



# Climate Resilience and Sustainability Board Agenda

Regular Meeting  
Thursday, January 9, 2025  
2:00 PM

Hybrid - Council Briefing Center / Microsoft Teams  
808 W Spokane Falls Blvd, Spokane, WA 99201

**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:

2:00 – 2:15	<ol style="list-style-type: none"> <li>1. Roll Call</li> <li>2. Approve <a href="#">12/12/2024</a> meeting minutes</li> <li>3. Chair Report</li> <li>4. Secretary Report</li> <li>5. Approval of current agenda</li> </ol>	Planning Staff All Brian Henning Tirrell Black All
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### Workshops:

2:15 – 3:45  3:45 – 4:45	<ol style="list-style-type: none"> <li>1. <a href="#">Climate Planning Technical Update #1 – Policy Audit, Climate Justice, Spatial Index</a></li> <li>2. <a href="#">Water Quality – NLT (Next Level Treatment) and CSO (Combined Sewer Overflow)</a></li> </ol>	BERK Consulting Maren Murphy, Planning Raylene Gennett, Wastewater Director
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**Adjournment: The next regularly scheduled CRSB meeting will be held Thursday, February 13, 2025.**

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

**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. The Council Briefing Center in the lower level of Spokane City Hall, 808 W. Spokane Falls Blvd., is wheelchair accessible and also is equipped with an infrared assistive listening system for persons with hearing loss. Headsets may be checked out (upon presentation of picture I.D.) through the meeting organizer. 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 [m\\_lowmaster@spokanecity.org](mailto:m_lowmaster@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.

# Climate Resilience and Sustainability Board Meeting Information

Thursday, January 9, 2025

The Climate Resilience and Sustainability Board will be held in a hybrid in-person / virtual format. Members of the public are welcome to attend in person at City Hall or online using the following information.

<p>Meeting ID: 297 827 294 047</p> <p>Passcode: qhF8iY</p>	<h2>Microsoft Teams</h2> <p><b>Join on your computer, mobile app or room device</b></p> <p><a href="#">Join the meeting now</a></p> <p>Meeting ID: 297 827 294 047 Passcode: qhF8iY</p> <p><a href="#">Download Teams</a>   <a href="#">Join on the web</a></p> <hr/> <p><b>Join with a video conferencing device</b></p> <p><a href="mailto:cityofspokane@m.webex.com">cityofspokane@m.webex.com</a></p> <p>Video Conference ID: 112 012 615 5</p> <p><a href="#">Alternate VTC instructions</a></p> <p><b>Or call in (audio only)</b> <a href="#">+1 323-618-1887,,999419515#</a> United States, Los Angeles</p> <p>Phone Conference ID: 999 419 515#</p> <p><a href="#">Find a local number</a>   <a href="#">Reset dial-in PIN</a></p>
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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](mailto: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)

<b>February 13, 2025 Climate Resilience and Sustainability Board (60 minutes available) Hybrid Workshop</b>		
<b>Time</b>	<b>Item</b>	<b>Presenter</b>
2:00-2:15	Roll call/Public Testimony/Briefing/ Agenda review, Secretary report	
2:15-4:00	Climate Planning Technical Update #2 – Climate Risk & Vulnerability Assessment	BERK Consulting Maren Murphy
4:00-4:45	Tree Equity Spokane project	Katie Kosanke, Urban Forester, Spokane Parks

<b>March 13, 2025 Climate Resilience and Sustainability Board (60 minutes available) Hybrid Workshop</b>		
<b>Time</b>	<b>Item</b>	<b>Presenter</b>
2:00-2:15	Roll call/Briefing/ Agenda review, Secretary report	
2:15-3:00	Climate Planning Update	Maren Murphy, Planning
3:00-3:30	PFOS/PFOA	Loren Searle, Water Department

<b>April 10, 2025 Climate Resilience and Sustainability Board (60 minutes available) Hybrid Workshop</b>		
<b>Time</b>	<b>Item</b>	<b>Presenter</b>
2:00-2:15	Roll call/Briefing/ Agenda review, Secretary report	
2:15-2:45	Climate Planning Update	Maren Murphy, Planning
2:45-3:45	GHG Emissions Inventory Reporting	Logan Callen, Public Works

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# Climate Resilience and Sustainability Board - Meeting Minutes Draft

Thursday, December 12, 2024

City Council Briefing Center

Meeting called to order at 2:00 PM by Tirrell Black

## Attendance:

- Board Members Present: Kathryn Alexander, Happy Avery, Kerry Brooks, Kevin Fagan, Brian Henning, Elyse Hochstadt, Matthew Hollon, Larry Luton, Bob Lutz, Lea Molina, Amanda Parrish
- Board Members Not Present: Hala Zahalqa
- *Quorum Present:* Yes
- Staff Members Present: Tirrell Black, Angie McCall, Emily King, Maren Murphy, KayCee Downey, Kelly Thomas, Katherine Miller, Elizabeth Schoedel, Marlene Feist, Adam McDaniel, Kirstin Davis

Current Agenda: The current agenda was approved.

## Informational, Discussion and/or Action Items:

- Introductions, Election of Officers
  - Presentation provided by: Tirrell Black, then handoff to elected officers
  - Questions asked and answered.
  - Discussion ensued.
    - Larry Luton nominated Brian Henning as Chair and Amanda Parrish as Vice-Chair, seconded by Kathryn Alexander
    - Kerry Brooks nominated himself as Chair, seconded by Bob Lutz
    - Brian Henning elected as Chair by roll call vote, 7-3-0
    - Amanda Parrish elected unanimously as Vice-Chair, 10-0-0
- Draft Meeting Procedures – Review Meeting Procedures Adoption
  - Presentation provided by staff member: Tirrell Black
  - Questions asked and answered.
  - Discussion ensued.
    - Amending rules to say chair and vice-chair rather than president and vice-president
    - Motion to strike the entirety of section 10.13 from the Rules of Procedure
      - Motion passes 6-4-0
    - Voice vote to accept the Rules of Procedure as amended passed 9-0-1
- Climate Resilience and Sustainability Board Work Program 25/26
  - Presentation provided by staff member: Adam McDaniel
  - Questions asked and answered.
  - Discussion ensued.
- Climate Planning Overview, A Component of the Periodic Update to the City's Comprehensive Plan
  - Presentation provided by staff member: Maren Murphy
  - Questions asked and answered.
  - Discussion ensued.
- Waste to Energy Disposal System
  - Presentation provided by staff member: Marlene Feist

- Questions asked and answered.
- Discussion ensued.

Meeting Adjourned at 4:01 PM.

The next regularly scheduled Climate Resilience and Sustainability Board meeting is scheduled for Thursday, January 9, 2025.

