Risk to Communities Housing Unit Impact	The data depict components of wildfire risk specifically for populated areas in the United States. These datasets represent an index that incorporates the general consequences of fire on a home as a function of fire intensity and uses flame length probabilities from wildfire modeling to capture likely intensity of fire.	USDA, US Forest Service, 2024 Housing Unit Impact
Gonzaga Urban Heat Island Mapping, July 2022	2022 Heat Watch Spokane	Developed by Gonzaga University Institute for Climate, Water, and the Environment. Field data was collected in Spokane on July 16, 2022. Model output includes predicted morning, afternoon, and evening temperatures citywide. https://www.gonzaga.edu/climate-institute/our-work/climate-resilience-project/understanding/heat-mapping

Climate Vulnerability Index Maps

Based on the method and indicators, the overall Climate Vulnerability Index results are shared for the block that primarily lie in city limits. A similar evaluation was conducted addressing blocks that intersect with the unincorporated urban growth area (UGA) abutting the City of Spokane. This captures blocks in Latah/Hangman and Chief Gary Park that straddle the city/UGA boundary. Because the dataset is expanded and indicator averages shift, some blocks shift in quintile scores slightly.

Exhibit 7. City of Spokane Climate Vulnerability Index



Source: BERK Consulting, Inc. 2025.

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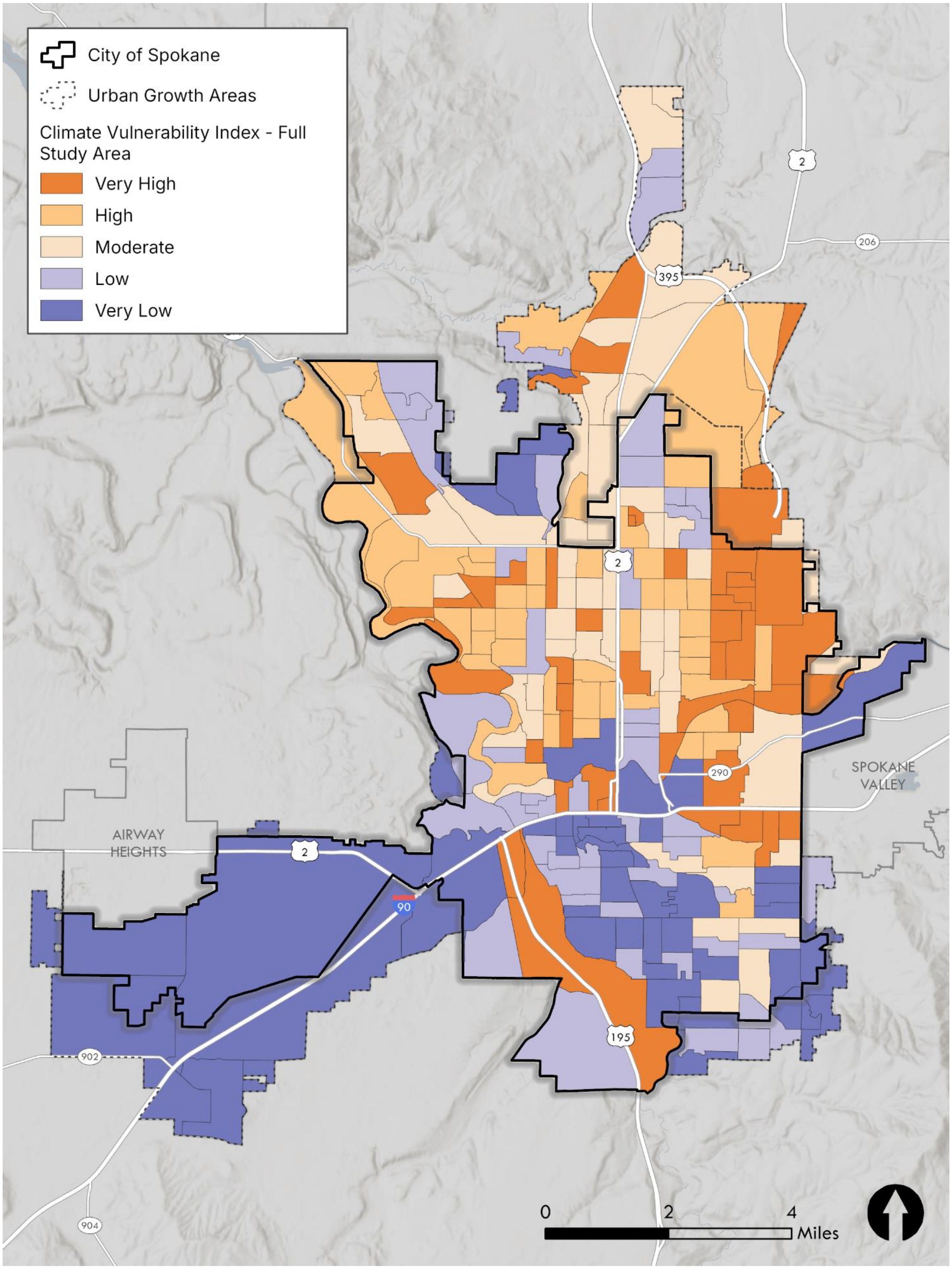
Exhibit 8. City of Spokane Climate Vulnerability Index: City and Urban Growth Area



Source: BERK Consulting, Inc. 2025.

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Spokane Climate Risk and Vulnerability Assessment: Risk Method

Introduction

The City of Spokane is developing a Climate Risk and Vulnerability Assessment (CRVA) for the following focus areas and sectors:

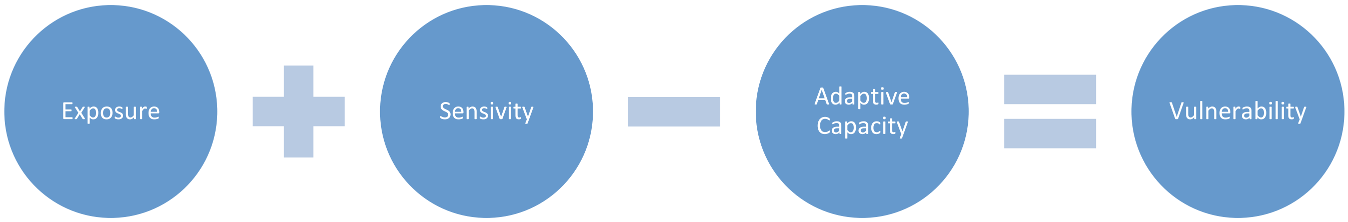
Exhibit 1. City of Spokane Climate Risk and Vulnerability Assessment Focus Areas and Sectors

Focus Area	Sectors Included
Human Well-being and Emergency Management	▪ Public Health ▪ Social Services ▪ Emergency Management
Cultural and Natural Resources	▪ Cultural Resources ▪ Food Systems ▪ Parks, Trails, and Open Spaces ▪ Urban Forests
Infrastructure	▪ Energy ▪ Transportation ▪ Waste ▪ Water and Wastewater Infrastructure
Ecosystems and Water Resources	▪ Critical Areas ▪ Water Supply ▪ Stormwater
Community Design, Land Use, and Economic Development	▪ Buildings (Residential, Commercial, Industrial, Office) /Major Facilities (Public and Event) ▪ Businesses ▪ Neighborhoods (based on Neighborhood Council boundaries) ▪ Housing

Vulnerability is the degree to which communities, assets, and natural systems will be impacted by a changing climate. It is defined using a framework that has three general components: exposure, sensitivity, and adaptive capacity, that are used to understand how climate risks will affect human, natural, and built systems; these terms are defined below and the approach is illustrated in Exhibit 2:

- **Exposure** incorporates the frequency and magnitude of climate impact.
- **Sensitivity** emphasizes the degree to which people, the environment, or other systems will be affected by, or respond to, a given climate shock or stress (e.g., extreme heat).
- **Adaptive capacity** is the capacity of individuals, communities, businesses, governments, institutions, or the natural environment to adapt or adjust to a disturbance, reduce long-term damage, take advantage of opportunities, and cope with consequences.

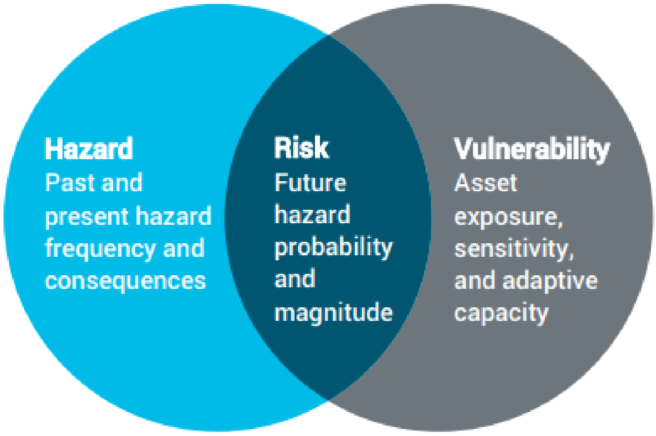
Exhibit 2. Vulnerability Elements



Source: (US Climate Resilience Toolkit, 2024)

According to the Department of Commerce's Climate Element Planning Guidance, *risk is a compound concept — encompassing a hazard's probability and magnitude of occurrence — which describes the chance of sustaining a substantial loss.* Commerce suggests that the cities and counties can identify hazard-asset pairs, and criteria relevant to risk for those pairs. (Washington Department of Commerce, 2023)

Exhibit 3. Relationship Between Hazard, Vulnerability, and Risk



Source: (Washington Department of Commerce, 2023)

Since the City of Spokane Climate Vulnerability Index (CVI) includes indicators and quantile scores, some blend of quantitative and qualitative criteria are helpful to the planning-level identification of risk and the locations in city limits to identify where the City of Spokane could focus its efforts to adapt to climate change.

Method to Determine Risk

To determine risk, the City of Spokane CVI is used since it combines over 30 indicators for census blocks in the city. Considering science and local conditions, individual or groups of indicators can be compared to develop relative risk.

The steps are numbered below with associated tables.

1. **Select** one exposure and adaptive capacity or sensitivity indicator relevant to risk per climate resilience literature. Two or three individual indicators can be compared or groups of indicators can be compared.

Exhibit 4. Indicator List

Index	Sub-Index	Indicator
Exposure	Heat	E Humidex 8.5 Weighted Avg
Exposure	Heat	E Urban Heat Island Mean
Exposure	Flooding and Precipitation	E HeavyPrecip Weighted Avg
Exposure	Flooding and Precipitation	E Flood Coverage
Exposure	Fire Smoke Air Quality	E WUI_Coverage

Index	Sub-Index	Indicator
Exposure	Fire Smoke Air Quality	E PM 2.5 Weighted Avg
Exposure	Fire Smoke Air Quality	E Ozone Weighted Avg
Sensitivity	Age	S Over 64 Percent
Sensitivity	Age	S Under 5 Percent
Sensitivity	Environment	S GeoHazard Coverage
Sensitivity	Environment	S Water Quality Coverage
Sensitivity	Environment	S Steep Slopes Coverage
Sensitivity	Health	S Hypertension Percent
Sensitivity	Health	S Asthma Percent
Sensitivity	Health	S Heart Disease Percent
Sensitivity	Health	S COPD Percent
Sensitivity	Health	S Diabetes Percent
Sensitivity	Health	S Poor Mental Health Percent
Sensitivity	Health	S Poor Physical Health Percent
Adaptive Capacity	Socioeconomic	AC People of Color Percent
Adaptive Capacity	Socioeconomic	AC Linguistic Isolation Percent
Adaptive Capacity	Socioeconomic	AC Living Alone Percent
Adaptive Capacity	Socioeconomic	AC No Vehicle Percent
Adaptive Capacity	Socioeconomic	AC Below Poverty Percent
Adaptive Capacity	Socioeconomic	AC Housing Cost Burden Percent
Adaptive Capacity	Socioeconomic	AC Median Household Income
Adaptive Capacity	Socioeconomic	AC Less than High School Percent
Adaptive Capacity	Socioeconomic	AC College Degree Percent
Adaptive Capacity	Employment	AC Unemployed Percent
Adaptive Capacity	Employment	AC Outdoor Professions Percent
Adaptive Capacity	Housing	AC Built before 1960 Percent
Adaptive Capacity	Socioeconomic	AC Disability Percent
Adaptive Capacity	Health	AC No Health Insurance Percent
Adaptive Capacity	Transportation	AC Access to Transit
Adaptive Capacity	Environment	AC Impervious Coverage
Adaptive Capacity	Environment	AC Tree Canopy Coverage
Adaptive Capacity	Socioeconomic	AC Energy Cost Burden
Adaptive Capacity	Environment	AC Access to Open Space Percent

Legend: E – Exposure, S – Sensitivity, AC – Adaptive Capacity
WUI – Wildland Urban Interface | COPD – chronic obstructive pulmonary disease

2. **Consider** how close scores of each census block are to the average looking at a standard deviation and **quintile scores**. See Exhibit 5 and Exhibit 6 as examples.

Exhibit 5. Indicator 1 and 2 and Combined Risk

Exposure: Urban Heat Island Mean	Sensitivity: Over 64 Years of Age, Percent	Combined Risk
High	High	**High**
High	Very High	**Very High**
Very High	High	**Very High**
Very High	Very High	**Very High**

Note: Selected blocks reported for example.

Exhibit 6. Indicator 1, 2 and 3 and Combined Risk

Exposure: Urban Heat Island Mean	Sensitivity: Over 64 Percent	Adaptive Capacity: Living Alone Percent	Combined Risk
High	High	Very High	**Very High**
High	High	Very Low	**Moderate**
High	High	Moderate	**High**
High	High	Very Low	**Low**
High	Very High	High	**Very High**
High	High	Very Low	**Moderate**
High	High	High	**Very High**
Very High	High	Moderate	**High**
Very High	High	High	**High**
High	High	Very Low	**Moderate**
Very High	High	Very High	**Very High**
Very High	Very High	Very High	**Very High**
High	Very High	Very High	**Very High**
Very High	High	Very High	**Very High**
Very High	Very High	Very Low	**Very High**
High	High	Moderate	**High**
Very High	Very High	High	**Very High**
Very High	High	High	**Very High**
Very High	Very High	Very High	**Very High**
High	Very High	High	**Very High**
Very High	High	High	**High**

Exposure: Urban Heat Island Mean	Sensitivity: Over 64 Percent	Adaptive Capacity: Living Alone Percent	Combined Risk
Very High	High	High	**Very High**
Very High	Very High	Very High	**Very High**
High	High	Low	**High**
High	Very High	Very High	**Very High**

Note: The combined risk can vary even if the qualitative quintile results are similar due to the block's score and the average across the selected indicators. A "very high" label could be the equivalent of an 81st percentile or it could be a 98th percentile, but the difference between those impacts affects the total risk score, which is averaged across the three selected indicators.

3. **Compare indicators and identify census blocks more at risk**.

Air Quality and Health: Respiratory illness (e.g., asthma or Chronic Obstructive Respiratory Disease) and respiratory illness-related hospitalizations will become more common due to declining air quality such as due to transportation sources along highways, further exacerbated by wildfires, increased pollen production, and increased ground-level ozone (Chang., et al., 2023). See Exhibit 7. The area most affected is Hillyard in Northeast Spokane if considering single indicator comparisons.

Exhibit 7. Example 1A – Public Health Sector: High Heat, High Ozone, COPD and Selected Demographics

Census Block Group	City Neighbor-hood	Exposure: E Humidex 8.5 Weighted Avg	Exposure: E Ozone Weighted Avg	Sensitivity: S COPD Percent	Combined Risk
530630002012	Hillyard	Very High	High	Very High	Very High
530630002021	Hillyard	Very High	High	Very High	Very High
530630144001	Hillyard	Very High	High	High	High

Source: CVI Tool, BERK, 2025.

- Total Block Groups: 3
- Total BG Population: 2,351 (1.0% of city)
- City Population (OFM 2024): 233,000

If considering grouped indicators for heat, smoke/air quality, and the full range of health indicators (respiratory, heart, and others), a wider range of blocks is highlighted. In that case considering demographics could help identify blocks that could use additional attention in adaptation. See Exhibit 8.

Exhibit 8. Example 1B – Public Health Sector: High Heat, High Smoke, High Health Sensitivity and Selected Demographics

Census Block Group	City Neighborhood	Exposure: Heat	Exposure: Fire Smoke Air Quality	Sensitivity: Health	Pop. Over 65	% BIPOC*
530630016002	Bemiss	High	Very High	Very High	14.4%	24.1%
530630016003	Bemiss	Very High	Very High	Very High	29.9%	15.2%
530630016001	Bemiss, Hillyard	Very High	Very High	Very High	6.7%	39.2%
530630018002	Bemiss, Logan	Very High	High	Very High	14.4%	23.6%
530630026001	Chief Garry Park	High	Very High	Very High	13.0%	29.7%
530630145003	Chief Garry Park, East Central	Very High	High	Very High	4.3%	21.5%
530630002012	Hillyard	Very High	Very High	Very High	17.9%	14.3%
530630002021	Hillyard	Very High	Very High	Very High	12.3%	15.0%
530630002022	Hillyard	Very High	Very High	Very High	8.8%	22.7%
530630144001	Hillyard	Very High	Very High	High	13.8%	19.3%
530630144004	Hillyard, Minnehaha	High	Very High	High	13.9%	4.6%
530630018001	Logan, Minnehaha	High	High	Very High	27.8%	17.0%
530630144003	Minnehaha	High	Very High	High	10.8%	30.2%

General Note: The combined risk can vary even if the qualitative quintile results are similar due to the block's score and the average across the selected indicators. A "very high" label could be the equivalent of an 81st percentile or it could be a 98th percentile, but the difference between those values impacts the total risk score, which is averaged across the three selected indicators.
Note: * Black, Indigenous, Persons of Color – BIPOC
Source: CVI Tool, BERK, 2025.

- Total Block Groups: 13
- Total BG Population: 15,157 (6.5% of city)
- City Population (OFM 2024): 233,000

Extreme Precipitation, Flooding, and Transportation: Flooded areas, including those resulting from clogged storm water drains, can prevent transit, rail, and personal vehicles from passing and block walking, rolling, and biking facilities as well as bus stops.