DRAFT

**BRIEFING PAPER**  
**City of Spokane**  
**Climate Resilience & Sustainability Board**  
**Workshop**  
**January 9, 2025**

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**Subject**

The City of Spokane is embarking on 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 June 2026.

The City and consultant team will provide an update on key project outcomes as part of Phase 1 climate planning, including analyses of climate impacts, climate justice, and climate policy audit reviewing the City's comprehensive plan and other local documents. The consultant team will also provide an overview of the engagement, and the methodology for the climate vulnerability index. Attachments for the workshop include:

- Attachment 1: Climate Resilience Community Engagement Plan – Final Draft – Aug 2025
- Attachment 2: Spokane Climate Vulnerability Index Indicators – Draft 2025-01-02

Project staff recently launched a community climate survey that will be open through the end of January 2025, linked on the City's website: <https://my.spokanecity.org/planspokane/climate-planning/>. Additional project materials are available on the City website including background resources.

**Impact**

The climate element should result in reductions in overall GHG emissions, must enhance resilience to and avoid the adverse impacts of climate change, and must include efforts to reduce localized emissions and avoid creating or worsening climate impacts to vulnerable populations and overburdened communities. The climate element will be integrated throughout the comprehensive plan elements such as housing, transportation, land use, utilities, and natural environment.

**Funding**

The WA Dept. of Commerce has made available funding for climate planning for the 2023-2025 biennium, with the City of Spokane eligible for \$700,000 in legislative appropriation for climate planning through 2029. City Council accepted \$420,000 in WA Dept. of Commerce grant funds for Phase 1 of climate planning on February 26, 2024 (RES 2024-0142), and adopted the climate planning resolution (RES 2024-0038) and consultant contract (OPR 2024-0292) on April 22, 2024. The WA Dept. 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](http://www.climate.wa.gov).

**Action:**

The CRSB will be engaged throughout the process and key phases, including community engagement, discussion of analyses, development of climate goals and policies, and integration into the comprehensive plan.

**BRIEFING PAPER**  
**City of Spokane**  
**Climate Resilience & Sustainability Board**  
**Workshop**  
**January 9, 2025**

Relevant Climate Planning Links:

<b>City of Spokane</b>	
Spokane Comprehensive Plan	<a href="https://my.spokanecity.org/shapingspokane/comprehensive-plan/">https://my.spokanecity.org/shapingspokane/comprehensive-plan/</a>
Spokane Climate Planning Project Page	<a href="https://my.spokanecity.org/climateplanning">https://my.spokanecity.org/climateplanning</a>
Spokane Climate Engagement Plan	<a href="https://static.spokanecity.org/documents/planspokane/climate-planning/climate-resilience-community-engagement-plan-august-2024.pdf">https://static.spokanecity.org/documents/planspokane/climate-planning/climate-resilience-community-engagement-plan-august-2024.pdf</a>
Spokane Community Climate Survey	<a href="https://www.surveymonkey.com/r/spokaneclimateplanning">https://www.surveymonkey.com/r/spokaneclimateplanning</a>
Spokane Climate Planning Engage HQ	<a href="https://engage.spokane.gov/">https://engage.spokane.gov/</a>
Spokane Environmental Programs	<a href="https://my.spokanecity.org/publicworks/environmental/">https://my.spokanecity.org/publicworks/environmental/</a>
Spokane Parks Master Plan	<a href="https://my.spokanecity.org/parksrec/master-plan/">https://my.spokanecity.org/parksrec/master-plan/</a>
<b>WA Dept. of Commerce</b>	
Commerce Climate Planning	<a href="https://www.commerce.wa.gov/growth-management/climate-planning/">https://www.commerce.wa.gov/growth-management/climate-planning/</a>
Commerce Guidance for Climate Planning	<a href="https://deptofcommerce.box.com/s/fpg3h0lbwln2ctqjg7jg802h54ie19jx">https://deptofcommerce.box.com/s/fpg3h0lbwln2ctqjg7jg802h54ie19jx</a>
Commerce Menu of Measures	<a href="https://deptofcommerce.box.com/s/n34kivgzn9rfe74jfz2vvzxqlrv7j9m9">https://deptofcommerce.box.com/s/n34kivgzn9rfe74jfz2vvzxqlrv7j9m9</a>
Climate Policy Explorer	<a href="https://experience.arcgis.com/experience/dd012fae9fad4a309b0d89e3c13016e5/page/Basic/">https://experience.arcgis.com/experience/dd012fae9fad4a309b0d89e3c13016e5/page/Basic/</a>

# Spokane Climate Element

COMMUNITY ENGAGEMENT PLAN – FINAL DRAFT

AUGUST 2024

Prepared for the City of Spokane by:





FUNDED BY WASHINGTON'S



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](http://www.climate.wa.gov).

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# Community Engagement Plan

The City of Spokane is undertaking a periodic review of the Comprehensive Plan as required by the Washington State Growth Management Act (GMA), due in 2026. The last periodic review occurred in 2017, known as Shaping Spokane. The GMA requires local governments to create and broadly disseminate a Public Participation Plan during the periodic review process. Legislation passed and signed into law through [HB 1181](#) in 2023 added a climate goal to the GMA and requires local comprehensive plans to have a Climate Element with resilience and greenhouse gas emissions mitigation sub-elements. The City of Spokane is eligible for up to \$700,000 in grant funding from the WA Department of Commerce for climate planning efforts through 2029, with an emphasis on the periodic update due in 2026.

The Final Draft Climate Resilience Community Engagement Plan (referred to herein as the CEP) will support the more general Periodic Update process by emphasizing engagement discussions around climate planning. This document recognizes the nuances required for successful and equitable engagement around climate impacts and environmental justice. This CEP provides a high-level direction for climate engagement, identifies values and priorities, and outlines examples of key tactics and opportunities for engagement as the process gets underway.

Engagement is a fluid, fluctuating process that requires adaptive strategies to make sure the project team - the City of Spokane and consultants - are reaching communities and gathering meaningful input. The CEP outlines the City's guiding principles, objectives, participants, and strategies for how the project team plans to engage Spokane community members to meaningfully participate in this planning process. It is intended as a guidepost and "living document" and we will continue to refine the detailed activities, with input from key stakeholders, as we go.

## CLIMATE PLANNING

This CEP outlines how the project team plans to engage a diversity of communities in Spokane around the climate planning as a part of HB 1181 requirements. Spokane's Climate Planning includes two sub-elements:

**Greenhouse Gas emissions sub-element:** must include goals and policies to reduce emissions and vehicle miles traveled, including developing a local emission inventory; conducting a Vehicle Miles Traveled Per Capita study; and projecting emission reductions to inform the adopted comprehensive plan goals and policies.

**Resilience sub-element:** must include goals and polices to improve climate preparedness, response, and recovery efforts, including data to explore expected local climate impacts; auditing existing plans and policies for climate resilience opportunities, gaps, and barriers; assessing climate vulnerability and risk; and developing and prioritizing science-based climate resilience goals and policies for comprehensive plans.

In crafting engagement for this climate planning effort, it is essential to reject "one-size-fits-all" approaches. Rather, our processes and plans must effectively engage impacted communities

through models of public facilitation that elevate community voices and priorities, and adjust based on the needs, perspectives, and realities of community members and the organizations that represent them. Climate is fundamentally an issue of equity, and the CEP incorporates equity, environmental justice, and climate justice as foundational lenses in the planning process. Climate planning must also maximize economic, environmental, and social co-benefits and prioritize environmental justice and climate justice to avoid worsening environmental health disparities. Our engagement efforts will ensure that historically underrepresented and overburdened communities are included early and continuously, particularly within those most affected by climate change.

## Engagement Objectives

Through our engagement, the project team intends to meet the following objectives:

**Inclusive and Intentional outreach:** Ensure everyone who lives and works in Spokane has the opportunity to engage in the planning process by maximizing outreach efforts. Focus on inclusivity and building relationships with historically underserved and marginalized communities.

**Open, Transparent, and Accessible Process:** Maintain a planning process that is open, transparent, culturally sensitive, and accessible to all community members.

**Strengthening Community Relationships:** Develop new and strengthen existing community relationships to foster a collaborative environment.

**Authentic Public Input:** Solicit and integrate public feedback meaningfully into the plan development, ensuring that community input can genuinely influence outcomes.

## Equitable Community Engagement

Equitable engagement aims to reach and engage with as many people as possible, while centering people who experience the first and worst consequences of climate change.

### Guiding Principles

To strive for an equitable public participation process, the following guiding principles will be a continual foundation for planning and in facilitating engagement activities.

Guiding Principle	Description
<b>CREATE CLEAR EXPECTATIONS</b>	Clear expectations of the purpose of each community engagement activity shall be built with the public. Whether the purpose is to inform, gain feedback, or seek suggestions, participants will be provided clear directives of how their engagement will impact the work being done.
<b>MAKE IT CONVENIENT</b>	Community engagement must be convenient if it is to avoid creating an unnecessary roadblock to open and robust communication. Not all activities will be convenient for all participants, but an effort will be made to meet a diverse range of needs.
<b>FOSTER PEER TO PEER CONVERSATIONS</b>	Rather than creating a transactional form of community engagement, this principle encourages conversations between City staff and the public, but also between members of the public, to generate greater understanding and build upon each person’s lived experiences.
<b>IMPLEMENT ACCESSIBILITY STANDARDS</b>	Accessibility for persons with physical and/or cognitive disabilities will be a guiding principle when planning any engagement activity.
<b>ENSURE LANGUAGE ACCESS FOR ALL</b>	According to the 2020 5-year American Community Survey, there are 16,732 Spokane residents who speak a language other than English, and Spokane’s immigrant population grew by 9% since 2010. On October 16, 2023, the Spokane City Council approved <a href="#">ORD C36449</a> , which established a language access program within the <a href="#">Spokane Municipal Code</a> . The Planning Department will evaluate language access needs and, where feasible, provide the opportunity for both language translation and interpretation, including American Sign Language.
<b>COMPENSATE PUBLIC EFFORTS</b>	As stated by the Washington Office of Equity in their <a href="#">guidance on community compensation</a> , compensation can help remove a significant barrier to public participation for populations for which participation in public meetings may be a significant economic burden due to work schedules, family care commitments, or other fixed obligations. Compensation can include stipends, but also wrap-around services like paid childcare and transportation support. During the periodic review, the

Guiding Principle	Description
	City will evaluate existing compensation policies and implement the guidance of the Office of Equity to ensure a more robust and equitable public participation process. Compensation should apply to Tribal engagement as well.
<b>BUILD PARTNERSHIPS</b>	Community based organizations (CBOs) and representatives of these organizations can be particularly helpful partners and collaborators because of their roles as trusted partners throughout the community. They also bring broader community perspectives, not only the perspectives of individual community members.
<b>TRIBAL ENGAGEMENT</b>	New changes to the Growth Management Act (GMA) implementing HB 1717 (2022) allows tribes to voluntarily participate in the City’s comprehensive planning process (RCW 36.70A.040). This also requires local jurisdictions to work with tribes to coordinate urban growth. Tribes must opt-in to coordinate with the jurisdiction (RCW 36.70A.110).

## Climate Justice Principles

In addition to the guiding principles described above, climate engagement will implement the following climate justice focused principles to ensure appropriate and equitable public participation. WA Department of Commerce provides guidance for climate justice in the [Summary Report: Climate Justice in Growth Management](#). Aligning with this guidance, the City will identify the overburdened communities and vulnerable populations in their scopes of work to determine if proposed Climate Planning Element measures are equitable. The climate justice guidance outlines four principles in the Just Transition Framework for climate strategies that will guide the City’s engagement efforts.

Climate Justice Principle	Description
<b>CENTER THOSE DISPROPORTIONATELY IMPACTED IN GOVERNANCE</b>	New models of participatory governance — or “co-governance” between government leaders and agencies and impacted communities — are necessary to meaningfully address these gaps in community leadership and shared governance. Key cornerstones of co-governance include a) establishing government commitment to the self-determination of communities; b) supporting communities to build their capacity to effectively participate (in government processes); c) developing shared governing power in principles and in process; and d) demonstrating equitable processes and results.
<b>RESTORE COMMUNITY CONNECTIONS TO PLACE</b>	A place-based approach focuses policy, programmatic interventions, and innovations in specific geographic areas that are suffering from environmental and social injustices to ensure no community is sacrificed to climate impacts or to suffer emissions disproportionately. This priority is integrated by placing greater value

Climate Justice Principle	Description
	on and by centering in public engagement processes the values, cultures, aspirations, hopes, and experiences of the communities impacted by their plans and actions.
<b>CREATE LIVELIHOODS WITHIN A HEALTHY ENVIRONMENT</b>	A regenerative economy is one that prioritizes sustainable living and working within ecological limits. Support movement toward a regenerative economy by prioritizing the needs of communities.
<b>TRANSITION TO RENEWABLE RESOURCES AND ENERGY</b>	A key cornerstone of a Just Transition is enabling strategies to ensure energy is first conserved, and that energy generation is renewable and equitable. Planning for the use of renewable energy sources and transitioning away from non-renewable sources can reduce social and environmental harms.