The blocks in northwest Spokane in Audubon/Downriver, Latah/Hangman, and Lincoln Heights as have very high exposure, very high environmental sensitivity (slopes), and very low access to transit which could be locations to focus emergency evacuation plans. See Exhibit 9Additional consideration for prioritization of adaptive capacity efforts: Older adults have limited mobility, increasing their risks before, during, and after an extreme weather event:

- Spokane residents 65 to 74 years: 27.9% of the age group have a disability
- Spokane residents 75 years and over: 52.2% of the age group have a disability

Several blocks have particularly high shares of persons over 65 years of age.

Exhibit 9.

Additional consideration for prioritization of adaptive capacity efforts: Older adults have limited mobility, increasing their risks before, during, and after an extreme weather event[1]:

- Spokane residents 65 to 74 years: 27.9% of the age group have a disability
- Spokane residents 75 years and over: 52.2% of the age group have a disability

Several blocks have particularly high shares of persons over 65 years of age.

Exhibit 9. Example 2 – Extreme Precipitation, Environmental Sensitivity (Landslide/Slopes/Water Quality), Low Transit Access, Age over 65 Years Old

Census Block Group	City Neighborhood	Exposure: E Flood Coverage	Sensitivity: S Steep Slopes Coverage	Adaptive Capacity: AC Access to Transit	Combined Risk	Pop. 65 years +
530630010005	Audubon/Downriver	Very High	Very High	Very Low	Very High	33.2%
530630106011	Audubon/Downriver, Northwest	High	Very High	Very Low	Very High	12.1%
530630026004	Chief Garry Park	High	High	Low	Low	5.8%
530630136001	Grandview/Thorpe	High	Very High	Very Low	Low	12.1%
530630039001	Latah/Hangman	Very High	Very High	Very Low	Very High	35.3%
530630039002	Latah/Hangman	Very High	Very High	Very Low	Very High	24.3%
530630046012	Lincoln Heights	Very High	Very High	Very Low	High	25.8%
530630144003	Minnehaha	Very High	High	Low	Moderate	10.8%
530630045002	Rockwood	High	High	Very Low	Very Low	20.6%

Note: The combined risk can vary even if the qualitative quintile results are similar due to the block's score and the average across the selected indicators. A "very high" label could be the equivalent of an 81st percentile or it could be a 98th percentile, but the difference between those values impacts the total risk score, which is averaged across the three selected indicators.

[1] See: https://www.epa.gov/climateimpacts/climate-change-and-health-older-adults.

Source: CVI Tool, BERK, 2025.

- Total Block Groups: 9
- Total BG Population: 12,042 (5.2% of city)
- City Population (OFM 2024): 233,000

Risk analysis for the sectors are summarized in the 2-page focus area sheets with each major focus area, and details are in an appendix to the CRVA.

Summary Vulnerability and Risk Matrix

Draft 5/15/2025

Focus Areas	Sectors	Indicators	Climate Impacts	Exposure	Sensitivity	Adaptive Capacity	Vulnerability	Risk
Human Well-Being and Emergency Management	Public Health	Rates of injury and illness	Extreme Heat, Wildfire Smoke	High	Very High	Low	High	High
		Access to medical care	Wildfire, Flooding	High	High	Moderate	Moderate	Moderate
	Social Services	General social services	All	High	Very High	Moderate	High	Moderate
		Childcare and Educational Facilities	All	High	High	Low	Moderate	Moderate
		Correctional facilities	Extreme Heat, Wildfire Smoke	Moderate	Very High	Low	High	Moderate
	Emergency Management	Critical facilities	All	High	Very High	Moderate	High	High
		Major transportation routes	All	High	High	Low	Moderate	High
		Gathering spaces (schools, libraries)	Extreme Heat, Wildfire Smoke	High	High	Moderate	High	High
Cultural and Natural Resources	Cultural Resources	Social and Tribal Service Centers	All	High	Very High	Moderate	Very High	High
		Community and Tribal Gathering Places	All	High	High	Low	High	High
		Cultural and Heritage Assets and Sites	All	High	Very High	Low	Very High	High
		Schools & Education	Extreme Heat, Wildfire Smoke	High	High	Moderate	High	High
		Libraries	All	Moderate	Moderate	High	Moderate	Moderate
	Food Systems	Food Processing, Urban Agriculture, Community Gardens	All	Moderate	High	Low	Moderate	Moderate
	Parks, Trails, and Open Space	(General)	All	High	High	Moderate	Moderate	High
		Parks and trails	All	High	Moderate	Moderate	Moderate	Moderate
		Natural lands	All	High	High	Low	Very High	Very High
		Indoor facilities	All	Moderate	Moderate	Moderate	Moderate	Moderate
	Urban Forest	Tree Canopy	Extreme Heat, Drought, Wildfire	High	High	Moderate	High	High
Infrastructure	Energy	Supply	All	High	High	Low	High	High
		Energy Infrastructure	All	High	High	Low	High	High
		Consumption/Demand	All	High	Very High	Low	Very High	Very High
	Transportation	Access to transit	All	High	High	Low	Moderate	High
		No vehicle available	All	High	High	Low	Moderate	High
	Solid Waste Management	Recycling Centers	Wildfire, Flooding, Extreme Precipitation	Moderate	Moderate	Moderate	High	Moderate
		Transfer Stations and Landfills	Wildfire, Flooding, Extreme Precipitation	Moderate	High	Low	High	High
		Waste-to-Energy Facility	Wildfire, Flooding, Extreme Precipitation	Moderate	Moderate	Low	High	High
	Water and Wastewater Infrastructur	Water Distribution Pipes	Wildfire, Flooding, Extreme Precipitation	High	Moderate	Low	High	High
		Water Pump Stations	Wildfire, Flooding, Extreme Precipitation	High	High	Low	Very High	Very High
		Wastewater Collections and Conveyance	Wildfire, Flooding, Extreme Precipitation	High	High	Low	Very High	Very High
		Wastewater Treatment Plant	Wildfire, Flooding, Extreme Precipitation	Moderate	High	Very Low	Very High	Very High
		Combined Sewer Tanks	Wildfire, Flooding, Extreme Precipitation	Moderate	High	Low	High	High
	Stormwater	Gray Stormwater Infrastructure	Wildfire, Flooding, Extreme Precipitation	High	High	Low	High	High
		Green Stormwater Infrastructure	Wildfire, Flooding, Extreme Precipitation	High	High	Very Low	Very High	Very High
		Impervious and Pervious Surfaces	Wildfire, Flooding, Extreme Precipitation	High	Moderate	Moderate	High	Moderate
		Water Retention and Treatment Facilities	Wildfire, Flooding, Extreme Precipitation	High	High	Low	High	High
Ecosystems and Water Resources	Critical Areas	Wetlands, Fish and Wildlife	All	High	Very High	Low	High	High
		Geologically Hazardous	Extreme Precipitation, Wildfire	High	High	Low	High	High
	Water Supply	Groundwater Supplies	Extreme Heat, Drought, Extreme Precipitation	High	Very High	Low	High	Very High
		Water Storage	Extreme Heat, Drought, Extreme Precipitation	High	Very High	Low	Very High	Very High
	Surface Water	Streams	Extreme Precipitation, Flooding	Moderate	Very High	Low	High	Moderate
Community Design, Land Use, and Economic Develo	Buildings	Building Stock Age	All	High	Very High	Low	High	Very High
	Businesses	Industrial, Recreation/Tourism, Businesses	All	High	High	Low	Moderate	High
	Neighborhoods	Tree Canopy, Heat Islands, and Redlining	All	High	High	Low	Moderate	High
	Housing	Affordability and Availability	All	High	Very High	Low	High	Very High

AGENDA

Fire/Smoke & Health

City Blocks

		Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:		Fire Smoke Air Quality	Health	Socioeconomic
		Exposure	*Sensitivity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable):	**Very High**	☑	☑	☑
	High	☑	☑	☑
	Moderate	☐	☐	☑
Total Block Gro 25	**Low**	☐	☐	☑
	Very Low	☐	☐	☑

Respiratory illness (e.g., asthma or Chronic Obstructive Respiratory Disease) and respiratory illness-related hospitalizations will become more common due to declining air quality from more frequent and intense wildfires, increased pollen production, and increased ground-level ozone (Chang., et al., 2023).

Total BG Popula 31,078 (13.3% of city)

City Population (OFM 2024): 233,000

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: Fire Smoke Air Quality	Sensitivity: Health	Adaptive Capacity: Socioeconomic	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	Very High	Low	Very High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630002012	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Very High	Very High	Low	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016002	Bemiss	City	100.0%	Very High	Very High	Very Low	Very High	979	8.6%	14.4%	24.1%	0.0%	12.5%	10.3%	Very High	Very High	Low	Very High
530630016003	Bemiss	City	100.0%	Very High	Very High	Very Low	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630018001	Logan, Minnehaha	City	100.0%	High	Very High	Very Low	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630018002	Bemiss, Logan	City	100.0%	High	Very High	High	High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630023002	West Central	City	100.0%	High	High	Moderate	High	1,667	1.5%	29.0%	9.0%	3.7%	8.7%	0.0%	Low	Very High	Very High	Moderate
530630023003	West Central	City	100.0%	High	High	Moderate	High	1,519	3.1%	12.8%	32.8%	0.0%	8.7%	13.2%	Low	Low	Low	Low
530630023004	West Central	City	100.0%	High	High	Very Low	Very High	1,258	0.0%	29.8%	29.5%	0.0%	8.7%	3.4%	Very Low	Moderate	Low	Moderate
530630026001	Chief Garry Park	City	100.0%	Very High	Very High	Low	Very High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630030001	East Central	City	100.0%	High	Very High	Very Low	Very High	1,182	3.8%	11.5%	27.8%	4.5%	12.5%	11.8%	Very High	High	Moderate	Very High
530630039001	Latah/Hangman	City	100.0%	High	Very High	Moderate	Very High	783	7.0%	35.3%	11.5%	0.0%	6.1%	2.2%	Low	Very High	High	High
530630039002	Latah/Hangman	City	100.0%	Very High	Very High	High	Very High	1,456	2.8%	24.3%	5.8%	0.0%	6.1%	12.1%	Low	Very High	High	Very High
530630046011	Lincoln Heights	City	100.0%	High	High	Moderate	High	1,690	5.5%	14.0%	15.2%	0.6%	6.4%	6.7%	Very Low	Very High	Low	High
530630046012	Lincoln Heights	City	100.0%	Very High	High	High	High	641	1.8%	25.8%	22.1%	0.0%	6.4%	0.0%	Very Low	Very High	High	Moderate
530630046013	Lincoln Heights	City	100.0%	High	High	Low	High	613	0.0%	40.0%	18.2%	0.0%	6.4%	0.0%	Very Low	Very High	High	Very Low
530630046014	Lincoln Heights	City	100.0%	High	High	Very Low	Very High	1,610	1.9%	58.2%	21.2%	3.7%	6.4%	12.7%	Very Low	Very High	High	Moderate
530630144001	Hillyard	City	100.0%	Very High	High	Moderate	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630144002	Hillyard, Minnehaha	City	96.7%	Very High	High	Moderate	Very High	1,180	2.5%	18.4%	34.2%	3.0%	9.3%	22.3%	High	High	Very Low	Very High
530630144003	Minnehaha	City	99.8%	Very High	High	Moderate	Very High	1,771	8.2%	10.8%	30.2%	1.2%	9.3%	6.7%	Very High	High	Low	Very High
530630144004	Hillyard, Minnehaha	City	100.0%	Very High	High	Moderate	Very High	1,204	11.3%	13.9%	4.6%	0.9%	9.3%	0.0%	Very High	High	High	High
530630145003	Chief Garry Park, East Central	City	100.0%	High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Heat & Health

City Blocks

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
	Heat	Health	Socioeconomic
	Exposure	Sensitivity	daptive Capacity
Very High	☑	☑	☑
High	☑	☑	☑
Moderate	☐	☐	☑
Low	☐	☐	☑
Very Low	☐	☐	☑

Select quantile scores (at least 1 for each variable):

Total Block Gro 48

Total BG Popula 59,800 (25.7% of city)

City Population (OFM 2024): 233,000

The City of Spokane could see an increase in dangerously hot conditions, particularly during the summer months, as projected changes in the city's climate include an increase in the number of peak summer temperatures throughout the season. Populations , including low-income people, aging and elderly people, children, homebound people, unhoused people, outdoor workers, people with mental illness, and those with chronic health conditions, are at a higher risk of developing heat-related illness, such as dehydration, heat exhaustion, and heat stroke (Savioli, et al., 2022; Harris & Albrecht, 2024).

Rising temperatures and urban heat island (UHI) effects will likely lead to greater demand for emergency response and hospital care.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: Heat	Sensitivity: Health	Adaptive Capacity: Socioeconomic	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Very High	Very High	Low	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630003012	Whitman	City	100.0%	High	Very High	Very Low	Very High	1,417	0.0%	11.6%	42.5%	2.8%	11.6%	7.5%	Moderate	Low	Very Low	High
530630003021	Nevada Heights, Whitman	City	100.0%	High	Very High	Low	High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630004001	Nevada Heights	City	100.0%	High	High	Moderate	High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004003	Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,258	2.7%	13.2%	29.1%	8.3%	10.9%	13.7%	High	Low	Very High	Low
530630012001	North Hill	City	100.0%	High	High	High	Moderate	894	2.0%	10.3%	16.5%	0.0%	8.7%	3.8%	Moderate	Low	Low	Moderate
530630013002	North Hill	City	100.0%	High	High	Low	High	1,372	3.9%	9.7%	18.5%	0.0%	9.4%	5.8%	High	Low	Low	Moderate
530630014001	Nevada Heights	City	100.0%	High	High	Very Low	High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	High	High	Moderate	High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	Moderate	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	High	Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016002	Bemiss	City	100.0%	High	Very High	Very Low	Very High	979	8.6%	14.4%	24.1%	0.0%	12.5%	10.3%	Very High	Very High	Low	Very High
530630016003	Bemiss	City	100.0%	Very High	Very High	Very Low	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630018001	Logan, Minnehaha	City	100.0%	High	Very High	Very Low	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630018002	Bemiss, Logan	City	100.0%	Very High	Very High	High	High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630020001	Emerson/Garfield	City	100.0%	High	High	Moderate	High	794	7.0%	18.2%	11.5%	0.0%	11.2%	6.7%	Moderate	High	Low	High
530630020002	Emerson/Garfield	City	100.0%	High	High	Low	High	836	8.5%	3.2%	16.8%	0.0%	11.2%	8.4%	Moderate	Moderate	Very Low	Very High
530630020003	Emerson/Garfield, West Central	City	100.0%	Very High	High	Very Low	Very High	900	5.5%	9.8%	34.5%	13.0%	11.2%	14.3%	Low	Moderate	Very Low	Very High
530630020004	West Central	City	100.0%	Very High	High	Very Low	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630023001	West Central	City	100.0%	Very High	High	Low	High	1,097	0.0%	12.6%	44.2%	0.0%	8.7%	9.0%	Low	Very Low	Very Low	Very High
530630024001	Emerson/Garfield, Riverside, West	City	100.0%	Very High	Very High	Very Low	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630024002	Emerson/Garfield	City	100.0%	Very High	Very High	Very Low	Very High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630026001	Chief Garry Park	City	100.0%	High	Very High	Low	High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630026002	Chief Garry Park	City	100.0%	High	Very High	Very Low	Very High	1,454	9.0%	10.9%	35.5%	1.1%	12.1%	2.7%	Low	High	Moderate	High
530630035002	Riverside	City	100.0%	High	Very High	Very Low	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630035004	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	1,001	0.0%	7.5%	28.8%	0.8%	11.6%	49.4%	Moderate	Moderate	Very Low	Very High
530630111021	Shiloh Hills	City	100.0%	High	High	High	High	2,409	6.0%	12.4%	15.1%	0.0%	9.3%	4.8%	Moderate	Moderate	Very High	Very Low
530630111022	Shiloh Hills	City	100.0%	Very High	High	Moderate	Very High	1,413	6.6%	16.8%	8.3%	0.8%	9.3%	2.4%	High	Moderate	Very High	Low
530630111031	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	1,508	3.0%	47.9%	19.7%	0.0%	11.1%	3.5%	High	Very High	Very High	High
530630111032	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,671	3.8%	33.8%	11.6%	2.4%	11.1%	5.3%	High	Very High	Very High	Moderate
530630111041	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630111042	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,584	1.8%	17.6%	14.9%	0.0%	11.1%	11.5%	High	High	High	Moderate
530630111043	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	507	12.4%	17.8%	41.6%	0.0%	11.1%	23.6%	High	Very High	Low	Very High
530630112032	Shiloh Hills	City	100.0%	High	High	Low	Very High	1,560	3.2%	29.0%	30.1%	4.2%	9.7%	2.2%	High	Moderate	Very High	Low
530630112034	Shiloh Hills	City	100.0%	Very High	High	Moderate	High	873	1.7%	9.9%	11.0%	0.0%	9.7%	6.0%	High	Very Low	Moderate	Low
530630112041	Shiloh Hills	City	100.0%	High	High	Low	High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630112042	Shiloh Hills	City	100.0%	High	High	Low	High	766	0.0%	45.1%	15.8%	2.3%	9.7%	6.4%	High	Very High	High	Moderate
530630144001	Hillyard	City	100.0%	Very High	High	Moderate	High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630144003	Minnehaha	City	99.8%	High	High	Moderate	High	1,771	8.2%	10.8%	30.2%	1.2%	9.3%	6.7%	Very High	High	Low	Very High
530630144004	Hillyard, Minnehaha	City	100.0%	High	High	Moderate	High	1,204	11.3%	13.9%	4.6%	0.9%	9.3%	0.0%	Very High	High	High	High
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Exposures, Vehicle Present, Access to Transit

City Blocks

Fire

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
	E WUI_Coverage	AC No Vehicle Percent	AC Access to Transit
	Exposure	Adaptive Capacity	Adaptive Capacity
Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☐	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑

Select quantile scores (at least 1 for each variable):

Total Block Groups: 10

Total BG Population: 11,306 (4.9% of city)

City Population (OFM 2024): 233,000

Extreme weather, flooding, and wildfires can hinder transportation to or operations of healthcare facilities, e.g., through supply chain shortages, power outages, or facility damage. Individuals in the City of Spokane without ready access to a vehicle or public transit and those with limited mobility may be especially challenged. During crises, their limited ability to seek timely medical attention can lead to severe health consequences.
Flooding, extreme heat, wildfires, and severe storms threaten school infrastructure, disrupt transportation, and create unsafe learning conditions.
The impacts of natural hazards will not only intensify with a changing climate, but their seasonal patterns will also shift, making some hazards a year-round threat to emergency management operations and first responders. These threats include the lengthening of wildfire seasons, more frequent and intense extreme heat and drought, and increasingly severe precipitation events (FEMA, 2023)

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E WUI_Coverage	Adaptive Capacity: AC No Vehicle Percent	Adaptive Capacity: AC Access to Transit	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630007004	Northwest	City	100.0%	Very High	High	Very Low	High	1,293	1.8%	11.6%	28.5%	0.0%	8.1%	0.0%	Very High	Very Low	Low	High
530630010004	Audubon/Downriver	City	100.0%	Very High	High	Very Low	Very High	775	2.5%	28.8%	8.1%	0.0%	6.1%	0.0%	Very High	Moderate	Very Low	Very High
530630010005	Audubon/Downriver	City	99.7%	Very High	High	Very Low	High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630011003	Audubon/Downriver	City	100.0%	Very High	High	Low	Very High	1,117	3.8%	17.7%	4.0%	0.0%	6.4%	0.0%	High	Moderate	Moderate	High
530630018001	Logan, Minnehaha	City	100.0%	High	Very High	Low	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630040013	Cliff-Cannon	City	100.0%	Very High	High	Low	High	709	3.8%	17.0%	20.2%	0.0%	8.4%	19.1%	Low	Low	Low	Low
530630043002	Comstock	City	100.0%	High	High	Low	Moderate	767	2.9%	26.2%	10.3%	0.0%	4.1%	2.1%	Very Low	High	Moderate	Low
530630048001	Southgate	City	100.0%	High	Very High	Low	High	1,766	2.5%	37.7%	17.8%	10.5%	5.1%	6.7%	Low	Moderate	High	Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	Very High	High	Very Low	High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Flooding

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
	E Flood Coverage	AC No Vehicle Percent	AC Access to Transit
	Exposure	Adaptive Capacity	Adaptive Capacity
Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☐	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑

Select quantile scores (at least 1 for each variable):

Total Block Groups: 7

Total BG Population: 8,638 (3.7% of city)

City Population (OFM 2024): 233,000

High indicator values indicate LOW Adaptive Capacity.

Some shelters and gathering places are already at risk, as several are located within or near flood zones. Notable facilities with heightened flood exposure include Spokane Falls Community College, Scott Elementary, Ferris High School, and the South Hill Library—sites that serve as critical educational, social, and emergency resources during extreme weather events. Would be helpful to list the ones most a risk here. Hard to tell on the map without labels.
While no hospitals are located within the 100-year or 500-year flood zones, many health clinics, law enforcement offices, and fire stations overlap with flood-prone areas.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Adaptive Capacity: AC No Vehicle Percent	Adaptive Capacity: AC Access to Transit	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630010005	Audubon/Downriver	City	99.7%	Very High	High	Very Low	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630018001	Logan, Minnehaha	City	100.0%	Very High	Very High	Low	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630025022	Logan	City	100.0%	Very High	Very High	Very Low	Very High	969	0.0%	16.4%	9.7%	2.7%	11.0%	42.9%	Moderate	Moderate	Very Low	Very High
530630026003	Chief Garry Park	City	100.0%	Very High	Very High	Low	Very High	1,223	7.1%	6.8%	32.0%	6.4%	12.1%	7.2%	Low	High	Very Low	High
530630046013	Lincoln Heights	City	100.0%	Very High	Very High	Very Low	Very High	613	0.0%	40.0%	18.2%	0.0%	6.4%	0.0%	Very Low	Very High	High	Very Low
530630048001	Southgate	City	100.0%	Very High	Very High	Low	Very High	1,766	2.5%	37.7%	17.8%	10.5%	5.1%	6.7%	Low	Moderate	High	Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	High	High	Very Low	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Heat, Impervious, Poverty

City Blocks

Choose Assessment Area (City only or Full UGA: **City Only**

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
Variable	E Humidex 8.5 Weighted Avg	AC Impervious Coverage	AC Below Poverty Percent
Sub-Index	*Exposure*	*Adaptive Capacity*	*Adaptive Capacity*
Very High	☑	☑	☑
High	☑	☑	☑
Moderate	☐	☐	☐
Low	☐	☐	☐
Very Low	☐	☐	☐

Select quantile scores (at least 1 for each variable):

High indicator values indicate LOW Adaptive Capacity.

Total Block Gro 10

Total BG Popula 10,281 (4.4% of city)

City Population (OFM 2024): 233,000

Much of the City of Spokane's social service infrastructure—particularly services for the unhoused—is concentrated Downtown, where over 50% of residents live in poverty (Spokane Neighborhood Action Partners and Downtown Spokane Partnership, 2025). This area also experiences some of the highest land surface temperatures in the city.

High land surface temperatures and impervious surface coverage in Central City, Downtown, and Northeast Spokane, indicating heightened heat vulnerability for many educational facilities.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Humidex 8.5 Weighted Avg	Adaptive Capacity: AC Impervious Coverage	Adaptive Capacity: AC Below Poverty Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	Very High	High	High	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very High	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Very High	High	High	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630015003	Bemiss	City	100.0%	Very High	High	High	High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very High	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016003	Bemiss	City	100.0%	Very High	High	Very High	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630144001	Hillyard	City	100.0%	Very High	Very High	High	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	Very High	High	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very High	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Heat, Impervious Area, Tree Canopy Coverage

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

Select quantile scores (at least 1 for each variable):

	Variable 1	Variable 2	Variable 3
	E Humidex 8.5 Weighted Avg	AC Impervious Coverage	AC Tree Canopy Coverage
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☐	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑

High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 13

Total BG Population: 14,162 (6.1% of city)

City Population (OFM 2024): 233,000

In urban settings, particularly within the City of Spokane, many older buildings used by Native organizations are located in areas with limited tree canopy and greater urban heat island effects, further increasing exposure to extreme heat and poor air quality.

The Spokane Powwow, salmon feasts, and other ceremonial gatherings are increasingly impacted by extreme heat and wildfire smoke.

Extreme temperatures already impact park use depending on the specific conditions of the park. Parks or trails with shade, air-conditioned indoor facilities, water features, and water access are already often used as a place to cool off during heat events, whereas parks with more impervious surfaces are more unsafe to use.

Some neighborhoods, particularly those with high concentrations of impervious surfaces like roads and buildings, experience localized temperature differences of up to 14°F. For example, on a 90°F day, areas with fewer trees and more paved surfaces can feel as hot as 104°F (Henning, Ducken, Honebein, Corrina, & Brown, 2023).Areas with lower tree canopy tend to correlate with neighborhoods that experience significant heat disparities.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Humidex 8.5 Weighted Avg	Adaptive Capacity: AC Impervious Coverage	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	Very High	High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Very High	High	Low	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630015003	Bemiss	City	100.0%	Very High	High	Low	Very High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016002	Bemiss	City	100.0%	Very High	High	Very Low	Very High	979	8.6%	14.4%	24.1%	0.0%	12.5%	10.3%	Very High	Very High	Low	Very High
530630016003	Bemiss	City	100.0%	Very High	High	Very Low	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630018002	Bemiss, Logan	City	100.0%	Very High	Very High	Very Low	Very High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630111022	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,413	6.6%	16.8%	8.3%	0.8%	9.3%	2.4%	High	Moderate	Very High	Low
530630144001	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2
Select up to 3 Sub-Index variables of interest:	E Flood Coverage	S GeoHazard Coverage
	Exposure	*Sensitivity*
Select quantile scores (at least 1 for each variable): **Very High**	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

Total Block Groups: 21

Total BG Population: 27,429 (11.8% of city)

City Population (OFM 2024): 233,000

Rising water levels and more intense precipitation events along the Spokane and Columbia Rivers threaten Indigenous burial sites and cultural landmarks (UCUT, 2021). The Spokane Tribe has documented multiple instances of erosion-related damage to historic sites in recent years (Spokane Tribe, 2022).
Flooding could impact certain parks, trails, and open space, depending on their location, by eroding trails and damaging other park assets directly. Potential flooding mechanisms in Spokane include a swollen Spokane River and urban runoff from high-intensity rain events

								Demographic Context									
Census Block Group	**City Neighborhood**	**Study Area**	**Percent of Block Group in City**	**Exposure: E Flood Coverage**	**Sensitivity: S GeoHazard Coverage**	**Combined Risk**	**Total Population (OFM 2024)**	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	**Exposure Index**	**Sensitivity Index**	**Adaptive Capacity Index**	**Vulnerability Index**
530630008001	Balboa/South Indian Trail	City	100.0%	High	Very High	Very High	2,681	1.4%	27.2%	19.0%	0.0%	5.4%	12.1%	High	Very High	Very High	Moderate
530630010005	Audubon/Downriver	City	99.7%	Very High	Very High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630023002	West Central	City	100.0%	Very High	Very High	Very High	1,667	1.5%	29.0%	9.0%	3.7%	8.7%	0.0%	Low	Very High	Very High	Moderate
530630029001	East Central	City	100.0%	Very High	Very High	Very High	930	8.3%	18.6%	22.4%	1.6%	6.8%	8.7%	Very High	Moderate	Moderate	Very High
530630029002	East Central, Lincoln Heights	City	99.2%	High	Very High	Very High	1,080	5.8%	21.6%	17.6%	0.0%	6.8%	5.3%	Low	Very High	Moderate	Moderate
530630029003	East Central, Lincoln Heights	City	100.0%	Very High	Very High	Very High	1,323	5.5%	12.5%	21.4%	1.5%	6.8%	5.0%	Very High	Low	High	High
530630030001	East Central	City	100.0%	Very High	Very High	Very High	1,182	3.8%	11.5%	27.8%	4.5%	12.5%	11.8%	Very High	High	Moderate	Very High
530630031004	East Central, Lincoln Heights, F	City	100.0%	High	Very High	Very High	1,486	10.4%	7.0%	10.8%	3.2%	7.7%	3.8%	Very Low	Very High	Moderate	Moderate
530630036011	West Hills	City	92.2%	Very High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630036012	Peaceful Valley	City	100.0%	Very High	Very High	Very High	671	0.0%	19.6%	25.1%	0.0%	7.5%	0.0%	Low	Very High	Very High	Low
530630036022	Browne's Addition	City	100.0%	Very High	Very High	Very High	1,128	2.1%	16.6%	19.1%	0.0%	7.5%	0.0%	Very Low	Very High	High	Low
530630038001	West Hills	City	93.7%	Very High	Very High	High	828	7.7%	8.9%	0.5%	0.0%	6.7%	12.2%	Very Low	High	High	Very Low
530630039001	Latah/Hangman	City	100.0%	Very High	Very High	Very High	783	7.0%	35.3%	11.5%	0.0%	6.1%	2.2%	Low	Very High	High	High
530630039002	Latah/Hangman	City	100.0%	Very High	Very High	Very High	1,456	2.8%	24.3%	5.8%	0.0%	6.1%	12.1%	Low	Very High	High	Very High
530630042005	Manito/Cannon Hill	City	100.0%	Very High	Very High	High	1,583	6.1%	23.9%	19.2%	0.0%	3.7%	5.6%	Very Low	High	Moderate	Low
530630045001	Rockwood	City	100.0%	Very High	Very High	Very High	1,247	4.4%	32.3%	10.8%	0.0%	4.0%	0.0%	Very Low	High	Very High	Very Low
530630045002	Rockwood	City	100.0%	High	Very High	Very High	1,026	4.4%	20.6%	14.2%	0.0%	4.0%	10.3%	Very Low	High	Very Low	Low
530630046012	Lincoln Heights	City	100.0%	Very High	Very High	Very High	641	1.8%	25.8%	22.1%	0.0%	6.4%	0.0%	Very Low	Very High	High	Moderate
530630046022	Lincoln Heights	City	100.0%	Very High	Very High	Very High	854	0.9%	12.5%	8.9%	0.0%	7.0%	1.7%	Low	Very Low	High	Very Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	High	Very High	High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630136001	Grandview/Thorpe	City	54.7%	High	Very High	Very High	2,193	6.2%	12.1%	28.0%	0.0%	6.5%	1.3%	Low	Low	High	Very Low
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

		Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:		E HeavyPrecip Weighted Avg	S GeoHazard Coverage	S Water Quality Coverage
		Exposure	*Sensitivity*	*Sensitivity*
Select quantile scores (at least 1 for each variable):	**Very High**	☑	☑	☑
	High	☑	☑	☑
Total Block Group 9	**Moderate**	☐	☐	☑
	Low	☐	☐	☑
Total BG Populati 16,184 (6.9% of city)	**Very Low**	☐	☐	☑

Longer dry periods followed by intense storms will also worsen non-point source pollution, leading to more days when swimming or fishing may be unsafe. Impacts to fishing also affect Tribal members' access to cultural resources.

City Population (OFM 2024): 233,000

									Demographic Context									
Census Block Group	**City Neighborhood**	**Study Area**	**Percent of Block Group in City**	**Exposure: E HeavyPrecip Weighted Avg**	**Sensitivity: S GeoHazard Coverage**	**Sensitivity: S Water Quality Coverage**	**Combined Risk**	**Total Population (OFM 2024)**	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	**Exposure Index**	**Sensitivity Index**	**Adaptive Capacity Index**	**Vulnerability Index**
530630008001	Balboa/South Indian Trail	City	100.0%	Very High	Very High	Very Low	Very High	2,681	1.4%	27.2%	19.0%	0.0%	5.4%	12.1%	High	Very High	Very High	Moderate
530630010005	Audubon/Downriver	City	99.7%	Very High	Very High	Very High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630036011	West Hills	City	92.2%	Very High	Very High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	Very High	Very High	Very High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630106031	Balboa/South Indian Trail, Nortl	City	100.0%	Very High	Very High	Very Low	Very High	1,039	1.3%	31.6%	13.0%	0.0%	5.1%	4.9%	Very High	High	High	Very High
530630106041	North Indian Trail	City	100.0%	Very High	Very High	Very Low	Very High	1,037	1.4%	34.2%	5.8%	0.0%	5.1%	0.0%	Very High	Moderate	Very High	Low
530630106042	North Indian Trail	City	97.2%	Very High	Very High	Very Low	Very High	3,133	4.1%	19.1%	12.9%	0.0%	5.1%	4.7%	Very High	Moderate	Very High	Low
530630107011	Five Mile Prairie	City	100.0%	Very High	Very High	Very Low	High	2,209	6.4%	8.6%	3.4%	0.0%	4.9%	5.0%	High	Very Low	Very High	Very Low
530630107013	Five Mile Prairie	City	55.5%	Very High	Very High	Very Low	High	1,414	4.9%	6.7%	18.0%	0.5%	4.9%	6.1%	High	Very Low	High	Very Low
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

		Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:		E WUI_Coverage	AC Built before 1960 Percent	AC No Vehicle Percent
		Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable):	Very High	☑	☑	☑
	High	☑	☑	☑
Total Block Group 22	Moderate	☐	☐	☑
	Low	☐	☐	☑
Total BG Populati 24,441 (10.5% of city)	Very Low	☐	☐	☑

High indicator values indicate LOW Adaptive Capacity.

City Population (OFM 2024): 233,000

Elders and youth are particularly vulnerable to health impacts from wildfire smoke and extreme heat and are also central to cultural transmission. Urban Native populations often face higher barriers to accessing clean air and cooling spaces due to socioeconomic disparities and mobility limitations.