## Metrics for Success

Periodically after engagement milestones, the project team will summarize engagement themes and feedback heard from community members. The project team will track our success at meaningfully and authentically engaging community members by the following metrics for success:

- **Quantitative Metrics**
- Total number and demographics of individuals engaged (gathered via optional survey after each engagement that includes anonymous demographic questions)
  - Total number of responses by activity
    - Survey responses
    - Geographic distribution of attendees
    - Events represented at
    - Drop-in session attendees
    - Focus group attendees
    - Social media engagement
- Subscribers to Community Update e-newsletter
  - Comments on draft plan

- **Qualitative Metrics**

- Document the richness of feedback received during one-on-one conversations and small group discussions.
- Assess the extent to which community members felt heard and valued during interactions.
- Capture key themes and insights from open-ended feedback and in-depth discussions.
- Track the development of new relationships and strengthening of existing ones, particularly with historically underserved communities.

## Participants

The CEP will seek to engage a diversity of residents, community groups, non-profit organizations, businesses, and others, with particular emphasis on identifying and engaging overburdened community organizations and members — people who experience the first and worst consequences of climate change. Engagement will also seek participation from those with technical expertise, cultural perspective, and/or lived experience.

## Participant Groups

We will engage various participant groups, both internal and external, throughout the project. Some participant categories include implementation leads, community-based organizations and groups, City department leads and staff, utilities, development staff, and other typical participant groups.

[Appendix A](#) includes potential participant details organized by participant category, potential groups, and anticipated engagement level. To gain further insight into potential participants, demographic data in [Appendix B: Spokane Community Profile was used](#) to inform the approach.

## Tailored Approaches

Three priority groups have been identified whose engagement will be tailored to collaborate and ensure that the climate planning results in community-driven policy.

### ADVISORY COMMITTEES

Engagement for climate planning in the Periodic Update will prioritize an external **community advisory board in coordination with the Mayor's Office**, and internal **City Technical Advisory Committee (CTAC)** to support co-creation in climate planning. The focus includes analyzing climate information, reviewing key deliverables, providing recommendations on climate focus and equity, and developing climate goals and policies. The advisory board and CTAC could also provide recommendations on goals with near-term due dates; actions that can be implemented readily; strategies for longer-term actions; and a structure for ongoing monitoring and evaluation. The committees will meet 3-5 times throughout June 2025, coinciding with key deliverables and milestones.



## Community Advisory Board Expertise and Members

Members of the community advisory board will be established in coordination with Mayor's Office and will include a diverse group of community members and agency partners in addition to planning and public works professionals. The focus of the community committee meetings will be to support the collaboration and development of the Climate Element in accordance with the WA Dept. of Commerce guidelines that centers equity and co-creation in policy development and implementation. A key focus of the process will identify and build partnerships with overburdened community organizations and members, along with others, to learn from their technical expertise, cultural perspective, and lived experience. The committees will include members with a variety of expertise. Appendix A. Participant Group Details

## PARTNERSHIPS WITH COMMUNITY-BASED ORGANIZATIONS

A guiding principle around climate engagement includes developing and deepening partnerships with Community-Based Organizations (CBOs) with the goal of establishing and building trust. A list of potential CBOs to collaborate with is detailed in Appendix A. Participant Group Details. Through collaboration with CBOs, we will gain insights into community events, authentic engagement methods, and the resource needs of targeted participants. Due to the nature of such partnerships, City staff cannot anticipate the specific events or other engagement efforts that will be deemed appropriate through deliberate community collaboration. As such, climate engagement will incorporate flexibility to ensure the capacity to be responsive.

## Support Community Participants

Climate planning acknowledges equity in participation as a critical component and will explore community compensation of who individuals who serve on the community committees, namely those whose participation is not a paid position within an organization, by:

- Paying a stipend for participation in meetings.
- Hosting accessible and convenient meetings and providing food and family-friendly activities.
- Offering meeting translation services and ensuring engagement materials are available in multiple languages and formats.
- Asking what support is needed to authentically participate.

Community-Based Organizations and representatives of these organizations can be particularly helpful partners and collaborators because of their roles as trusted partners in overburdened communities. They also bring broader community perspectives, not only the perspectives of individual community members. Partnerships with CBOs should also consider compensating organizations to participate meaningfully in development, implementation, and evaluation of engagement efforts.

## Tribal and Native American Engagement

Spokane is home to over 25,000 Native Americans from a variety of U.S. Tribes and First Nations of Canada. Between the 2010 and 2020 U.S. Census, the City’s Native community has grown by about 10,000 people, now reaching over 25,000 in total. Special emphasis in climate planning guidance includes Tribal engagement. Tribal engagement encompasses all levels of Tribal communication and partnership, from formal government-to-government consultation to informal coordination. The City of Spokane is currently considering a Tribal Consultation Ordinance to guide the City’s tribal government-to-government engagement process. In addition, the City is proposing to establish a Native American Community Council as a means of more effectively engaging the City’s urban Native American community.

Local tribal governments with aboriginal territories on or near the City of Spokane include the Spokane Tribe, Kalispel Tribe, Coeur d’Alene Tribe, and Colville Tribe. Each of these tribal governments may have a direct interest in the City’s climate planning effort and may request formal consultations on a government-to-government basis with the City of Spokane.

The City’s climate planning efforts will also engage with Spokane’s urban Native American communities through conversations focused on information sharing and provide opportunities to hear about their climate impacts, experience, concerns, and community needs. The City recognizes the importance of working with Native American groups that are not Tribal governments, such as the American Indian Center, Native Project, Spokane Tribal Network, the Upper Columbia United Tribes, and perhaps the Native American Community Council once it is established (see Appendix A. Participant Group Details).

Collaborative planning with local Tribal governments and the urban Native American communities at all levels can help identify mutual priority actions and strategies that can inform and integrate climate planning efforts and facilitate information sharing of existing resiliency actions and plans. KAI will assist the city to define working relationships, identify key contacts, identify common goals and similar efforts, develop culturally appropriate outreach opportunities, and facilitate meetings and consultations with Tribes to voluntarily participate in the City’s climate planning. KAI will work directly with the Mayor’s Office to identify both formal and informal Tribal and Native American community engagement opportunities early on, which is critical to developing relationships, building trust, and fostering collaboration.

KAI will:

- Coordinate with the Mayor’s office and key planning staff at the City of Spokane to identify and contact key officials with the Spokane, Kalispel, and Couer d’Alene Tribal Governments to initiate introductory meetings, present the City’s climate planning process and schedule, discuss tribal consultation process, and engagement with the Tribal Engagement Workgroup (TEW). Introductory meetings between the mayor’s office and Tribal Governments will be scheduled in August 2024.
- Coordinate with the Mayor’s office and key planning staff at the City of Spokane to identify and contact key representatives of Native American urban organizations including The Native

Project, American Indian Community Center, Spokane Tribal Network, Upper Columbia United Tribes to initiate introductory meetings, present the City’s climate planning process, discuss engagement process, and participation on the Tribal Engagement Workgroup. Introductory meetings between the mayor’s office and urban Native American organizations will be scheduled in August 2024.