									Demographic Context									
Census Block Group	**City Neighborhood**	**Study Area**	**Percent of Block Group in City**	**Exposure: E WUI_Coverage**	**Adaptive Capacity: AC Built before 1960 Percent**	**Adaptive Capacity: AC No Vehicle Percent**	**Combined Risk**	**Total Population (OFM 2024)**	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	**Exposure Index**	**Sensitivity Index**	**Adaptive Capacity Index**	**Vulnerability Index**
530630002011	Hillyard	City	100.0%	High	High	Moderate	High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630007004	Northwest	City	100.0%	Very High	Very High	High	Very High	1,293	1.8%	11.6%	28.5%	0.0%	8.1%	0.0%	Very High	Very Low	Low	High
530630009003	Northwest	City	100.0%	Very High	Very High	Moderate	Very High	954	6.3%	24.0%	4.2%	0.0%	7.3%	0.0%	Very High	High	Moderate	Very High
530630009004	Northwest	City	100.0%	Very High	High	Very Low	Very High	631	3.1%	10.8%	10.1%	0.0%	7.3%	14.2%	Very High	Low	Low	Very High
530630010001	Audubon/Downriver	City	100.0%	Very High	Very High	Moderate	Very High	889	2.3%	16.5%	0.0%	0.0%	6.1%	4.3%	Very High	Very Low	Moderate	Moderate
530630010002	Audubon/Downriver	City	100.0%	Very High	Very High	Very Low	Very High	771	2.2%	2.5%	12.8%	0.0%	6.1%	6.6%	Very High	Very Low	Very Low	High
530630010003	Audubon/Downriver	City	100.0%	Very High	Very High	Very Low	Very High	708	0.7%	18.1%	6.1%	0.0%	6.1%	0.0%	Very High	Very Low	Very Low	Very High
530630010004	Audubon/Downriver	City	100.0%	Very High	High	High	Very High	775	2.5%	28.8%	8.1%	0.0%	6.1%	0.0%	Very High	Moderate	Very Low	Very High
530630010006	Audubon/Downriver	City	100.0%	Very High	High	Moderate	Very High	1,533	4.0%	15.2%	15.4%	0.0%	6.1%	2.7%	Very High	Low	Moderate	High
530630011002	Audubon/Downriver	City	100.0%	Very High	High	Very Low	Very High	1,072	14.6%	7.8%	37.6%	6.0%	6.4%	2.7%	Very High	High	Moderate	High
530630011003	Audubon/Downriver	City	100.0%	Very High	Very High	High	Very High	1,117	3.8%	17.7%	4.0%	0.0%	6.4%	0.0%	High	Moderate	Moderate	High
530630018002	Bemiss, Logan	City	100.0%	High	High	Low	High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630021002	Emerson/Garfield, West Centra	City	100.0%	High	Very High	Low	High	1,557	2.2%	10.8%	24.2%	0.9%	8.6%	12.3%	High	Very Low	Low	Moderate
530630023003	West Central	City	100.0%	High	Very High	Moderate	Very High	1,519	3.1%	12.8%	32.8%	0.0%	8.7%	13.2%	Low	Low	Low	Low
530630023004	West Central	City	100.0%	High	Very High	Very High	Very High	1,258	0.0%	29.8%	29.5%	0.0%	8.7%	3.4%	Very Low	Moderate	Low	Moderate
530630040013	Cliff-Cannon	City	100.0%	Very High	High	High	Very High	709	3.8%	17.0%	20.2%	0.0%	8.4%	19.1%	Low	Low	Low	Low
530630040021	Cliff-Cannon	City	100.0%	High	High	Moderate	High	1,248	2.1%	14.8%	22.3%	0.0%	8.4%	3.2%	Low	Low	Moderate	Low
530630042001	Manito/Cannon Hill	City	100.0%	High	Very High	Very Low	High	880	5.0%	11.0%	3.3%	0.0%	3.7%	2.6%	Very Low	Low	Moderate	Very Low
530630042003	Manito/Cannon Hill	City	100.0%	High	High	Very Low	Very High	676	10.3%	14.2%	22.8%	1.7%	3.7%	0.0%	Very Low	Moderate	High	Very Low
530630042004	Manito/Cannon Hill	City	100.0%	High	Very High	Very Low	Very High	691	7.4%	14.8%	33.4%	0.0%	3.7%	9.4%	Very Low	Low	Moderate	Low
530630042005	Manito/Cannon Hill	City	100.0%	High	Very High	Very Low	Very High	1,583	6.1%	23.9%	19.2%	0.0%	3.7%	5.6%	Very Low	High	Moderate	Low
530630043002	Comstock	City	100.0%	High	Very High	High	Very High	767	2.9%	26.2%	10.3%	0.0%	4.1%	2.1%	Very Low	High	Moderate	Low
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:	E Flood Coverage	AC No Vehicle Percent	AC Below Poverty Percent
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑	☑
High	☑	☑	☑
Moderate	☐	☐	☐
Low	☐	☐	☐
Very Low	☐	☐	☐

Total Block Group 17

Total BG Populati 23,118 (9.9% of city)

City Population (OFM 2024): 233,000

High indicator values indicate LOW Adaptive Capacity.

The impacts of a changing climate on the City of Spokane's food system will not be felt equally. More frequent and severe climate-driven disruptions are expected to disproportionately affect vulnerable groups, including women, children, older adults, people with disabilities, and people in neighborhoods that are more than one mile from the nearest super market. These communities already face barriers to accessing fresh, nutritious food—whether due to transportation, cost, or geographic isolation.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Adaptive Capacity: AC No Vehicle Percent	Adaptive Capacity: AC Below Poverty Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context						Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
									Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment				
530630007001	Northwest	City	100.0%	Very High	High	Very High	Very High	1,315	6.0%	9.4%	16.7%	0.0%	8.1%	0.0%	High	Low	Very Low	High
530630018001	Logan, Minnehaha	City	100.0%	Very High	Very High	Very High	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630024001	Emerson/Garfield, Riverside, W	City	100.0%	High	Very High	Very High	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630025022	Logan	City	100.0%	Very High	Very High	Very High	Very High	969	0.0%	16.4%	9.7%	2.7%	11.0%	42.9%	Moderate	Moderate	Very Low	Very High
530630026003	Chief Garry Park	City	100.0%	Very High	Very High	Very High	Very High	1,223	7.1%	6.8%	32.0%	6.4%	12.1%	7.2%	Low	High	Very Low	High
530630030002	East Central	City	100.0%	Very High	Very High	Very High	Very High	1,436	8.7%	13.8%	37.1%	6.1%	12.5%	3.3%	Very High	Very High	Low	Very High
530630031001	East Central	City	100.0%	High	High	Very High	Very High	1,430	13.3%	12.5%	32.7%	7.8%	7.7%	5.0%	Low	Very High	High	Low
530630035001	Riverside	City	100.0%	Very High	Very High	Very High	Very High	1,609	6.2%	22.5%	15.6%	0.0%	11.6%	12.9%	Low	Very High	High	Very High
530630035002	Riverside	City	100.0%	Very High	Very High	Very High	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	High	Very High	Very High	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630036011	West Hills	City	92.2%	Very High	High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630036012	Peaceful Valley	City	100.0%	Very High	Very High	High	Very High	671	0.0%	19.6%	25.1%	0.0%	7.5%	0.0%	Low	Very High	Very High	Low
530630036022	Browne's Addition	City	100.0%	Very High	Very High	High	High	1,128	2.1%	16.6%	19.1%	0.0%	7.5%	0.0%	Very Low	Very High	High	Low
530630038001	West Hills	City	93.7%	Very High	High	High	High	828	7.7%	8.9%	0.5%	0.0%	6.7%	12.2%	Very Low	High	High	Very Low
530630046014	Lincoln Heights	City	100.0%	Very High	Very High	Very High	Very High	1,610	1.9%	58.2%	21.2%	3.7%	6.4%	12.7%	Very Low	Very High	High	Moderate
530630047022	Lincoln Heights	City	100.0%	Very High	Very High	High	Very High	1,199	9.4%	31.8%	4.4%	10.1%	6.6%	5.1%	Moderate	Very High	Very High	Moderate
530630145002	East Central	City	100.0%	Very High	Very High	Very High	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
	Heat	Health	Socioeconomic
	Exposure	*Sensitivity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☐	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑

Total Block Groups: 37

Total BG Population: 45,009 (19.3% of city)

City Population (OFM 2024): 233,000

Recently, the City has experienced more frequent power outages and strain to the energy infrastructure due to higher average summer temperatures and increased wildfire risk. The City's energy supply is primarily provided by Avista Utilities (Avista), which has reported an increase in climate-related service disruptions, as well as infrastructure/equipment failures during heat waves and wildfires near critical transmission mains (Avista, 2024).

The effects of climate-related energy disruptions disproportionately impact the City's most vulnerable residents, including low-income individuals and individuals with health conditions.

									Demographic Context									
Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: Heat	Sensitivity: Health	Adaptive Capacity: Socioeconomic	Combined Risk	Total Population (OFM 2024)	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Very High	Very High	Low	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630003012	Whitman	City	100.0%	High	Very High	Very Low	Very High	1,417	0.0%	11.6%	42.5%	2.8%	11.6%	7.5%	Moderate	Low	Very Low	High
530630003021	Nevada Heights, Whitman	City	100.0%	High	Very High	Low	High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630004003	Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,258	2.7%	13.2%	29.1%	8.3%	10.9%	13.7%	High	Low	Very High	Low
530630013002	North Hill	City	100.0%	High	High	Low	High	1,372	3.9%	9.7%	18.5%	0.0%	9.4%	5.8%	High	Low	Low	Moderate
530630014001	Nevada Heights	City	100.0%	High	High	Very Low	High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	High	Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016002	Bemiss	City	100.0%	High	Very High	Very Low	Very High	979	8.6%	14.4%	24.1%	0.0%	12.5%	10.3%	Very High	Very High	Low	Very High
530630016003	Bemiss	City	100.0%	Very High	Very High	Very Low	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630018001	Logan, Minnehaha	City	100.0%	High	Very High	Very Low	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630020002	Emerson/Garfield	City	100.0%	High	High	Low	High	836	8.5%	3.2%	16.8%	0.0%	11.2%	8.4%	Moderate	Moderate	Very Low	Very High
530630020003	Emerson/Garfield, West Central	City	100.0%	Very High	High	Very Low	Very High	900	5.5%	9.8%	34.5%	13.0%	11.2%	14.3%	Low	Moderate	Very Low	Very High
530630020004	West Central	City	100.0%	Very High	High	Very Low	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630023001	West Central	City	100.0%	Very High	High	Low	High	1,097	0.0%	12.6%	44.2%	0.0%	8.7%	9.0%	Low	Very Low	Very Low	Very High
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	Very High	Very High	Very Low	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630024002	Emerson/Garfield	City	100.0%	Very High	Very High	Very Low	Very High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630026001	Chief Garry Park	City	100.0%	High	Very High	Low	High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630026002	Chief Garry Park	City	100.0%	High	Very High	Very Low	Very High	1,454	9.0%	10.9%	35.5%	1.1%	12.1%	2.7%	Low	High	Moderate	High
530630035002	Riverside	City	100.0%	High	Very High	Very Low	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630035004	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	1,001	0.0%	7.5%	28.8%	0.8%	11.6%	49.4%	Moderate	Moderate	Very Low	Very High
530630111031	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	1,508	3.0%	47.9%	19.7%	0.0%	11.1%	3.5%	High	Very High	Very High	High
530630111032	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,671	3.8%	33.8%	11.6%	2.4%	11.1%	5.3%	High	Very High	Very High	Moderate
530630111041	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630111042	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,584	1.8%	17.6%	14.9%	0.0%	11.1%	11.5%	High	High	High	Moderate
530630111043	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	507	12.4%	17.8%	41.6%	0.0%	11.1%	23.6%	High	Very High	Low	Very High
530630112032	Shiloh Hills	City	100.0%	High	High	Low	Very High	1,560	3.2%	29.0%	30.1%	4.2%	9.7%	2.2%	High	Moderate	Very High	Low
530630112041	Shiloh Hills	City	100.0%	High	High	Low	High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630112042	Shiloh Hills	City	100.0%	High	High	Low	High	766	0.0%	45.1%	15.8%	2.3%	9.7%	6.4%	High	Very High	High	Moderate
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
Sub-Index variable	E Urban Heat Island Mean	AC Built before 1960 Percent	AC Energy Cost Burden
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑	☑
High	☑	☑	☑
Moderate	☐	☐	☐
Low	☐	☐	☐
Very Low	☐	☐	☐

High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 28

Total BG Population: 34,715 (14.9% of city)

City Population (OFM 2024): 233,000

Extreme weather events can impact residents living in aging housing, as poor insulation increases their susceptibility to extreme temperatures and higher energy bills. Limited financial resources may prevent individuals from obtaining or using air conditioning during extreme heat events, increasing the risk of dehydration or heat injury, or heating during cold weather events, increasing the risk of cold-weather-related injury.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Built before 1960 Percent	Adaptive Capacity: AC Energy Cost Burden	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	High	High	Very High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630003011	Whitman	City	100.0%	High	High	Very High	Very High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	High	High	High	Very High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630004001	Nevada Heights	City	100.0%	High	High	High	High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004002	Nevada Heights	City	100.0%	High	High	High	Very High	1,477	7.0%	7.9%	20.4%	1.2%	10.9%	8.1%	Moderate	Moderate	Low	Moderate
530630005003	North Hill	City	100.0%	High	Very High	High	Very High	1,178	12.4%	13.6%	19.6%	0.4%	7.5%	6.4%	Moderate	High	Low	High
530630006003	North Hill	City	100.0%	High	Very High	High	Very High	1,090	2.4%	10.4%	15.2%	0.0%	7.9%	1.4%	Moderate	Very Low	Very Low	Moderate
530630007003	Northwest	City	100.0%	High	Very High	High	Very High	780	0.0%	20.1%	5.6%	0.0%	8.1%	15.2%	High	Very Low	Very Low	High
530630007004	Northwest	City	100.0%	High	Very High	High	Very High	1,293	1.8%	11.6%	28.5%	0.0%	8.1%	0.0%	Very High	Very Low	Low	High
530630013001	North Hill	City	100.0%	High	High	High	Very High	1,060	0.7%	14.2%	17.2%	0.0%	9.4%	1.6%	Moderate	Low	Low	Moderate
530630013003	North Hill	City	100.0%	High	Very High	High	Very High	1,079	15.4%	20.0%	16.0%	0.0%	9.4%	9.6%	Moderate	Very High	Very Low	Very High
530630014001	Nevada Heights	City	100.0%	High	Very High	High	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	Very High	Very High	High	Very High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	Moderate	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	Very High	High	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Very High	High	High	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015003	Bemiss	City	100.0%	High	Very High	High	Very High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630015005	Nevada Heights	City	100.0%	Very High	Very High	High	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630019002	Emerson/Garfield	City	100.0%	High	High	High	Very High	1,666	11.3%	11.6%	19.0%	0.0%	7.9%	10.2%	Moderate	Moderate	Low	High
530630019003	Emerson/Garfield	City	100.0%	Very High	Very High	High	Very High	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020001	Emerson/Garfield	City	100.0%	High	High	High	Very High	794	7.0%	18.2%	11.5%	0.0%	11.2%	6.7%	Moderate	High	Low	High
530630020002	Emerson/Garfield	City	100.0%	Very High	Very High	High	Very High	836	8.5%	3.2%	16.8%	0.0%	11.2%	8.4%	Moderate	Moderate	Very Low	Very High
530630020004	West Central	City	100.0%	Very High	Very High	High	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	High	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630021001	Emerson/Garfield	City	100.0%	High	High	High	Very High	943	12.5%	10.1%	7.7%	0.2%	8.6%	8.7%	High	Moderate	Moderate	Moderate
530630021002	Emerson/Garfield, West Central	City	100.0%	High	Very High	High	Very High	1,557	2.2%	10.8%	24.2%	0.9%	8.6%	12.3%	High	Very Low	Low	Moderate
530630025021	Logan	City	100.0%	High	High	High	Very High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	High	High	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Select up to 3 Sub-Index variables of interest:

	E Flood Coverage	AC Access to Transit	AC No Vehicle Percent
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Very High	☑	☐	☑
High	☑	☐	☑
Moderate	☐	☐	☑
Low	☐	☑	☐
Very Low	☐	☑	☐

Select quantile scores (at least 1 for each variable):

High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 11

Total BG Population: 15,036 (6.5% of city)

City Population (OFM 2024): 233,000

Flooded areas, including those resulting from clogged storm water drains, can prevent **transit, rail, and personal vehicles** from passing and block walking, rolling, and biking facilities as well as bus stops. Precipitation events can also preclude people from utilizing walking, rolling, biking, or taking transit, particularly if the transit stops do not include a covered shelter.
There are seven **bridges** across the Hangman Creek and 15 bridges across the Spokane River that could be damaged and/or blocked by river flooding.
Climate hazards, such as flooding, heavy snowfall, or extreme heat, can disrupt **waste collection** services by making roads impassable, delaying service schedules, or creating unsafe conditions for the City's waste management crews.
Neighborhoods with limited infrastructure, including limited to no **stormwater management** infrastructure, to address extreme weather impacts, may experience longer delays in service restoration.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Adaptive Capacity: AC Access to Transit	Adaptive Capacity: AC No Vehicle Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630010005	Audubon/Downriver	City	99.7%	Very High	Very Low	High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630018001	Logan, Minnehaha	City	100.0%	Very High	Low	Very High	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630025022	Logan	City	100.0%	Very High	Very Low	Very High	Very High	969	0.0%	16.4%	9.7%	2.7%	11.0%	42.9%	Moderate	Moderate	Very Low	Very High
530630026001	Chief Garry Park	City	100.0%	Very High	Very Low	Moderate	High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630026003	Chief Garry Park	City	100.0%	Very High	Low	Very High	Very High	1,223	7.1%	6.8%	32.0%	6.4%	12.1%	7.2%	Low	High	Very Low	High
530630026004	Chief Garry Park	City	100.0%	High	Low	Moderate	High	1,704	3.4%	5.8%	22.4%	5.7%	12.1%	2.6%	High	High	Low	High
530630046013	Lincoln Heights	City	100.0%	Very High	Very Low	Very High	Very High	613	0.0%	40.0%	18.2%	0.0%	6.4%	0.0%	Very Low	Very High	High	Very Low
530630047023	Southgate	City	100.0%	High	Low	Moderate	High	1,541	3.4%	22.6%	18.2%	1.0%	6.6%	0.0%	Very Low	Moderate	Very High	Very Low
530630048001	Southgate	City	100.0%	Very High	Low	Very High	Very High	1,766	2.5%	37.7%	17.8%	10.5%	5.1%	6.7%	Low	Moderate	High	Low
530630048002	Southgate	City	97.1%	Very High	Very Low	Moderate	Very High	1,764	8.8%	16.7%	9.3%	3.2%	5.1%	0.0%	Low	High	Very High	Very Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	High	Very Low	High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2	Variable 3
	E WUI_Coverage	AC Access to Transit	AC No Vehicle Percent
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Very High	☑	☐	☑
High	☑	☐	☑
Moderate	☐	☐	☑
Low	☐	☑	☐
Very Low	☐	☑	☐

Select quantile scores (at least 1 for each variable):

Total Block Groups: 18

Total BG Population: 22,733 (9.8% of city)

City Population (OFM 2024): 233,000

Transportation systems may be strained should evacuation become necessary in denser neighborhoods. Key highways and arterials pass through areas with high levels of wildland-urban interface conditions, which can pose as a challenge for fire-related evacuation. Wildfires can damage infrastructure and disrupt connectivity in its path, and resulting smoke can increase PM 2.5 in the air and deteriorate the air quality. This reduces the feasibility and health benefits of non-motorized travel due to the health impacts of breathing in wildfire smoke, including the feasibility of accessing critical destinations and evacuation route options.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E WUI_Coverage	Adaptive Capacity: AC Access to Transit	Adaptive Capacity: AC No Vehicle Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	Very High	Very Low	Very High	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630007004	Northwest	City	100.0%	Very High	Very Low	High	Very High	1,293	1.8%	11.6%	28.5%	0.0%	8.1%	0.0%	Very High	Very Low	Low	High
530630009002	Northwest	City	100.0%	High	Low	Moderate	High	962	0.0%	21.3%	11.2%	0.0%	7.3%	3.7%	Very High	Low	High	Moderate
530630009003	Northwest	City	100.0%	Very High	Low	Moderate	Very High	954	6.3%	24.0%	4.2%	0.0%	7.3%	0.0%	Very High	High	Moderate	Very High
530630009006	Northwest	City	100.0%	Very High	Low	Moderate	High	2,057	5.6%	21.4%	8.7%	0.0%	7.3%	3.9%	Very High	High	High	High
530630010004	Audubon/Downriver	City	100.0%	Very High	Very Low	High	Very High	775	2.5%	28.8%	8.1%	0.0%	6.1%	0.0%	Very High	Moderate	Very Low	Very High
530630010005	Audubon/Downriver	City	99.7%	Very High	Very Low	High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630011003	Audubon/Downriver	City	100.0%	Very High	Low	High	Very High	1,117	3.8%	17.7%	4.0%	0.0%	6.4%	0.0%	High	Moderate	Moderate	High
530630018001	Logan, Minnehaha	City	100.0%	High	Low	Very High	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630026001	Chief Garry Park	City	100.0%	High	Very Low	Moderate	High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630040013	Cliff-Cannon	City	100.0%	Very High	Low	High	Very High	709	3.8%	17.0%	20.2%	0.0%	8.4%	19.1%	Low	Low	Low	Low
530630040021	Cliff-Cannon	City	100.0%	High	Very Low	Moderate	High	1,248	2.1%	14.8%	22.3%	0.0%	8.4%	3.2%	Low	Low	Moderate	Low
530630043002	Comstock	City	100.0%	High	Low	High	High	767	2.9%	26.2%	10.3%	0.0%	4.1%	2.1%	Very Low	High	Moderate	Low
530630048001	Southgate	City	100.0%	High	Low	Very High	High	1,766	2.5%	37.7%	17.8%	10.5%	5.1%	6.7%	Low	Moderate	High	Low
530630048002	Southgate	City	97.1%	Very High	Very Low	Moderate	Very High	1,764	8.8%	16.7%	9.3%	3.2%	5.1%	0.0%	Low	High	Very High	Very Low
530630050001	Southgate	City	98.5%	Very High	Very Low	Moderate	Very High	2,211	7.8%	3.3%	44.4%	3.8%	5.6%	17.9%	Low	Very Low	High	Very Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	Very High	Very Low	High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630106034	North Indian Trail	City	99.9%	Very High	Very Low	Moderate	Very High	842	0.0%	33.8%	5.1%	0.0%	5.1%	8.4%	Very High	Low	Very High	High
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2
Select up to 3 Sub-Index variables of interest:	E Flood Coverage	S GeoHazard Coverage
	Exposure	*Sensitivity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

Total Block Groups: 21

Total BG Population: 27,429 (11.8% of city)

City Population (OFM 2024): 233,000

Water: Severe flooding can lead to ground movement, causing misalignment, cracking, or even complete breakage or transmission of pipe mains, straining the integrity of the system's pipe network or disrupting water delivery across the city.
Wastewater: The City's wastewater collection system faces increasing vulnerability to climate-induced hazards, such as extreme heat, flooding, and ground movement. Aging infrastructure is more susceptible to damage, and these hazards increase the risks for pipe deterioration, infiltrate
Stormwater: Extreme precipitation events and flooding pose significant risks to residents in aging housing, which may lead to property damage, or areas with limited to no drainage infrastructure, such as the Hillyard Industrial Area, known as The YARD, which lacks stormwater management infrastructure (City of Spokane, 2017). Communities with limited-to-no green stormwater infrastructure (GSI), which includes natural and engineered systems like swales, bioretention cells, and infiltration ponds, may also face higher risks of localized flooding, as impervious surfaces prevent natural absorption.

								Demographic Context									
Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Sensitivity: S GeoHazard Coverage	Combined Risk	Total Population (OFM 2024)	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630008001	Balboa/South Indian Trail	City	100.0%	High	Very High	Very High	2,681	1.4%	27.2%	19.0%	0.0%	5.4%	12.1%	High	Very High	Very High	Moderate
530630010005	Audubon/Downriver	City	99.7%	Very High	Very High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630023002	West Central	City	100.0%	Very High	Very High	Very High	1,667	1.5%	29.0%	9.0%	3.7%	8.7%	0.0%	Low	Very High	Very High	Moderate
530630029001	East Central	City	100.0%	Very High	Very High	Very High	930	8.3%	18.6%	22.4%	1.6%	6.8%	8.7%	Very High	Moderate	Moderate	Very High
530630029002	East Central, Lincoln Heights	City	99.2%	High	Very High	Very High	1,080	5.8%	21.6%	17.6%	0.0%	6.8%	5.3%	Low	Very High	Moderate	Moderate
530630029003	East Central, Lincoln Heights	City	100.0%	Very High	Very High	Very High	1,323	5.5%	12.5%	21.4%	1.5%	6.8%	5.0%	Very High	Low	High	High
530630030001	East Central	City	100.0%	Very High	Very High	Very High	1,182	3.8%	11.5%	27.8%	4.5%	12.5%	11.8%	Very High	High	Moderate	Very High
530630031004	East Central, Lincoln Heights, Rockwood	City	100.0%	High	Very High	Very High	1,486	10.4%	7.0%	10.8%	3.2%	7.7%	3.8%	Very Low	Very High	Moderate	Moderate
530630036011	West Hills	City	92.2%	Very High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630036012	Peaceful Valley	City	100.0%	Very High	Very High	Very High	671	0.0%	19.6%	25.1%	0.0%	7.5%	0.0%	Low	Very High	Very High	Low
530630036022	Browne's Addition	City	100.0%	Very High	Very High	Very High	1,128	2.1%	16.6%	19.1%	0.0%	7.5%	0.0%	Very Low	Very High	High	Low
530630038001	West Hills	City	93.7%	Very High	Very High	High	828	7.7%	8.9%	0.5%	0.0%	6.7%	12.2%	Very Low	High	High	Very Low
530630039001	Latah/Hangman	City	100.0%	Very High	Very High	Very High	783	7.0%	35.3%	11.5%	0.0%	6.1%	2.2%	Low	Very High	High	High
530630039002	Latah/Hangman	City	100.0%	Very High	Very High	Very High	1,456	2.8%	24.3%	5.8%	0.0%	6.1%	12.1%	Low	Very High	High	Very High
530630042005	Manito/Cannon Hill	City	100.0%	Very High	Very High	High	1,583	6.1%	23.9%	19.2%	0.0%	3.7%	5.6%	Very Low	High	Moderate	Low
530630045001	Rockwood	City	100.0%	Very High	Very High	Very High	1,247	4.4%	32.3%	10.8%	0.0%	4.0%	0.0%	Very Low	High	Very High	Very Low
530630045002	Rockwood	City	100.0%	High	Very High	Very High	1,026	4.4%	20.6%	14.2%	0.0%	4.0%	10.3%	Very Low	High	Very Low	Low
530630046012	Lincoln Heights	City	100.0%	Very High	Very High	Very High	641	1.8%	25.8%	22.1%	0.0%	6.4%	0.0%	Very Low	Very High	High	Moderate
530630046022	Lincoln Heights	City	100.0%	Very High	Very High	Very High	854	0.9%	12.5%	8.9%	0.0%	7.0%	1.7%	Low	Very Low	High	Very Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	High	Very High	High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630136001	Grandview/Thorpe	City	54.7%	High	Very High	Very High	2,193	6.2%	12.1%	28.0%	0.0%	6.5%	1.3%	Low	Low	High	Very Low
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:	E Flood Coverage	AC Impervious Coverage	AC Tree Canopy Coverage
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☐	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑

Total Block Groups: 7

Total BG Population: 11,129 (4.8% of city)

City Population (OFM 2024): 233,000

Impervious surfaces prevent natural infiltration, exacerbating the challenge of declining groundwater recharge. While severe precipitation events lead to an increase in runoff from impervious surfaces, overwhelming stormwater drains and treatment facilities. Pervious surfaces, including permeable pavement, vegetated roofs, and storm gardens, can assist in slowing runoff and reducing strain on gray infrastructure, filling a critical role in capturing and storing stormwater for gradual infiltration into aquifers. Furthermore, impervious surfaces contribute to extreme heat with higher temperatures and droughts, further straining vegetation in GSI (Ecology, 2024; City of Spokane, 2008).

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Adaptive Capacity: AC Impervious Coverage	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	High	Very High	Very Low	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630025031	Logan	City	100.0%	Very High	Very High	Low	Very High	3,091	0.0%	0.7%	25.8%	0.5%	11.0%	16.6%	Low	Very Low	Moderate	Low
530630035001	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	1,609	6.2%	22.5%	15.6%	0.0%	11.6%	12.9%	Low	Very High	High	Very High
530630035002	Riverside	City	100.0%	Very High	Very High	Low	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	High	Very High	Very Low	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Flooding and Environmental Sensitivity (Risk of Geologic Hazards, Adverse Water Quality, Low Tree Canopy, Low Open Space)

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

		Variable 1	Variable 2
Select up to 3 Sub-Index variables of interest:		Flooding and Precipitation	Environment
		Exposure	*Sensitivity*
Select quantile scores (at least 1 for each variable):	Very High	☑	☑
	High	☑	☑
	Moderate	☐	☐
	Low	☐	☐
	Very Low	☐	☐

Total Block Groups: 27

Total BG Population: 39,653 (17.0% of city)

City Population (OFM 2024): 233,000

Wetlands are vulnerable to changes in water regime, such as less water in the summer and more in the winter, more flooding or high-water events, or lower groundwater table. Wetland plants and wildlife may not adapt to changes in conditions and provide opportunities for invasive species. Wetlands may also dry out, resulting in a loss of functions such as flood attenuation, water filtration, and wildlife habitat.
Riverine systems face increasing threats from flooding, erosion, water quality degradation, and altered habitat conditions.
Slopes can be more susceptible to erosion and landslides during high-precipitation events. Fire may remove vegetation, or drought may result in low soil moisture **making geologically hazardous areas** more vulnerable to erosion and landslide risks (WSDOT, 2011).
As Spokane experiences more extreme precipitation in shorter windows of the year, runoff and sediment will be increasing concerns for **surface water**. A growing risk of wildfire in the area is also a threat.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: Flooding and Precipitation	Sensitivity: Environment	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630008001	Balboa/South Indian Trail	City	100.0%	Very High	Very High	Very High	2,681	1.4%	27.2%	19.0%	0.0%	5.4%	12.1%	High	Very High	Very High	Moderate
530630008002	Balboa/South Indian Trail	City	100.0%	Very High	High	Very High	2,735	6.7%	23.7%	21.5%	0.6%	5.4%	3.5%	Very High	High	Very High	Moderate
530630009003	Northwest	City	100.0%	Very High	High	Very High	954	6.3%	24.0%	4.2%	0.0%	7.3%	0.0%	Very High	High	Moderate	Very High
530630009006	Northwest	City	100.0%	Very High	High	Very High	2,057	5.6%	21.4%	8.7%	0.0%	7.3%	3.9%	Very High	High	High	High
530630010002	Audubon/Downriver	City	100.0%	Very High	High	Very High	771	2.2%	2.5%	12.8%	0.0%	6.1%	6.6%	Very High	Very Low	Very Low	High
530630010003	Audubon/Downriver	City	100.0%	Very High	High	Very High	708	0.7%	18.1%	6.1%	0.0%	6.1%	0.0%	Very High	Very Low	Very Low	Very High
530630010004	Audubon/Downriver	City	100.0%	Very High	High	Very High	775	2.5%	28.8%	8.1%	0.0%	6.1%	0.0%	Very High	Moderate	Very Low	Very High
530630010005	Audubon/Downriver	City	99.7%	Very High	Very High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630010006	Audubon/Downriver	City	100.0%	Very High	High	Very High	1,533	4.0%	15.2%	15.4%	0.0%	6.1%	2.7%	Very High	Low	Moderate	High
530630011003	Audubon/Downriver	City	100.0%	High	High	High	1,117	3.8%	17.7%	4.0%	0.0%	6.4%	0.0%	High	Moderate	Moderate	High
530630018001	Logan, Minnehaha	City	100.0%	Very High	High	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630023002	West Central	City	100.0%	High	Very High	Very High	1,667	1.5%	29.0%	9.0%	3.7%	8.7%	0.0%	Low	Very High	Very High	Moderate
530630025022	Logan	City	100.0%	Very High	Very High	Very High	969	0.0%	16.4%	9.7%	2.7%	11.0%	42.9%	Moderate	Moderate	Very Low	Very High
530630026001	Chief Garry Park	City	100.0%	High	High	High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630026004	Chief Garry Park	City	100.0%	High	Very High	Very High	1,704	3.4%	5.8%	22.4%	5.7%	12.1%	2.6%	High	High	Low	High
530630029001	East Central	City	100.0%	Very High	High	Very High	930	8.3%	18.6%	22.4%	1.6%	6.8%	8.7%	Very High	Moderate	Moderate	Very High
530630029003	East Central, Lincoln Heights	City	100.0%	Very High	Very High	Very High	1,323	5.5%	12.5%	21.4%	1.5%	6.8%	5.0%	Very High	Low	High	High
530630030001	East Central	City	100.0%	Very High	High	Very High	1,182	3.8%	11.5%	27.8%	4.5%	12.5%	11.8%	Very High	High	Moderate	Very High
530630036011	West Hills	City	92.2%	Very High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630036012	Peaceful Valley	City	100.0%	Very High	Very High	Very High	671	0.0%	19.6%	25.1%	0.0%	7.5%	0.0%	Low	Very High	Very High	Low
530630047021	Lincoln Heights, Southgate	City	100.0%	Very High	High	Very High	1,066	0.0%	22.3%	17.1%	0.2%	6.6%	5.4%	Low	Low	Very High	Very Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	Very High	Very High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630106031	Balboa/South Indian Trail, North Indian Trail	City	100.0%	Very High	Very High	Very High	1,039	1.3%	31.6%	13.0%	0.0%	5.1%	4.9%	Very High	High	High	Very High
530630106032	North Indian Trail	City	100.0%	Very High	High	Very High	2,174	4.9%	16.7%	2.8%	0.0%	5.1%	0.0%	Very High	Low	Very High	Moderate
530630106041	North Indian Trail	City	100.0%	Very High	High	Very High	1,037	1.4%	34.2%	5.8%	0.0%	5.1%	0.0%	Very High	Moderate	Very High	Low
530630106042	North Indian Trail	City	97.2%	Very High	Very High	Very High	3,133	4.1%	19.1%	12.9%	0.0%	5.1%	4.7%	Very High	Moderate	Very High	Low
530630144003	Minnehaha	City	99.8%	Very High	High	High	1,771	8.2%	10.8%	30.2%	1.2%	9.3%	6.7%	Very High	High	Low	Very High
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

Select quantile scores (at least 1 for each variable):

	Variable 1	Variable 2	Variable 3
	E HeavyPrecip Weighted Avg	S GeoHazard Coverage	S Water Quality Coverage
	Exposure	*Sensitivity*	*Sensitivity*
Very High	☑	☑	☑
High	☑	☑	☑
Moderate	☐	☐	☑
Low	☐	☐	☑
Very Low	☐	☐	☑

Total Block Groups: 9

Total BG Population: 16,184 (6.9% of city)

City Population (OFM 2024): 233,000

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E HeavyPrecip Weighted Avg	Sensitivity: S GeoHazard Coverage	Sensitivity: S Water Quality Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630008001	Balboa/South Indian Trail	City	100.0%	Very High	Very High	Very Low	Very High	2,681	1.4%	27.2%	19.0%	0.0%	5.4%	12.1%	High	Very High	Very High	Moderate
530630010005	Audubon/Downriver	City	99.7%	Very High	Very High	Very High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630036011	West Hills	City	92.2%	Very High	Very High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	Very High	Very High	Very High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630106031	Balboa/South Indian Trail, North Indian Trail	City	100.0%	Very High	Very High	Very Low	Very High	1,039	1.3%	31.6%	13.0%	0.0%	5.1%	4.9%	Very High	High	High	Very High
530630106041	North Indian Trail	City	100.0%	Very High	Very High	Very Low	Very High	1,037	1.4%	34.2%	5.8%	0.0%	5.1%	0.0%	Very High	Moderate	Very High	Low
530630106042	North Indian Trail	City	97.2%	Very High	Very High	Very Low	Very High	3,133	4.1%	19.1%	12.9%	0.0%	5.1%	4.7%	Very High	Moderate	Very High	Low
530630107011	Five Mile Prairie	City	100.0%	Very High	Very High	Very Low	High	2,209	6.4%	8.6%	3.4%	0.0%	4.9%	5.0%	High	Very Low	Very High	Very Low
530630107013	Five Mile Prairie	City	55.5%	Very High	Very High	Very Low	High	1,414	4.9%	6.7%	18.0%	0.5%	4.9%	6.1%	High	Very Low	High	Very Low
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Heat , Flooding, and Water Quality

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

Select quantile scores (at least 1 for each variable):

	Variable 1	Variable 2
	E Urban Heat Island Mean	S Water Quality Coverage
	Exposure	*Sensitivity*
Very High	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

Higher temperatures and drought, low oxygen, poor water quality, and low flows affect the ability of water to support **fish and wildlife**.

Total Block Groups: 5

Total BG Population: 6,429 (2.8% of city)

City Population (OFM 2024): 233,000

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Sensitivity: S Water Quality Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	Very High	Very High	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630035002	Riverside	City	100.0%	High	Very High	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	Very High	Very High	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630145002	East Central	City	100.0%	Very High	Very High	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2
Select up to 3 Sub-Index variables of interest:	E Flood Coverage	S Water Quality Coverage
	Exposure	*Sensitivity*
Select quantile scores (at least 1 for each variable): **Very High**	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

Total Block Groups: 22

Total BG Population: 30,987 (13.3% of city)

City Population (OFM 2024): 233,000

The City has approximately 16-20 NPDES-permitted outfalls located within the 100-year or 500-year flood zone that face increasing risk of inundation due to **flooding**. Additionally, the system's lines can also experience backups during flooding events, exacerbating flooding and the possibilities of water quality impacts (CH2MHill, 2014; Vulnerability Map, 2025).