- Key staff of the mayor’s office will prepare a summary memo describing the City’s climate planning process and schedule including the establishment of the TEW. KAI and the Mayor’s office staff will formalize appointment of the TEW in August and KAI will facilitate the first meeting of the TEW immediately after the TEW is established. The TEW will meet virtually each month thereafter. KAI, the Mayor’s office, and City climate planners will coordinate monthly TEW agendas, climate planning and engagement materials, and TEW input and recommendations.
- Provide or gather technical knowledge for climate impacts and policy considerations for Tribal governments and the urban Native American communities (especially climate and health intersections).
- Review important local Tribal government documents related to climate vulnerability assessments, climate adaptation plans, and other related policies or reports.
- Ensure project climate impacts and proposed policy approaches incorporate Tribal government and urban Native American communities' perspectives and subject matter expertise identified through engagement.
- Prepare quarterly, or engagement phase-based, update reports on engagement activities, key takeaways, and major outcomes.
- Develop public presentation materials and practices for City staff to expand upon engagement with additional opportunities as appropriate.

### TRIBAL ENGAGEMENT WORK GROUP

A Tribal Engagement Workgroup (TEW) will be established to help guide Tribal government and urban Native American communities’ engagement efforts, provide advice and analysis on climate impacts, and ensure effective input on the climate update for the Comprehensive Plan. The TEW will consist of 6-7 members. The three Tribal government representatives – one each from the Spokane, Kalispel, and Coeur d’Alene tribes – will be appointed by their respective tribes. There will be 3-4 representatives of the urban Native American communities appointed by the Mayor’s Office to the TEW, as discussed above. The goal is to establish the TEW in August 2024 and meet virtually every month thereafter.

KAI will take the lead to coordinate agendas, share climate planning information, take minutes, and facilitate 8 virtual meetings with the TEW each and every month beginning in August 2024. The purpose of the workgroup will be to guide the tribal engagement work to enable input on the development of the Climate Element for the comprehensive plan. Monthly reports on the tasks assigned and major accomplishments of the TEW will be prepared and provided.

# Engagement Strategy

The engagement strategy is phased, broken out into four main phases. Each of the phases is supported by a mix of engagement activities to offer varying options for participation in the planning process.

	Timing	Purpose	Activities
<p><b>Phase 1: Understand Spokane’s current state from diverse perspectives &amp; develop a shared community vision</b></p>	<p>Spring 2024 – Spring 2025</p>	<ul style="list-style-type: none"> <li>● Build early awareness of planning process and opportunities to participate</li> <li>● Build or strengthen partner relationships</li> <li>● Gather community values and visions for guiding</li> <li>● Community-driven prioritization of key plan elements</li> </ul>	<ul style="list-style-type: none"> <li>● Committee meetings</li> <li>● Tabling at existing events</li> <li>● Community-wide survey</li> <li>● Community-wide workshop</li> <li>● 2 Focus groups</li> <li>● Interviews with City staff</li> <li>● Tribal engagement</li> <li>● Project webpage, social media, and newsletters</li> <li>● Constituent and partner kits</li> </ul>
<p><b>Phase 2: Develop and refine draft goals and priorities</b></p>	<p>Summer 2025 – Summer 2026</p>	<ul style="list-style-type: none"> <li>● Incorporate community feedback into climate planning</li> <li>● Gather input for implementation</li> <li>● Share back with the community how input was incorporated</li> <li>● Provide opportunity for comment on</li> </ul>	<ul style="list-style-type: none"> <li>● 2 Focus groups</li> <li>● Tabling at existing events</li> <li>● Tribal engagement</li> <li>● Project webpage, social media, and newsletters</li> <li>● Constituent and partner kits</li> <li>● Online open house</li> </ul>

	Timing	Purpose	Activities
		final climate planning	

## Engagement Activities

### Committee Meetings

**Participants:** Climate Resilience and Sustainability Board (CRSB) and Internal Technical Groups (City Technical Advisory Committee - CTAC).

**Purpose:** Facilitate collaborative analysis of climate data, understanding of impacts, and development of climate goals and policies.

**Details:** The strategy involves hosting one in-person meeting and two virtual meetings with the community advisory board, comprised of experts in various fields related to climate action. These sessions will focus on developing recommendations on focus areas and strategies to guide the City's climate action efforts. Additionally, one in-person meeting and three virtual workshops will be held with the CTAC to collaboratively analyze climate data, understand impacts, and develop climate goals and policies to integrate into the City's comprehensive plan. These workshops will provide a platform for technical experts within the City administration to engage in detailed discussions and provide input on the development of actionable strategies.

**Roles and responsibilities:** **City of Spokane** will form and establish a community advisory board, the Climate Resilience and Sustainability Board, in coordination with the Mayor's Office. Members could include planning and public works professionals, community-based organizations, community members, and leaders within overburdened communities that are most impacted by the changing climate conditions. **Cascadia** will host and facilitate the meetings.

### Interviews with City Staff

**Participants:** Key City staff.

**Purpose:** Gather insights on critical climate impacts and vulnerabilities faced by each department, including lessons learned from the lived experiences of staff to concurrent document and policy review.

**Details:** This strategy involves conducting interviews with key City staff members from departments relevant to the Vulnerability Assessment focus areas. To streamline the process, multiple staff members from the same department will participate in joint interviews.

**Roles and responsibilities:** **City of Spokane** will identify key staff to interview. **Cascadia** will help develop interview materials and facilitate meetings as the budget allows.

## Community-Wide Survey

**Participants:** Community members who live and work in Spokane.

**Purpose:** Gather diverse perspectives and prioritize community assets for climate resilience planning and the Climate Risk and Vulnerability Assessment.

**Details:** The community-wide survey aims to gather insights from a diverse range of Spokane community members to inform the development of climate resilience goals and policies. The survey will be promoted extensively by the City of Spokane, with paper copies made available in central locations such as libraries and senior centers to ensure accessibility. Return postages will be provided by the City. The survey will also be promoted through social media as well as the Community Update weekly newsletter that has about 80,000 subscribers. The survey will focus on identifying and prioritizing community assets, understanding how people experience climate as individuals and a community, revealing issues faced by households due to changing climate, hazards and risks that cause concern and climate anxiety, and establishing community climate priorities. To enhance accessibility, the survey will be translated into key languages aligned with the City's Language Access Program. An incentive program, such as a raffle for a local business gift card, could be implemented to encourage participation. The survey's timeline will be strategically aligned with community workshops, allowing for cross-promotion and ensuring maximum engagement. The project team will also monitor other surveys distributed by the City to prevent engagement fatigue. The survey will remain open for at least four weeks to ensure ample community engagement and responses.

**Roles and responsibilities:** **Cascadia** will develop survey and analysis and can pass through raffle gift cards to community members. **City of Spokane** will lead promotion and distribution of survey.