								Demographic Context									
Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Sensitivity: S Water Quality Coverage	Combined Risk	Total Population (OFM 2024)	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630010005	Audubon/Downriver	City	99.7%	Very High	Very High	Very High	869	9.5%	33.2%	24.1%	0.0%	6.1%	5.1%	Very High	Very High	Moderate	Very High
530630018001	Logan, Minnehaha	City	100.0%	Very High	Very High	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630023002	West Central	City	100.0%	Very High	Very High	Very High	1,667	1.5%	29.0%	9.0%	3.7%	8.7%	0.0%	Low	Very High	Very High	Moderate
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	High	Very High	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630025022	Logan	City	100.0%	Very High	Very High	Very High	969	0.0%	16.4%	9.7%	2.7%	11.0%	42.9%	Moderate	Moderate	Very Low	Very High
530630025031	Logan	City	100.0%	Very High	Very High	Very High	3,091	0.0%	0.7%	25.8%	0.5%	11.0%	16.6%	Low	Very Low	Moderate	Low
530630026001	Chief Garry Park	City	100.0%	Very High	Very High	Very High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630026003	Chief Garry Park	City	100.0%	Very High	Very High	Very High	1,223	7.1%	6.8%	32.0%	6.4%	12.1%	7.2%	Low	High	Very Low	High
530630026004	Chief Garry Park	City	100.0%	High	Very High	Very High	1,704	3.4%	5.8%	22.4%	5.7%	12.1%	2.6%	High	High	Low	High
530630035001	Riverside	City	100.0%	Very High	Very High	Very High	1,609	6.2%	22.5%	15.6%	0.0%	11.6%	12.9%	Low	Very High	High	Very High
530630035002	Riverside	City	100.0%	Very High	Very High	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	High	Very High	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630036011	West Hills	City	92.2%	Very High	Very High	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630036012	Peaceful Valley	City	100.0%	Very High	Very High	Very High	671	0.0%	19.6%	25.1%	0.0%	7.5%	0.0%	Low	Very High	Very High	Low
530630036022	Browne's Addition	City	100.0%	Very High	Very High	Very High	1,128	2.1%	16.6%	19.1%	0.0%	7.5%	0.0%	Very Low	Very High	High	Low
530630038001	West Hills	City	93.7%	Very High	Very High	Very High	828	7.7%	8.9%	0.5%	0.0%	6.7%	12.2%	Very Low	High	High	Very Low
530630039001	Latah/Hangman	City	100.0%	Very High	Very High	Very High	783	7.0%	35.3%	11.5%	0.0%	6.1%	2.2%	Low	Very High	High	High
530630039002	Latah/Hangman	City	100.0%	Very High	Very High	Very High	1,456	2.8%	24.3%	5.8%	0.0%	6.1%	12.1%	Low	Very High	High	Very High
530630106011	Audubon/Downriver, Northwest	City	99.9%	High	Very High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630144003	Minnehaha	City	99.8%	Very High	Very High	Very High	1,771	8.2%	10.8%	30.2%	1.2%	9.3%	6.7%	Very High	High	Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:	E HeavyPrecip Weighted Avg	AC Impervious Coverage	AC Tree Canopy Coverage
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☑	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑
		High indicator values indicate LOW Adaptive Capacity.	

Total Block Groups: 43

Total BG Population: 51,160 (22.0% of city)

City Population (OFM 2024): 233,000

Changes to seasonal precipitation, such as reduced snowpack, limits runoff that feeds into the Spokane River, further limiting **groundwater recharge** to the SVRP Aquifer. Warmer winters are further decreasing snow accumulation, weakening the aquifer's ability to replenish during crucial recharge months (GSI, 2024; City of Spokane, 2023b).

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E HeavyPrecip Weighted Avg	Adaptive Capacity: AC Impervious Coverage	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	Moderate	High	Very Low	Very High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630002012	Hillyard	City	100.0%	Moderate	High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Moderate	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Moderate	High	Low	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630003011	Whitman	City	100.0%	Moderate	High	Very Low	Very High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	Moderate	High	Low	High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630003022	Nevada Heights, Whitman	City	100.0%	Moderate	High	Low	High	1,621	6.2%	6.1%	46.3%	7.2%	11.6%	5.4%	Moderate	Low	Very Low	High
530630004001	Nevada Heights	City	100.0%	Moderate	High	Very Low	Very High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004002	Nevada Heights	City	100.0%	Moderate	High	Low	High	1,477	7.0%	7.9%	20.4%	1.2%	10.9%	8.1%	Moderate	Moderate	Low	Moderate
530630004003	Nevada Heights	City	100.0%	Moderate	Very High	Very Low	Very High	1,258	2.7%	13.2%	29.1%	8.3%	10.9%	13.7%	High	Low	Very High	Low
530630006001	North Hill	City	100.0%	Moderate	High	Low	High	980	8.0%	7.4%	27.0%	1.8%	7.9%	7.6%	Moderate	Low	Very Low	Moderate
530630007003	Northwest	City	100.0%	Moderate	High	Low	High	780	0.0%	20.1%	5.6%	0.0%	8.1%	15.2%	High	Very Low	Very Low	High
530630009001	Northwest	City	100.0%	Very High	High	Low	Very High	719	2.1%	8.3%	22.4%	0.0%	7.3%	10.2%	High	Very Low	Very Low	High
530630009002	Northwest	City	100.0%	Very High	High	Low	Very High	962	0.0%	21.3%	11.2%	0.0%	7.3%	3.7%	Very High	Low	High	Moderate
530630011002	Audubon/Downriver	City	100.0%	Very High	Very High	Low	Very High	1,072	14.6%	7.8%	37.6%	6.0%	6.4%	2.7%	Very High	High	Moderate	High
530630014001	Nevada Heights	City	100.0%	Moderate	High	Very Low	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	Moderate	Very High	Very Low	Very High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	Moderate	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Moderate	Very High	Very Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Moderate	Very High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015003	Bemiss	City	100.0%	Moderate	High	Low	High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630015004	Logan, Nevada Heights	City	100.0%	Moderate	Very High	Very Low	Very High	809	0.0%	16.9%	25.1%	0.4%	9.1%	5.5%	High	Very Low	Low	Moderate
530630015005	Nevada Heights	City	100.0%	Moderate	Very High	Very Low	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630016001	Bemiss, Hillyard	City	100.0%	Moderate	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016002	Bemiss	City	100.0%	Moderate	High	Very Low	Very High	979	8.6%	14.4%	24.1%	0.0%	12.5%	10.3%	Very High	Very High	Low	Very High
530630016003	Bemiss	City	100.0%	Moderate	High	Very Low	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630018002	Bemiss, Logan	City	100.0%	Moderate	Very High	Very Low	Very High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630019003	Emerson/Garfield	City	100.0%	Moderate	Very High	Low	High	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020004	West Central	City	100.0%	Moderate	Very High	Low	High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Moderate	High	Low	High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630021001	Emerson/Garfield	City	100.0%	Moderate	High	Low	High	943	12.5%	10.1%	7.7%	0.2%	8.6%	8.7%	High	Moderate	Moderate	Moderate
530630024002	Emerson/Garfield	City	100.0%	Moderate	Very High	Low	High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630025011	Logan	City	100.0%	Moderate	Very High	Very Low	Very High	796	6.2%	5.1%	50.0%	25.7%	11.0%	0.0%	High	Very Low	Very Low	High
530630025021	Logan	City	100.0%	Moderate	High	Low	High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630111022	Shiloh Hills	City	100.0%	Moderate	Very High	Low	Very High	1,413	6.6%	16.8%	8.3%	0.8%	9.3%	2.4%	High	Moderate	Very High	Low
530630111031	Shiloh Hills	City	100.0%	Moderate	Very High	Very Low	Very High	1,508	3.0%	47.9%	19.7%	0.0%	11.1%	3.5%	High	Very High	Very High	High
530630111041	Shiloh Hills	City	100.0%	Moderate	Very High	Very Low	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630111042	Shiloh Hills	City	100.0%	Moderate	Very High	Low	Very High	1,584	1.8%	17.6%	14.9%	0.0%	11.1%	11.5%	High	High	High	Moderate
530630111043	Shiloh Hills	City	100.0%	Moderate	Very High	Low	Very High	507	12.4%	17.8%	41.6%	0.0%	11.1%	23.6%	High	Very High	Low	Very High
530630112032	Shiloh Hills	City	100.0%	Moderate	Very High	Low	High	1,560	3.2%	29.0%	30.1%	4.2%	9.7%	2.2%	High	Moderate	Very High	Low
530630112041	Shiloh Hills	City	100.0%	Moderate	Very High	Low	Very High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630112042	Shiloh Hills	City	100.0%	Moderate	Very High	Very Low	Very High	766	0.0%	45.1%	15.8%	2.3%	9.7%	6.4%	High	Very High	High	Moderate
530630144001	Hillyard	City	100.0%	Moderate	Very High	Very Low	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630145003	Chief Garry Park, East Central	City	100.0%	Moderate	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Choose Assessment Area (City only or Full UGA: City Only

		Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:		E Urban Heat Island Mean	AC Impervious Coverage	AC Tree Canopy Coverage
		Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable):	Very High	☑	☑	☐
	High	☑	☑	☐
	Moderate	☐	☐	☐
	Low	☐	☐	☑
	Very Low	☐	☐	☑
			High indicator values indicate LOW Adaptive Capacity.	

Total Block Groups: 48

Total BG Population: 57,027 (24.5% of city)

City Population (OFM 2024): 233,000

Rising temperatures contribute to higher demand, necessitating more frequent refilling to maintain adequate reserves At the same time, reduced snowpack levels mean less water flows into the SVRP Aquifer, further limiting water availability for the City's system storage and exacerbating water shortage during summer months (GSI, 2024).

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Impervious Coverage	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	High	Very Low	High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630002012	Hillyard	City	100.0%	High	High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	High	High	Low	High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630003011	Whitman	City	100.0%	High	High	Very Low	High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	High	High	Low	High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630003022	Nevada Heights, Whitman	City	100.0%	High	High	Low	High	1,621	6.2%	6.1%	46.3%	7.2%	11.6%	5.4%	Moderate	Low	Very Low	High
530630004001	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004002	Nevada Heights	City	100.0%	High	High	Low	High	1,477	7.0%	7.9%	20.4%	1.2%	10.9%	8.1%	Moderate	Moderate	Low	Moderate
530630004003	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,258	2.7%	13.2%	29.1%	8.3%	10.9%	13.7%	High	Low	Very High	Low
530630006001	North Hill	City	100.0%	High	High	Low	High	980	8.0%	7.4%	27.0%	1.8%	7.9%	7.6%	Moderate	Low	Very Low	Moderate
530630007003	Northwest	City	100.0%	High	High	Low	High	780	0.0%	20.1%	5.6%	0.0%	8.1%	15.2%	High	Very Low	Very Low	High
530630009001	Northwest	City	100.0%	High	High	Low	High	719	2.1%	8.3%	22.4%	0.0%	7.3%	10.2%	High	Very Low	Very Low	High
530630009002	Northwest	City	100.0%	High	High	Low	High	962	0.0%	21.3%	11.2%	0.0%	7.3%	3.7%	Very High	Low	High	Moderate
530630014001	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	Moderate	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015003	Bemiss	City	100.0%	High	High	Low	High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630015004	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	809	0.0%	16.9%	25.1%	0.4%	9.1%	5.5%	High	Very Low	Low	Moderate
530630015005	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630018002	Bemiss, Logan	City	100.0%	High	Very High	Very Low	Very High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630019003	Emerson/Garfield	City	100.0%	Very High	Very High	Low	Very High	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020004	West Central	City	100.0%	Very High	Very High	Low	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630021001	Emerson/Garfield	City	100.0%	High	High	Low	High	943	12.5%	10.1%	7.7%	0.2%	8.6%	8.7%	High	Moderate	Moderate	Moderate
530630023001	West Central	City	100.0%	High	High	Low	High	1,097	0.0%	12.6%	44.2%	0.0%	8.7%	9.0%	Low	Very Low	Very Low	Very High
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	Very High	Very High	Very Low	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630024002	Emerson/Garfield	City	100.0%	Very High	Very High	Low	Very High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630025011	Logan	City	100.0%	Very High	Very High	Very Low	Very High	796	6.2%	5.1%	50.0%	25.7%	11.0%	0.0%	High	Very Low	Very Low	High
530630025021	Logan	City	100.0%	High	High	Low	High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630035002	Riverside	City	100.0%	High	Very High	Low	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630035004	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	1,001	0.0%	7.5%	28.8%	0.8%	11.6%	49.4%	Moderate	Moderate	Very Low	Very High
530630036021	Browne's Addition, Riverside	City	100.0%	Very High	Very High	Very Low	Very High	578	3.1%	5.5%	15.9%	0.0%	7.5%	10.6%	Low	Very Low	Moderate	Very Low
530630111022	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,413	6.6%	16.8%	8.3%	0.8%	9.3%	2.4%	High	Moderate	Very High	Low
530630111031	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	1,508	3.0%	47.9%	19.7%	0.0%	11.1%	3.5%	High	Very High	Very High	High
530630111041	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630111042	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,584	1.8%	17.6%	14.9%	0.0%	11.1%	11.5%	High	High	High	Moderate
530630111043	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	507	12.4%	17.8%	41.6%	0.0%	11.1%	23.6%	High	Very High	Low	Very High
530630112032	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,560	3.2%	29.0%	30.1%	4.2%	9.7%	2.2%	High	Moderate	Very High	Low
530630112041	Shiloh Hills	City	100.0%	High	Very High	Low	Very High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630112042	Shiloh Hills	City	100.0%	High	Very High	Very Low	Very High	766	0.0%	45.1%	15.8%	2.3%	9.7%	6.4%	High	Very High	High	Moderate
530630144001	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Heat, Building Age, Low Tree Canopy

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

		Variable 1	Variable 2	Variable 3
		E Urban Heat Island Mean	AC Built before 1960 Percent	AC Tree Canopy Coverage
		Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable):	Very High	☑	☑	☐
	High	☑	☑	☐
Total Block Groups: 25	Moderate	☐	☐	☐
	Low	☐	☐	☑
Total BG Population: 30,676 (13.2% of city)	Very Low	☐	☐	☑

High indicator values indicate LOW Adaptive Capacity.

City Population (OFM 2024): 233,000

Rising annual average temperatures, with particularly higher summer and winter temperatures, coupled with more frequent and sustained heatwaves, pose significant risks to both residents and workers.
Older building s tend to be less insulated and energy-efficient compared to newer structures built under more stringent codes (Power, 2008). For the purposes of this analysis, older buildings are defined as those built before 1960. As a result, increased cooling demands during the summer and extreme heat events may negatively impact the health and comfort of occupants in older buildings.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Built before 1960 Percent	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	High	Very Low	Very High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630003011	Whitman	City	100.0%	High	High	Very Low	Very High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	High	High	Low	Very High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630004001	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004002	Nevada Heights	City	100.0%	High	High	Low	Very High	1,477	7.0%	7.9%	20.4%	1.2%	10.9%	8.1%	Moderate	Moderate	Low	Moderate
530630007003	Northwest	City	100.0%	High	Very High	Low	Very High	780	0.0%	20.1%	5.6%	0.0%	8.1%	15.2%	High	Very Low	Very Low	High
530630007004	Northwest	City	100.0%	High	Very High	Low	Very High	1,293	1.8%	11.6%	28.5%	0.0%	8.1%	0.0%	Very High	Very Low	Low	High
530630010004	Audubon/Downriver	City	100.0%	High	High	Low	High	775	2.5%	28.8%	8.1%	0.0%	6.1%	0.0%	Very High	Moderate	Very Low	Very High
530630014001	Nevada Heights	City	100.0%	High	Very High	Very Low	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	Moderate	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015003	Bemiss	City	100.0%	High	Very High	Low	Very High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630015005	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630018002	Bemiss, Logan	City	100.0%	High	High	Very Low	Very High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630019003	Emerson/Garfield	City	100.0%	Very High	Very High	Low	Very High	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020004	West Central	City	100.0%	Very High	Very High	Low	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630021001	Emerson/Garfield	City	100.0%	High	High	Low	Very High	943	12.5%	10.1%	7.7%	0.2%	8.6%	8.7%	High	Moderate	Moderate	Moderate
530630023001	West Central	City	100.0%	High	Very High	Low	Very High	1,097	0.0%	12.6%	44.2%	0.0%	8.7%	9.0%	Low	Very Low	Very Low	Very High
530630024002	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630025011	Logan	City	100.0%	Very High	Very High	Very Low	Very High	796	6.2%	5.1%	50.0%	25.7%	11.0%	0.0%	High	Very Low	Very Low	High
530630025021	Logan	City	100.0%	High	High	Low	Very High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Fire Risk, Housing Age

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

	Variable 1	Variable 2
	E WUI_Coverage	AC Built before 1960 Percent
	Exposure	*Adaptive Capacity*
Very High	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

Select quantile scores (at least 1 for each variable):

High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 22

Total BG Population: 24,441 (10.5% of city)