## Community-Wide Workshop

**Participants:** Spokane community members.

**Purpose:** Facilitate broad community input on climate goals, policies, and concerns.

**Details:** A community-wide workshop will serve as an initial touchpoint for engaging the Spokane community on climate planning efforts. The workshop will provide a platform for community members to share their perspectives, experiences, and concerns related to climate change. Key topics explored will include issues faced by households due to changing climate patterns, hazards and risks that cause concern, and priorities for community climate action. The project team will conduct outreach to inform the community about the workshop and encourage participation, including partnering with community centers and food banks for distribution of information. The

workshop will be designed to be inclusive and accessible, with efforts made to accommodate diverse needs and preferences, and stipends provided to community members for attending.

**Roles and responsibilities:** **Cascadia** will host and facilitate the community-wide workshop and can pass through stipend funds to community members. **City of Spokane** will lead promotion of the meeting.

## Focus Groups

**Participants:** Key participant groups such as youth, Spanish-speaking communities, residents in higher-impact areas identified by the vulnerability assessment, and communities of color (i.e., the Marshallese community).

**Purpose:** Engage targeted groups in in-depth discussions to gather detailed input for vulnerability assessment and identify key vulnerabilities and risks.

**Details:** Focus groups will be conducted virtually and promoted to targeted communities in Spokane. The sessions will incorporate storytelling elements to resonate more deeply with participants, allowing them to share personal experiences and perspectives related to climate impacts. The aim is to foster meaningful conversations and gather rich qualitative data. These sessions are intended for participant groups typically not involved in planning processes or those facing significant impacts from plan implementation. Three to four focus groups will be organized, with groups such as youth, Spanish-speaking communities, residents in higher-impact areas identified by the vulnerability assessment, and communities of color. In-person sessions will be considered as resources allow, ensuring accessibility for all community members. Additional focus groups may be considered based on community feedback, partnerships, and timelines.

**Roles and responsibilities:** **Cascadia** will host and facilitate 2 focus groups. **City of Spokane** will host and facilitate the remainder and will lead promotion of all focus group meetings.

## Project Webpage, Social Media, Newsletters, and Constituent and Partner Kits

**Participants:** Interested individuals and organizations.

**Purpose:** Provide a central platform for information dissemination, project updates, and engagement opportunities.

**Details:** The City will develop a project webpage as a central hub for directing interested individuals to more information about the climate planning process. The City will have access to [Granicus Engagement HQ](#). The webpage will provide an overview of the project, updates, upcoming engagement opportunities, and contact information. Additionally, the webpage will host project materials, including surveys and online comment periods for the draft implementation plan. Regular updates will be provided to individuals and organizations interested in climate planning through emailed newsletters. The City's social media platforms will be leveraged to build awareness of and provide information about climate planning and engagement activities. Constituent and partner kits will provide ready-to-share information and materials to elected

officials, partner agencies, and organizations at key milestones to disseminate out through various networks.

**Roles and responsibilities:** **City of Spokane** will lead development social media posts, newsletters, and project webpage. **Cascadia** will support content development if needed and as budget allows.

## Tabling at Existing Events

**Participants:** Spokane community members.

**Purpose:** Raise awareness about the project and provide opportunities for involvement.

**Details:** Cascadia will develop 1-2 factsheets detailing the project overview, ways to get involved, and additional information. These factsheets will be available in English and Spanish, in both digital and printed formats. They will be distributed at various community events and locations, including food banks, farmers markets, SpoCanopy and Water Wise events, partner events, events related to universities (e.g. Gonzaga Green Drinks) and Earth Day 2025.

The project team will regularly check the [Spokane Events Calendar](#) for additional opportunities to table at existing events, distribute factsheets, and solicit community feedback. At these events, poster boards with questions designed to gather input on goals, key areas of concern, and experiences with climate impacts will be used as appropriate.

**Roles and responsibilities:** **City of Spokane** will lead in-person attendance at existing events. **Cascadia** will develop factsheets and engagement material.

## Online Open House

**Participants:** Spokane community members.

**Purpose:** Provide an interactive platform for community members to review and provide feedback on draft documents.

**Details:** An online open house will be developed and published via [Konveio.com](#) for the final phase of engagement. This platform will provide up-to-date information on the draft climate planning status and allow community members to directly provide feedback or public comments on draft documents. Compared to traditional in-person open houses, this format allows individuals to participate at their convenience and take their time digesting materials. The platform supports multiple interactive features, making it easy for diverse participants to understand. To make the experience more engaging, we plan to gamify the open house, adding elements that make the process more enjoyable and fun for participants. The comment period will remain open for at least four weeks to ensure ample opportunity for feedback.

**Roles and responsibilities:** **Cascadia** will develop the online open house platform, and track responses. **City of Spokane** will lead promotion and distribution of the online open house.



## 1:1 Meetings with Tribal Governments

**Participants:** Tribal Government elected leaders and staff.

**Purpose:** Engage with Tribal leaders to incorporate Tribal government input on climate goals, policies, and concerns into the planning process. Understand existing and future Tribal policy, climate related plans, and opportunities for government-to-government collaboration.

**Details:** KAI will develop draft letters for the mayor's office consideration, to send to each of the four Tribal governments, informing them of the city's desire to engage in consultations and collaboration with each government. KAI will then coordinate between the mayor's office and the respective Tribe for an initial introductory meeting to provide an overview of the City's climate planning effort, timeframe, opportunities for tribal engagement and consultation, discuss representation on the Tribal Engagement Workgroup (TEW), and propose periodic meetings to provide update and input. This will create the framework for regular and consistent consultations between the city and the tribe.

**Roles and responsibilities:** KAI will prepare draft communications for the city, coordinate tribal – city meeting dates and locations, provide necessary briefing materials, facilitate the meetings with Tribal leaders and staff, and document meeting outcomes. The mayor's office will send the communications to the tribes, help in agenda preparation, identify and brief representatives from the mayor's office to participate in the tribal consultation meetings, make presentations, and follow up with appropriate actions.

## Others as Relevant

The project team will continue to identify other engagement activities and discuss roles as relevant.

## Key Messages

### WHAT IS THIS PROJECT?

The City of Spokane is embarking on a comprehensive Climate Impact and Resiliency Planning project as part of our 2026 Comprehensive Plan Update. Our goal is to deepen our community's resilience that fosters an exceptional sense of unity, wellbeing, and quality of life for all people to live, work, and recreate in a clean and healthy environment.

- **Climate Vulnerability and Risk Assessment:** Identifying climate impacts, risks, and vulnerabilities to inform resilience strategies.
- **Comprehensive Plan Integration:** Updating policies to address climate change and environmental justice.
- **Community Engagement:** Actively involving Spokane residents in the planning process to ensure diverse perspectives are considered.

- **Environmental Justice:** The fair treatment and meaningful involvement of all people in the environmental laws, regulations, and policies that shape their communities. Environmental justice includes addressing disproportionate environmental and health impacts by prioritizing vulnerable populations and overburdened communities.

## WHY SHOULD I PARTICIPATE IN THIS PROCESS?

Your participation is crucial for several reasons:

- **Voice Your Priorities:** Ensure your priorities about climate impacts and community needs are heard and addressed.
- **Shape the Future:** Guide the development of climate resilience policies and strategies that will protect and enhance the quality of life, wellbeing, and environment for all people in Spokane.
- **Community Resilience:** Help build a resilient Spokane to better collectively and individually withstand and adapt to climate challenges, ensuring a safer, healthier, and more equitable community for all.

## HOW WILL MY FEEDBACK BE USED?

Your feedback will play a vital role in shaping our Comprehensive Plan Update by:


- **Identifying Priorities:** Helping to prioritize climate risks and community assets that need protection and enhancement.
- **Informing Policies:** Contributing to the development of climate resilience goals and policies that reflect community values and needs.
- **Guiding Implementation:** Ensuring that the actions taken are grounded in the lived experiences and insights of Spokane residents, making developed strategies more effective and community-driven.

## WHERE IS THE FUNDING FOR THIS EFFORT COMING FROM?

- This work is funded through a [WA Department of Commerce](#) climate planning grant which is supported with funding from Washington's Climate Commitment Act. The Climate Commitment Act 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](http://www.climate.wa.gov).

# Timeline

Table 1 depicts the proposed timing and sequence of key engagement events as they relate to the overall project timeline (Figure 1). The proposed timeline includes gap time in between engagement milestones for the project team to summarize results from previous engagement efforts, prepare for upcoming events, and adaptively adjust strategies based on community and demographic trends. This timeline serves as a high-level overview, and Cascadia will also share a more detailed working timeline with the City, to be used for more detailed planning and implementation of activities.

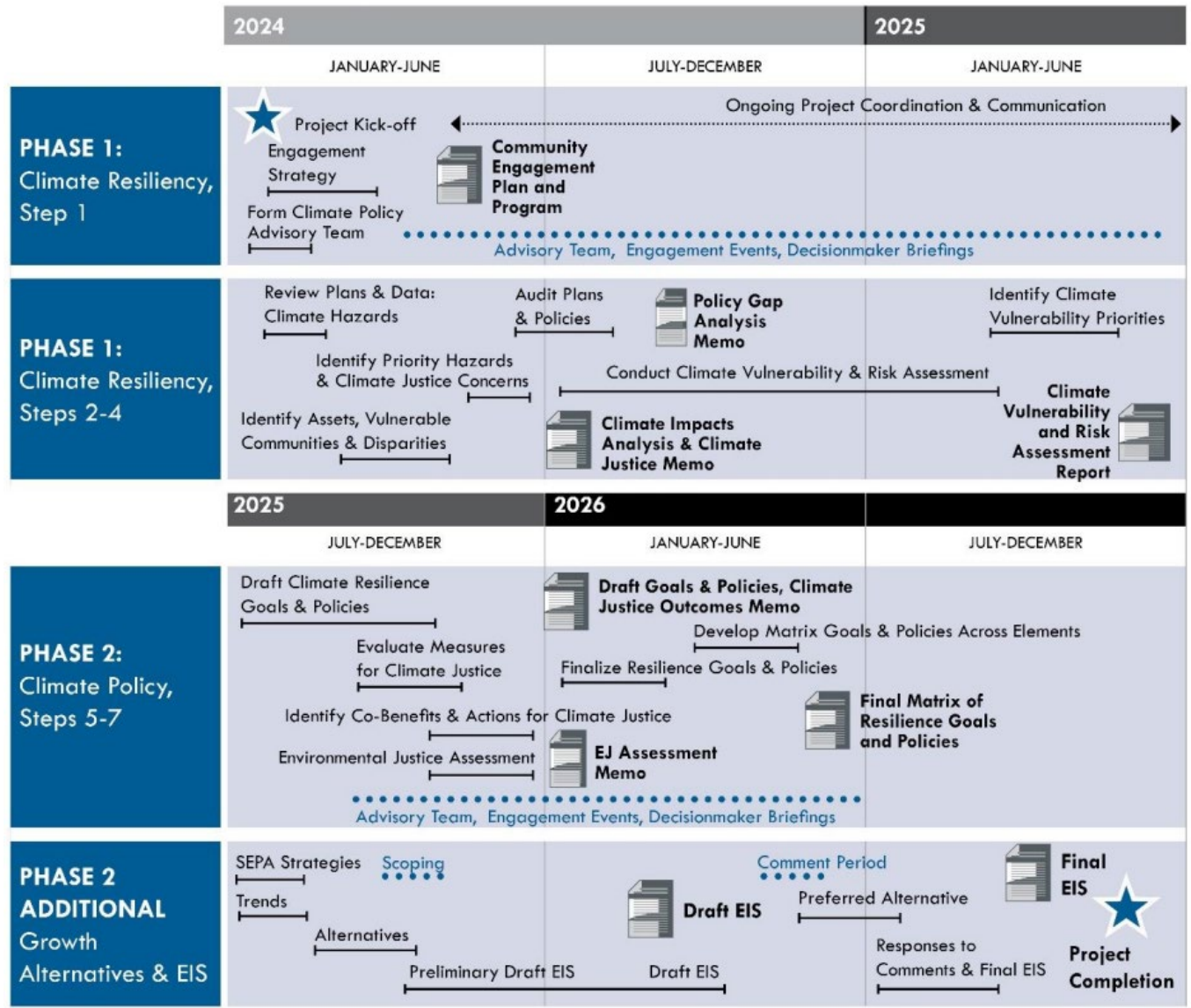
 = key engagement touchpoint

**Table 1: Engagement Timeline**

Engagement Strategy	Spring 2024	Summer 2024	Fall 2024	Winter 2024	Spring 2025	Summer 2025	Fall 2025	Winter 2025	Spring 2026	Summer 2026
	<i>Phase 1: Understand Spokane’s current state from diverse perspectives &amp; develop a shared community vision</i>					<i>Phase 2: Develop and refine draft goals and priorities</i>				
<b>Committee Meetings</b>	★		★	★	★					
<b>Interviews with City Staff</b>			★	★						
<b>Community-wide Survey</b>			★							
<b>Community-wide Workshop</b>			★							
<b>Focus Groups (4)</b>				★	★			★	★	

Engagement Strategy	Spring 2024	Summer 2024	Fall 2024	Winter 2024	Spring 2025	Summer 2025	Fall 2025	Winter 2025	Spring 2026	Summer 2026
Tabling at Existing Events		★			★					
Online Open House										★
Meetings with Tribes, and Native American Urban Organizations					★					
Project webpage, Social Media, and Newsletters		★								

Figure 1: Overall Project Timeline



# Appendix A. Participant Group Details

## LEVELS OF ENGAGEMENT

Adapted from the [Spectrum of Community Engagement](#) framework by Facilitating Power, the levels of engagement that will be used throughout the engagement process to meet different participation needs and overall engagement goals are defined below.