City Population (OFM 2024): 233,000

Older buildings are also less likely to have ventilation or air conditioning systems, which are essential not only for maintaining indoor air quality during smoke events, but also for managing indoor temperatures during extreme heat. Older windows, in particular, tend to be less airtight and more prone to leakage, making these buildings especially vulnerable to the infiltration of polluted air during and after wildfire events, as well as to heat loss or gain year-round.
Wildfires and smoke present a serious risk to building safety, especially for those situated in the wildland-urban interface along the city's periphery, where direct damage may occur.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E WUI_Coverage	Adaptive Capacity: AC Built before 1960 Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	High	Very High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630007004	Northwest	City	100.0%	Very High	Very High	Very High	1,293	1.8%	11.6%	28.5%	0.0%	8.1%	0.0%	Very High	Very Low	Low	High
530630009003	Northwest	City	100.0%	Very High	Very High	Very High	954	6.3%	24.0%	4.2%	0.0%	7.3%	0.0%	Very High	High	Moderate	Very High
530630009004	Northwest	City	100.0%	Very High	High	Very High	631	3.1%	10.8%	10.1%	0.0%	7.3%	14.2%	Very High	Low	Low	Very High
530630010001	Audubon/Downriver	City	100.0%	Very High	Very High	Very High	889	2.3%	16.5%	0.0%	0.0%	6.1%	4.3%	Very High	Very Low	Moderate	Moderate
530630010002	Audubon/Downriver	City	100.0%	Very High	Very High	Very High	771	2.2%	2.5%	12.8%	0.0%	6.1%	6.6%	Very High	Very Low	Very Low	High
530630010003	Audubon/Downriver	City	100.0%	Very High	Very High	Very High	708	0.7%	18.1%	6.1%	0.0%	6.1%	0.0%	Very High	Very Low	Very Low	Very High
530630010004	Audubon/Downriver	City	100.0%	Very High	High	Very High	775	2.5%	28.8%	8.1%	0.0%	6.1%	0.0%	Very High	Moderate	Very Low	Very High
530630010006	Audubon/Downriver	City	100.0%	Very High	High	Very High	1,533	4.0%	15.2%	15.4%	0.0%	6.1%	2.7%	Very High	Low	Moderate	High
530630011002	Audubon/Downriver	City	100.0%	Very High	High	Very High	1,072	14.6%	7.8%	37.6%	6.0%	6.4%	2.7%	Very High	High	Moderate	High
530630011003	Audubon/Downriver	City	100.0%	Very High	Very High	Very High	1,117	3.8%	17.7%	4.0%	0.0%	6.4%	0.0%	High	Moderate	Moderate	High
530630018002	Bemiss, Logan	City	100.0%	High	High	Very High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630021002	Emerson/Garfield, West Central	City	100.0%	High	Very High	Very High	1,557	2.2%	10.8%	24.2%	0.9%	8.6%	12.3%	High	Very Low	Low	Moderate
530630023003	West Central	City	100.0%	High	Very High	Very High	1,519	3.1%	12.8%	32.8%	0.0%	8.7%	13.2%	Low	Low	Low	Low
530630023004	West Central	City	100.0%	High	Very High	Very High	1,258	0.0%	29.8%	29.5%	0.0%	8.7%	3.4%	Very Low	Moderate	Low	Moderate
530630040013	Cliff-Cannon	City	100.0%	Very High	High	Very High	709	3.8%	17.0%	20.2%	0.0%	8.4%	19.1%	Low	Low	Low	Low
530630040021	Cliff-Cannon	City	100.0%	High	High	High	1,248	2.1%	14.8%	22.3%	0.0%	8.4%	3.2%	Low	Low	Moderate	Low
530630042001	Manito/Cannon Hill	City	100.0%	High	Very High	Very High	880	5.0%	11.0%	3.3%	0.0%	3.7%	2.6%	Very Low	Low	Moderate	Very Low
530630042003	Manito/Cannon Hill	City	100.0%	High	High	Very High	676	10.3%	14.2%	22.8%	1.7%	3.7%	0.0%	Very Low	Moderate	High	Very Low
530630042004	Manito/Cannon Hill	City	100.0%	High	Very High	Very High	691	7.4%	14.8%	33.4%	0.0%	3.7%	9.4%	Very Low	Low	Moderate	Low
530630042005	Manito/Cannon Hill	City	100.0%	High	Very High	Very High	1,583	6.1%	23.9%	19.2%	0.0%	3.7%	5.6%	Very Low	High	Moderate	Low
530630043002	Comstock	City	100.0%	High	Very High	High	767	2.9%	26.2%	10.3%	0.0%	4.1%	2.1%	Very Low	High	Moderate	Low
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Flood Risk, Socioeconomics

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

Select quantile scores (at least 1 for each variable):

	Variable 1	Variable 2
	Flooding and Precipitation	Socioeconomic
	Exposure	*Adaptive Capacity*
Very High	☑	☐
High	☑	☐
Moderate	☐	☐
Low	☐	☑
Very Low	☐	☑

Total Block Groups: 11

Total BG Population: 15,431 (6.6% of city)

City Population (OFM 2024): 233,000

The University District PDA, situated near the Spokane River, is especially vulnerable due to its proximity to flood hazard zones, compounded by a concentration of residents living in poverty and with disabilities.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: Flooding and Precipitation	Adaptive Capacity: Socioeconomic	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630007001	Northwest	City	100.0%	Very High	Low	Very High	1,315	6.0%	9.4%	16.7%	0.0%	8.1%	0.0%	High	Low	Very Low	High
530630018001	Logan, Minnehaha	City	100.0%	Very High	Very Low	Very High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630025022	Logan	City	100.0%	Very High	Very Low	Very High	969	0.0%	16.4%	9.7%	2.7%	11.0%	42.9%	Moderate	Moderate	Very Low	Very High
530630026001	Chief Garry Park	City	100.0%	High	Low	Very High	1,388	2.5%	13.0%	29.7%	1.4%	12.1%	0.0%	Very High	High	Moderate	Very High
530630026004	Chief Garry Park	City	100.0%	High	Low	Very High	1,704	3.4%	5.8%	22.4%	5.7%	12.1%	2.6%	High	High	Low	High
530630030001	East Central	City	100.0%	Very High	Very Low	Very High	1,182	3.8%	11.5%	27.8%	4.5%	12.5%	11.8%	Very High	High	Moderate	Very High
530630030002	East Central	City	100.0%	Very High	Very Low	Very High	1,436	8.7%	13.8%	37.1%	6.1%	12.5%	3.3%	Very High	Very High	Low	Very High
530630036011	West Hills	City	92.2%	Very High	Low	Very High	2,203	3.4%	4.5%	28.4%	0.0%	7.5%	11.3%	High	Moderate	Very High	Low
530630036012	Peaceful Valley	City	100.0%	Very High	Low	Very High	671	0.0%	19.6%	25.1%	0.0%	7.5%	0.0%	Low	Very High	Very High	Low
530630047022	Lincoln Heights	City	100.0%	Very High	Low	Very High	1,199	9.4%	31.8%	4.4%	10.1%	6.6%	5.1%	Moderate	Very High	Very High	Moderate
530630048001	Southgate	City	100.0%	Very High	Very Low	Very High	1,766	2.5%	37.7%	17.8%	10.5%	5.1%	6.7%	Low	Moderate	High	Low
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Flood Risk, Housing Age

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

Select quantile scores (at least 1 for each variable):

	Variable 1	Variable 2
	E Flood Coverage	AC Built before 1960 Percent
	Exposure	*Adaptive Capacity*
Very High	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐
		High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 8

Total BG Population: 9,788 (4.2% of city)

City Population (OFM 2024): 233,000

Increased stormwater and riverine flooding, driven by higher precipitation levels in winter, further threatens Spokane's built environment, particularly in neighborhoods such as East Central, Southgate, Lincoln Heights, and Grandview/Thorpe, as well as areas along the Spokane River and Hangman Creek.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Flood Coverage	Adaptive Capacity: AC Built before 1960 Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630007001	Northwest	City	100.0%	Very High	Very High	Very High	1,315	6.0%	9.4%	16.7%	0.0%	8.1%	0.0%	High	Low	Very Low	High
530630010006	Audubon/Downriver	City	100.0%	High	High	High	1,533	4.0%	15.2%	15.4%	0.0%	6.1%	2.7%	Very High	Low	Moderate	High
530630030002	East Central	City	100.0%	Very High	High	Very High	1,436	8.7%	13.8%	37.1%	6.1%	12.5%	3.3%	Very High	Very High	Low	Very High
530630031004	East Central, Lincoln Heights, Rockwood	City	100.0%	High	High	Moderate	1,486	10.4%	7.0%	10.8%	3.2%	7.7%	3.8%	Very Low	Very High	Moderate	Moderate
530630042001	Manito/Cannon Hill	City	100.0%	High	Very High	Very High	880	5.0%	11.0%	3.3%	0.0%	3.7%	2.6%	Very Low	Low	Moderate	Very Low
530630042005	Manito/Cannon Hill	City	100.0%	Very High	Very High	Very High	1,583	6.1%	23.9%	19.2%	0.0%	3.7%	5.6%	Very Low	High	Moderate	Low
530630045002	Rockwood	City	100.0%	High	Very High	Very High	1,026	4.4%	20.6%	14.2%	0.0%	4.0%	10.3%	Very Low	High	Very Low	Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:	E Urban Heat Island Mean	AC Housing Cost Burden Percent	AC Energy Cost Burden
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑	☑
High	☑	☑	☑
Moderate	☐	☐	☐
Low	☐	☐	☐
Very Low	☐	☐	☐

High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 22

Total BG Population: 25,117 (10.8% of city)

City Population (OFM 2024): 233,000

Older building s tend to be less insulated and energy-efficient compared to newer structures built under more stringent codes (Power, 2008). The heightened demand for electricity during extreme heat events raises the risk of power failures. While lower-income homeowners spend a larger share of their income on maintenance, they invest significantly less overall than higher-income households, often prioritizing urgent repairs and disaster recovery over long-term improvements. Without resources for routine upkeep or essential replacements, many are left in unstable and unhealthy housing (Joint Center for Housing Studies, 2021). In contrast, higher-income households living in older units are often better positioned to afford the upkeep and upgrades that aging homes require.

Heat and smoke events in the City of Spokane have already put pressure on households due to the costs of air conditioning or lack of cooling. The city's housing stock is likely to be affected by climate-related hazards over the next twenty years. Increases in the number of extreme heat days are likely to increase household energy costs for cooling, which could especially impact households that are already housing cost-burdened.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Housing Cost Burden Percent	Adaptive Capacity: AC Energy Cost Burden	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	High	High	High	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	High	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630003011	Whitman	City	100.0%	High	Very High	Very High	Very High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	High	High	High	Very High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630003022	Nevada Heights, Whitman	City	100.0%	High	High	High	High	1,621	6.2%	6.1%	46.3%	7.2%	11.6%	5.4%	Moderate	Low	Very Low	High
530630006003	North Hill	City	100.0%	High	Very High	High	Very High	1,090	2.4%	10.4%	15.2%	0.0%	7.9%	1.4%	Moderate	Very Low	Very Low	Moderate
530630014001	Nevada Heights	City	100.0%	High	Very High	High	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	High	High	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Very High	Very High	High	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015004	Logan, Nevada Heights	City	100.0%	Very High	Very High	High	Very High	809	0.0%	16.9%	25.1%	0.4%	9.1%	5.5%	High	Very Low	Low	Moderate
530630015005	Nevada Heights	City	100.0%	Very High	Very High	High	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630016001	Bemiss, Hillyard	City	100.0%	Very High	High	High	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630019002	Emerson/Garfield	City	100.0%	High	High	High	Very High	1,666	11.3%	11.6%	19.0%	0.0%	7.9%	10.2%	Moderate	Moderate	Low	High
530630020001	Emerson/Garfield	City	100.0%	High	High	High	Very High	794	7.0%	18.2%	11.5%	0.0%	11.2%	6.7%	Moderate	High	Low	High
530630020002	Emerson/Garfield	City	100.0%	Very High	Very High	High	Very High	836	8.5%	3.2%	16.8%	0.0%	11.2%	8.4%	Moderate	Moderate	Very Low	Very High
530630020003	Emerson/Garfield, West Central	City	100.0%	Very High	Very High	High	Very High	900	5.5%	9.8%	34.5%	13.0%	11.2%	14.3%	Low	Moderate	Very Low	Very High
530630020004	West Central	City	100.0%	Very High	High	High	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	Very High	High	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630025021	Logan	City	100.0%	High	High	High	Very High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630111041	Shiloh Hills	City	100.0%	Very High	Very High	High	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630111043	Shiloh Hills	City	100.0%	Very High	High	High	Very High	507	12.4%	17.8%	41.6%	0.0%	11.1%	23.6%	High	Very High	Low	Very High
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	High	High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2
Select up to 3 Sub-Index variables of interest:	E Urban Heat Island Mean	AC Outdoor Professions Percent
	Exposure	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): Very High	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

High indicator values indicate LOW Adaptive Capacity.

Total Block Groups: 40

Total BG Population: 45,813 (19.7% of city)

City Population (OFM 2024): 233,000

Workers in climate-exposed sectors, such as manufacturing, transportation, and warehousing, may experience reduced working hours, job losses, or furloughs due to unsafe working conditions or infrastructure shutdowns (United States Environmental Protection Agency, 2025).
Accommodation, food services, and retail trade may suffer from changing tourism patterns due to natural landscape degradation and increased temperatures, leading to fewer tourists, reduced revenues, and fewer outdoor activities (International Economic Development Council, 2022).

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Outdoor Professions Percent	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002012	Hillyard	City	100.0%	High	High	High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	High	Very High	High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630003011	Whitman	City	100.0%	High	High	High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	High	High	High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630003022	Nevada Heights, Whitman	City	100.0%	High	High	High	1,621	6.2%	6.1%	46.3%	7.2%	11.6%	5.4%	Moderate	Low	Very Low	High
530630004001	Nevada Heights	City	100.0%	High	High	High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630006001	North Hill	City	100.0%	High	Very High	Very High	980	8.0%	7.4%	27.0%	1.8%	7.9%	7.6%	Moderate	Low	Very Low	Moderate
530630007003	Northwest	City	100.0%	High	High	High	780	0.0%	20.1%	5.6%	0.0%	8.1%	15.2%	High	Very Low	Very Low	High
530630009001	Northwest	City	100.0%	High	Very High	Very High	719	2.1%	8.3%	22.4%	0.0%	7.3%	10.2%	High	Very Low	Very Low	High
530630012001	North Hill	City	100.0%	High	High	High	894	2.0%	10.3%	16.5%	0.0%	8.7%	3.8%	Moderate	Low	Low	Moderate
530630012002	North Hill	City	100.0%	High	High	High	1,480	6.6%	13.9%	24.9%	1.0%	8.7%	3.4%	Moderate	Moderate	Moderate	Moderate
530630013001	North Hill	City	100.0%	High	Very High	Very High	1,060	0.7%	14.2%	17.2%	0.0%	9.4%	1.6%	Moderate	Low	Low	Moderate
530630014001	Nevada Heights	City	100.0%	High	Very High	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630015004	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very High	809	0.0%	16.9%	25.1%	0.4%	9.1%	5.5%	High	Very Low	Low	Moderate
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630018002	Bemiss, Logan	City	100.0%	High	High	High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630019002	Emerson/Garfield	City	100.0%	High	High	High	1,666	11.3%	11.6%	19.0%	0.0%	7.9%	10.2%	Moderate	Moderate	Low	High
530630019003	Emerson/Garfield	City	100.0%	Very High	Very High	Very High	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020002	Emerson/Garfield	City	100.0%	Very High	Very High	Very High	836	8.5%	3.2%	16.8%	0.0%	11.2%	8.4%	Moderate	Moderate	Very Low	Very High
530630020003	Emerson/Garfield, West Central	City	100.0%	Very High	Very High	Very High	900	5.5%	9.8%	34.5%	13.0%	11.2%	14.3%	Low	Moderate	Very Low	Very High
530630020004	West Central	City	100.0%	Very High	Very High	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630021002	Emerson/Garfield, West Central	City	100.0%	High	Very High	Very High	1,557	2.2%	10.8%	24.2%	0.9%	8.6%	12.3%	High	Very Low	Low	Moderate
530630023001	West Central	City	100.0%	High	Very High	Very High	1,097	0.0%	12.6%	44.2%	0.0%	8.7%	9.0%	Low	Very Low	Very Low	Very High
530630025011	Logan	City	100.0%	Very High	High	Very High	796	6.2%	5.1%	50.0%	25.7%	11.0%	0.0%	High	Very Low	Very Low	High
530630025012	Logan	City	100.0%	Very High	Very High	Very High	1,333	0.0%	7.4%	37.5%	0.0%	11.0%	5.5%	Moderate	Very Low	Moderate	Low
530630025021	Logan	City	100.0%	High	Very High	Very High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630035004	Riverside	City	100.0%	Very High	Very High	Very High	1,001	0.0%	7.5%	28.8%	0.8%	11.6%	49.4%	Moderate	Moderate	Very Low	Very High
530630106031	Balboa/South Indian Trail, North Indian Trail	City	100.0%	Very High	Very High	Very High	1,039	1.3%	31.6%	13.0%	0.0%	5.1%	4.9%	Very High	High	High	Very High
530630106032	North Indian Trail	City	100.0%	High	Very High	Very High	2,174	4.9%	16.7%	2.8%	0.0%	5.1%	0.0%	Very High	Low	Very High	Moderate
530630111041	Shiloh Hills	City	100.0%	Very High	Very High	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630112034	Shiloh Hills	City	100.0%	Very High	Very High	Very High	873	1.7%	9.9%	11.0%	0.0%	9.7%	6.0%	High	Very Low	Moderate	Low
530630112041	Shiloh Hills	City	100.0%	High	Very High	Very High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630112042	Shiloh Hills	City	100.0%	High	High	High	766	0.0%	45.1%	15.8%	2.3%	9.7%	6.4%	High	Very High	High	Moderate
530630137001	West Hills	City	76.6%	Very High	High	Very High	926	4.1%	6.2%	28.4%	0.0%	8.1%	0.0%	Very Low	Very Low	Very High	Very Low
530630144001	Hillyard	City	100.0%	Very High	Very High	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	High	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	High	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

Choose Assessment Area (City only or Full UGA: City Only

	Variable 1	Variable 2
Select up to 3 Sub-Index variables of interest:	**E WUI_Coverage**	**AC Outdoor Professions Percent**
	Exposure	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable): **Very High**	☑	☑
High	☑	☑
Moderate	☐	☐
Low	☐	☐
Very Low	☐	☐

Total Block Groups: **26**

Total BG Population: **37,325 (16.0% of city)**

City Population (OFM 2024): **233,000**

Businesses that depend on outdoor recreation are particularly vulnerable to climate hazards such as extreme heat, drought, flooding, and wildfires. Between 2012 and 2022, 66 days failed health standards in the Spokane area due to wildfire smoke, which limited the number of days safe for outdoor activities. (Spokane Regional Health District, 2023).

								Demographic Context									
Census Block Group	**City Neighborhood**	**Study Area**	**Percent of Block Group in City**	**Exposure: E WUI_Coverage**	**Adaptive Capacity: AC Outdoor Professions Percent**	**Combined Risk**	**Total Population (OFM 2024)**	Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	**Exposure Index**	**Sensitivity Index**	**Adaptive Capacity Index**	**Vulnerability Index**
530630002012	Hillyard	City	100.0%	Very High	High	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	Very High	Very High	Very High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630008002	Balboa/South Indian Trail	City	100.0%	High	High	High	2,735	6.7%	23.7%	21.5%	0.6%	5.4%	3.5%	Very High	High	Very High	Moderate
530630009005	Northwest	City	100.0%	Very High	High	Very High	991	1.8%	5.0%	30.8%	0.0%	7.3%	3.7%	Very High	Very Low	Moderate	Moderate
530630010003	Audubon/Downriver	City	100.0%	Very High	Very High	Very High	708	0.7%	18.1%	6.1%	0.0%	6.1%	0.0%	Very High	Very Low	Very Low	Very High
530630011002	Audubon/Downriver	City	100.0%	Very High	High	Very High	1,072	14.6%	7.8%	37.6%	6.0%	6.4%	2.7%	Very High	High	Moderate	High
530630011003	Audubon/Downriver	City	100.0%	Very High	High	Very High	1,117	3.8%	17.7%	4.0%	0.0%	6.4%	0.0%	High	Moderate	Moderate	High
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630016003	Bemiss	City	100.0%	Very High	High	Very High	1,330	0.7%	29.9%	15.2%	2.0%	12.5%	8.3%	Very High	Very High	Low	Very High
530630018001	Logan, Minnehaha	City	100.0%	High	High	High	1,599	3.6%	27.8%	17.0%	2.5%	9.3%	13.0%	Very High	Very High	Low	Very High
530630018002	Bemiss, Logan	City	100.0%	High	High	High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630021002	Emerson/Garfield, West Central	City	100.0%	High	Very High	High	1,557	2.2%	10.8%	24.2%	0.9%	8.6%	12.3%	High	Very Low	Low	Moderate
530630029001	East Central	City	100.0%	High	High	Moderate	930	8.3%	18.6%	22.4%	1.6%	6.8%	8.7%	Very High	Moderate	Moderate	Very High
530630046021	Lincoln Heights	City	100.0%	High	Very High	High	1,050	3.6%	14.4%	17.1%	2.3%	7.0%	9.3%	Very Low	Very Low	Moderate	Very Low
530630046022	Lincoln Heights	City	100.0%	High	High	Moderate	854	0.9%	12.5%	8.9%	0.0%	7.0%	1.7%	Low	Very Low	High	Very Low
530630047012	Lincoln Heights	City	100.0%	High	Very High	Very High	1,667	7.5%	8.7%	40.0%	2.0%	6.6%	8.4%	Very Low	Low	Moderate	Low
530630106011	Audubon/Downriver, Northwest	City	99.9%	Very High	High	Very High	1,598	12.7%	12.1%	14.6%	0.0%	5.1%	0.0%	Very High	Very High	Very High	High
530630106031	Balboa/South Indian Trail, North Indian Trail	City	100.0%	High	Very High	Very High	1,039	1.3%	31.6%	13.0%	0.0%	5.1%	4.9%	Very High	High	High	Very High
530630106032	North Indian Trail	City	100.0%	Very High	Very High	Very High	2,174	4.9%	16.7%	2.8%	0.0%	5.1%	0.0%	Very High	Low	Very High	Moderate
530630107011	Five Mile Prairie	City	100.0%	High	Very High	Very High	2,209	6.4%	8.6%	3.4%	0.0%	4.9%	5.0%	High	Very Low	Very High	Very Low
530630135033	Latah/Hangman	City	79.2%	Very High	High	Very High	4,463	13.2%	17.6%	9.6%	0.0%	4.2%	0.3%	Low	Very High	Very High	Low
530630137001	West Hills	City	76.6%	High	High	High	926	4.1%	6.2%	28.4%	0.0%	8.1%	0.0%	Very Low	Very Low	Very High	Very Low
530630144001	Hillyard	City	100.0%	Very High	High	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630144002	Hillyard, Minnehaha	City	96.7%	Very High	Very High	Very High	1,180	2.5%	18.4%	34.2%	3.0%	9.3%	22.3%	High	High	Very Low	Very High
530630144003	Minnehaha	City	99.8%	Very High	Very High	Very High	1,771	8.2%	10.8%	30.2%	1.2%	9.3%	6.7%	Very High	High	Low	Very High
Average								4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Heat, Impervious Area, Trees, Transit/ Vehicular Access

City Blocks

Choose Assessment Area (City only or Full UGA: City Only

		Variable 1	Variable 2	Variable 3
Select up to 3 Sub-Index variables of interest:		E Urban Heat Island Mean	AC Impervious Coverage	AC Tree Canopy Coverage
		Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Select quantile scores (at least 1 for each variable):	Very High	☑	☑	☐
	High	☑	☑	☐
	Moderate	☐	☐	☐
	Low	☐	☐	☑
	Very Low	☐	☐	☑

Total Block Groups: 48

Total BG Population: 57,027 (24.5% of city)

City Population (OFM 2024): 233,000

Extreme heat events combined with a lack of greenspace and predominance of impervious areas such as in Northeast Spokane are shown with a higher vulnerability. This area has less than the city's average street trees; and more people lack access to a vehicle, exposing residents to extreme heat or wildfire smoke.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Impervious Coverage	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	High	Very Low	High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630002012	Hillyard	City	100.0%	High	High	Very Low	Very High	814	2.0%	17.9%	14.3%	3.8%	13.4%	4.7%	Very High	High	Very Low	Very High
530630002021	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	739	0.0%	12.3%	15.0%	1.0%	13.4%	12.5%	Very High	Moderate	Very Low	Very High
530630002022	Hillyard	City	100.0%	High	High	Low	High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630003011	Whitman	City	100.0%	High	High	Very Low	High	1,384	2.4%	10.5%	23.2%	0.9%	11.6%	4.9%	Moderate	Low	Very Low	Moderate
530630003021	Nevada Heights, Whitman	City	100.0%	High	High	Low	High	1,303	12.8%	20.6%	24.2%	3.7%	11.6%	6.4%	Moderate	Very High	Very Low	Very High
530630003022	Nevada Heights, Whitman	City	100.0%	High	High	Low	High	1,621	6.2%	6.1%	46.3%	7.2%	11.6%	5.4%	Moderate	Low	Very Low	High
530630004001	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004002	Nevada Heights	City	100.0%	High	High	Low	High	1,477	7.0%	7.9%	20.4%	1.2%	10.9%	8.1%	Moderate	Moderate	Low	Moderate
530630004003	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,258	2.7%	13.2%	29.1%	8.3%	10.9%	13.7%	High	Low	Very High	Low
530630006001	North Hill	City	100.0%	High	High	Low	High	980	8.0%	7.4%	27.0%	1.8%	7.9%	7.6%	Moderate	Low	Very Low	Moderate
530630007003	Northwest	City	100.0%	High	High	Low	High	780	0.0%	20.1%	5.6%	0.0%	8.1%	15.2%	High	Very Low	Very Low	High
530630009001	Northwest	City	100.0%	High	High	Low	High	719	2.1%	8.3%	22.4%	0.0%	7.3%	10.2%	High	Very Low	Very Low	High
530630009002	Northwest	City	100.0%	High	High	Low	High	962	0.0%	21.3%	11.2%	0.0%	7.3%	3.7%	Very High	Low	High	Moderate
530630014001	Nevada Heights	City	100.0%	High	High	Very Low	Very High	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	High	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015003	Bemiss	City	100.0%	High	High	Low	High	923	4.1%	15.0%	13.8%	0.0%	9.1%	6.9%	High	Very Low	Very Low	High
530630015004	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	809	0.0%	16.9%	25.1%	0.4%	9.1%	5.5%	High	Very Low	Low	Moderate
530630015005	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630018002	Bemiss, Logan	City	100.0%	High	Very High	Very Low	Very High	1,490	6.3%	14.4%	23.6%	0.0%	9.3%	0.9%	High	High	Moderate	High
530630019003	Emerson/Garfield	City	100.0%	Very High	Very High	Low	Very High	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020004	West Central	City	100.0%	Very High	Very High	Low	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630021001	Emerson/Garfield	City	100.0%	High	High	Low	High	943	12.5%	10.1%	7.7%	0.2%	8.6%	8.7%	High	Moderate	Moderate	Moderate
530630023001	West Central	City	100.0%	High	High	Low	High	1,097	0.0%	12.6%	44.2%	0.0%	8.7%	9.0%	Low	Very Low	Very Low	Very High
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	Very High	Very High	Very Low	Very High	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630024002	Emerson/Garfield	City	100.0%	Very High	Very High	Low	Very High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630025011	Logan	City	100.0%	Very High	Very High	Very Low	Very High	796	6.2%	5.1%	50.0%	25.7%	11.0%	0.0%	High	Very Low	Very Low	High
530630025021	Logan	City	100.0%	High	High	Low	High	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630035002	Riverside	City	100.0%	High	Very High	Low	Very High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630035004	Riverside	City	100.0%	Very High	Very High	Very Low	Very High	1,001	0.0%	7.5%	28.8%	0.8%	11.6%	49.4%	Moderate	Moderate	Very Low	Very High
530630036021	Browne's Addition, Riverside	City	100.0%	Very High	Very High	Very Low	Very High	578	3.1%	5.5%	15.9%	0.0%	7.5%	10.6%	Low	Very Low	Moderate	Very Low
530630111022	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,413	6.6%	16.8%	8.3%	0.8%	9.3%	2.4%	High	Moderate	Very High	Low
530630111031	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	1,508	3.0%	47.9%	19.7%	0.0%	11.1%	3.5%	High	Very High	Very High	High
530630111041	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	778	0.0%	6.8%	60.4%	0.0%	11.1%	28.9%	High	Very Low	Very Low	Very High
530630111042	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,584	1.8%	17.6%	14.9%	0.0%	11.1%	11.5%	High	High	High	Moderate
530630111043	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	507	12.4%	17.8%	41.6%	0.0%	11.1%	23.6%	High	Very High	Low	Very High
530630112032	Shiloh Hills	City	100.0%	Very High	Very High	Low	Very High	1,560	3.2%	29.0%	30.1%	4.2%	9.7%	2.2%	High	Moderate	Very High	Low
530630112041	Shiloh Hills	City	100.0%	High	Very High	Low	Very High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630112042	Shiloh Hills	City	100.0%	High	Very High	Very Low	Very High	766	0.0%	45.1%	15.8%	2.3%	9.7%	6.4%	High	Very High	High	Moderate
530630144001	Hillyard	City	100.0%	Very High	Very High	Very Low	Very High	798	17.3%	13.8%	19.3%	2.0%	9.3%	4.2%	Very High	Very High	Low	Very High
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very High	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very High	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				

AGENDA

Choose Assessment Area (City only or Full UGA: City Only

Select up to 3 Sub-Index variables of interest:

Select quantile scores (at least 1 for each variable):

	Variable 1	Variable 2	Variable 3
	E Urban Heat Island Mean	AC Access to Transit	AC Tree Canopy Coverage
	Exposure	*Adaptive Capacity*	*Adaptive Capacity*
Very High	☑	☑	☐
High	☑	☑	☐
Moderate	☐	☐	☐
Low	☐	☐	☑
Very Low	☐	☐	☑

Total Block Groups: 28

Total BG Population: 35,875 (15.4% of city)

City Population (OFM 2024): 233,000

Areas with less access to centers and transit include the West Hills/Latah Valley area and West Plains near the airport. Many of the transit access areas have less tree canopy cover or shade structures, leaving transit riders exposed during extreme heat events.

Census Block Group	City Neighborhood	Study Area	Percent of Block Group in City	Exposure: E Urban Heat Island Mean	Adaptive Capacity: AC Access to Transit	Adaptive Capacity: AC Tree Canopy Coverage	Combined Risk	Total Population (OFM 2024)	Demographic Context: Population Under 5	Population Over 65	Percent BIPOC	Linguistic Isolation	No Health Insurance	Unemployment	Exposure Index	Sensitivity Index	Adaptive Capacity Index	Vulnerability Index
530630002011	Hillyard	City	100.0%	High	High	Very Low	High	2,322	5.2%	16.2%	22.6%	3.5%	13.4%	4.7%	High	Very High	Low	Very High
530630002022	Hillyard	City	100.0%	High	High	Low	High	1,019	17.5%	8.8%	22.7%	1.3%	13.4%	11.3%	Very High	Very High	Low	Very High
530630004001	Nevada Heights	City	100.0%	High	Very High	Very Low	Moderate	1,446	12.7%	10.3%	31.7%	0.0%	10.9%	10.3%	Moderate	Very High	Moderate	High
530630004003	Nevada Heights	City	100.0%	Very High	Very High	Very Low	Moderate	1,258	2.7%	13.2%	29.1%	8.3%	10.9%	13.7%	High	Low	Very High	Low
530630014001	Nevada Heights	City	100.0%	High	Very High	Very Low	Moderate	1,679	3.5%	11.5%	19.4%	0.0%	10.4%	8.6%	Moderate	Low	Very Low	Moderate
530630014002	Logan, Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,698	8.5%	3.7%	27.2%	0.0%	10.4%	6.4%	Moderate	Low	Moderate	Moderate
530630014003	Logan, Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,392	6.2%	18.5%	30.3%	2.0%	10.4%	13.2%	High	Moderate	Very Low	Very High
530630014004	Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,862	8.3%	11.0%	37.6%	7.6%	10.4%	8.5%	Moderate	Moderate	Very Low	High
530630015004	Logan, Nevada Heights	City	100.0%	Very High	Very High	Very Low	Very High	809	0.0%	16.9%	25.1%	0.4%	9.1%	5.5%	High	Very Low	Low	Moderate
530630015005	Nevada Heights	City	100.0%	Very High	High	Very Low	Very High	1,429	0.0%	13.2%	10.1%	9.3%	9.1%	4.5%	Moderate	Very Low	Low	Moderate
530630016001	Bemiss, Hillyard	City	100.0%	Very High	Very High	Very Low	High	1,496	8.3%	6.7%	39.2%	6.8%	12.5%	8.7%	Very High	High	Moderate	Very High
530630019003	Emerson/Garfield	City	100.0%	Very High	Very High	Low	Moderate	833	11.2%	13.8%	25.2%	0.0%	7.9%	0.0%	Moderate	High	Moderate	Moderate
530630020004	West Central	City	100.0%	Very High	High	Low	Very High	999	2.7%	18.3%	24.4%	0.0%	11.2%	1.9%	Moderate	Moderate	Very Low	High
530630020005	Emerson/Garfield	City	100.0%	Very High	High	Low	Very High	926	6.2%	10.5%	11.3%	4.2%	11.2%	7.0%	High	Moderate	Low	High
530630021001	Emerson/Garfield	City	100.0%	High	High	Low	High	943	12.5%	10.1%	7.7%	0.2%	8.6%	8.7%	High	Moderate	Moderate	Moderate
530630024001	Emerson/Garfield, Riverside, West Central	City	100.0%	Very High	Very High	Very Low	Very Low	2,181	3.2%	13.4%	32.2%	0.4%	13.2%	7.8%	Moderate	Moderate	Very High	Very Low
530630024002	Emerson/Garfield	City	100.0%	Very High	Very High	Low	High	1,062	3.0%	26.2%	11.3%	4.7%	13.2%	13.3%	Moderate	High	Low	High
530630025021	Logan	City	100.0%	High	Very High	Low	Moderate	1,564	4.9%	9.2%	12.8%	0.6%	11.0%	2.7%	Moderate	Very Low	Moderate	Moderate
530630035002	Riverside	City	100.0%	High	High	Low	High	1,141	0.0%	27.4%	20.7%	0.0%	11.6%	13.0%	Low	Very High	Low	Very High
530630035003	Riverside	City	100.0%	Very High	Very High	Very Low	Low	618	0.0%	19.1%	15.4%	0.0%	11.6%	0.0%	Low	Very High	Very High	Low
530630036021	Browne's Addition, Riverside	City	100.0%	Very High	High	Very Low	Very High	578	3.1%	5.5%	15.9%	0.0%	7.5%	10.6%	Low	Very Low	Moderate	Very Low
530630111022	Shiloh Hills	City	100.0%	Very High	Very High	Low	Moderate	1,413	6.6%	16.8%	8.3%	0.8%	9.3%	2.4%	High	Moderate	Very High	Low
530630111031	Shiloh Hills	City	100.0%	Very High	Very High	Very Low	Very High	1,508	3.0%	47.9%	19.7%	0.0%	11.1%	3.5%	High	Very High	Very High	High
530630112041	Shiloh Hills	City	100.0%	High	High	Low	High	1,613	3.3%	18.4%	13.2%	7.0%	9.7%	0.0%	Moderate	Low	High	Low
530630137001	West Hills	City	76.6%	Very High	Very High	Very Low	Moderate	926	4.1%	6.2%	28.4%	0.0%	8.1%	0.0%	Very Low	Very Low	Very High	Very Low
530630145001	Chief Garry Park, East Central	City	100.0%	Very High	High	Very Low	Very High	673	6.4%	16.2%	44.6%	1.0%	13.7%	0.0%	High	Very High	Very Low	Very High
530630145002	East Central	City	100.0%	Very High	Very High	Very Low	Very Low	1,959	1.1%	8.5%	16.8%	2.1%	13.7%	22.5%	Low	Low	Very High	Very Low
530630145003	Chief Garry Park, East Central	City	100.0%	Very High	Very High	Very Low	Very Low	530	5.6%	4.3%	21.5%	1.9%	13.7%	11.3%	High	Moderate	Very High	Moderate
Average									4.8%	16.9%	19.7%	1.4%	8.2%	6.7%				