<b>Inform</b>	Provide the community with relevant information
<b>Consult</b>	Gather input from the community
<b>Involve</b>	Community needs and priorities are heard and actively integrated into the planning process and inform decisions
<b>Collaborate</b>	Community plays a critical role in planning process and decision-making
<b>Co-Design</b>	Community co-plans community-based events and activities and co-develops metrics and policies/actions.

## PARTICIPANT MATRIX

This list is a starting point for engagement, and includes potential participants but is not exhaustive. Additional participants will be identified and partnerships fostered throughout the process. Cascadia will maintain and update a database, shared with the City, of a detailed list of contacts.

Participant & Description	Groups	Engagement Goal/Level of Engagement
<b>Internal Participants</b>		
<b>Decision-makers</b>	<ul style="list-style-type: none"> <li>City Mayor’s Office</li> <li>City Council</li> </ul>	<b>Consult</b>
<b>Implementation Leads City</b>  Staff who are responsible for directing implementation in departments	<b>Department heads and staff, specifically:</b> <ul style="list-style-type: none"> <li>Climate Technical Advisory Committee (CTAC)*               <ul style="list-style-type: none"> <li>Community &amp; Economic Development</li> <li>Integrated Capital Management</li> <li>Public Works Division</li> <li>Neighborhood, Housing, and Human Services</li> <li>County Health Department</li> <li>Emergency Management</li> <li>Spokane Fire Department</li> <li>Spokane Parks</li> <li>Office of Civil Rights, Equity &amp; Inclusion</li> <li>Emergency Management</li> </ul> </li> </ul>	<b>Collaborate</b>

Participant & Description	Groups	Engagement Goal/Level of Engagement
	<ul style="list-style-type: none"> <li>○ Finance</li> <li>○ Spokane Public Library</li> </ul>	
<b>Boards, Commissions, Committees</b>	<ul style="list-style-type: none"> <li>● Spokane Plan Commission</li> <li>● Spokane Transportation Commission</li> <li>● Spokane Human Rights Commission</li> <li>● City Council Equity Subcommittee</li> <li>● Environmental Justice Working Group</li> </ul>	<b>Consult Involve</b>
<b>External Participants</b>		
<b>General Public</b>		<b>Inform</b>
<b>Implementation Leads</b>	<ul style="list-style-type: none"> <li>● Climate Resilience and Sustainability Board *</li> </ul>	<b>Co-Design</b>
<b>Jurisdictions</b>	<ul style="list-style-type: none"> <li>● Spokane County</li> <li>● City of Spokane Valley</li> <li>● City of Liberty Lake</li> <li>● City of Airway Heights</li> </ul>	<b>Involve Collaborate</b>
<b>Tribal Governments</b>	<ul style="list-style-type: none"> <li>● Spokane Tribe</li> <li>● Kalispel Tribe</li> <li>● Coeur d'Alene Tribe</li> <li>● Colville Tribe</li> </ul>	<b>Involve Collaborate</b>
<b>Partner Agencies and Institutions</b>	<ul style="list-style-type: none"> <li>● Spokane Transit Authority</li> <li>● Spokane Regional Transportation Council</li> <li>● Spokane Regional Health District</li> <li>● Spokane Regional Clean Air Agency</li> <li>● Spokane Conservation District</li> <li>● Avista Utilities</li> <li>● Inland Power</li> <li>● Spokane Aquifer Joint Board</li> <li>● Spokane Public Schools</li> <li>● Mead School District</li> <li>● Cheney Public Schools</li> <li>● Gonzaga Institute for Climate, Water, and the Environment</li> <li>● Fairchild Air Force Base</li> <li>● Spokane International Airport</li> <li>● Department of Commerce</li> <li>● Department of Ecology</li> <li>● Department of Fish and Wildlife</li> </ul>	<b>Involve Collaborate</b>

Participant & Description	Groups	Engagement Goal/Level of Engagement
	<ul style="list-style-type: none"> <li>• Department of Natural Resources</li> <li>• Department of Transportation</li> <li>• Washington State Parks</li> <li>• Spokane Housing Authority</li> </ul>	
<p><b>Key Community Groups</b></p>	<p><b>Education</b></p> <ul style="list-style-type: none"> <li>• Area universities and community colleges</li> </ul> <p><b>Environmental Groups/Organizations</b></p> <ul style="list-style-type: none"> <li>• 350 Spokane</li> <li>• Inland Northwest Land Conservancy</li> <li>• Spokane Zero Waste</li> <li>• Spokane Riverkeeper</li> <li>• The Lands Council</li> <li>• Spokane River Forum</li> </ul> <p><b>Neighborhood Councils and Community Centers</b></p> <ul style="list-style-type: none"> <li>• Neighborhood Councils</li> <li>• Northeast Community Center</li> <li>• Southside Community Center</li> <li>• West Central Community Center</li> <li>• MLK Jr. Family Outreach Center</li> </ul> <p><b>Disability/Accessibility Centered Organizations</b></p> <ul style="list-style-type: none"> <li>• Access 4 All Spokane</li> <li>• Disability Action Center NW</li> <li>• Disability Action Center</li> </ul> <p><b>Youth Centered Organization</b></p> <ul style="list-style-type: none"> <li>• YMCA</li> <li>• Chase Youth Commission</li> <li>• Spark Central</li> <li>• Spokane Northeast Youth Center</li> </ul> <p><b>Elder Adults Centered Organizations</b></p> <ul style="list-style-type: none"> <li>• Aging &amp; Long-Term Care of Eastern Washington</li> <li>• Spokane Veterans Homes</li> <li>• AARP</li> </ul> <p><b>Frontline Community Serving Organizations</b></p> <ul style="list-style-type: none"> <li>• Asian Hispanic African Native American (AHANA) Business Association</li> <li>• Asians for Collective Liberation in Spokane</li> <li>• Manzanita House</li> <li>• Carl Maxey Center</li> <li>• Global Neighborhood Thrift</li> </ul>	<p><b>Involve</b> <b>Collaborate</b></p>



Participant & Description	Groups	Engagement Goal/Level of Engagement
	<ul style="list-style-type: none"> <li>• Bosnia &amp; Herzegovina Heritage Association of Spokane</li> <li>• Building Ohana</li> <li>• Latinos en Spokane</li> <li>• Mujeres in Action</li> <li>• Muslims for Community Action and Support</li> <li>• Spectrum Center</li> <li>• NAACP Spokane</li> <li>• Odyssey Youth Movement</li> <li>• Thrive International</li> <li>• Spokane Immigrant Rights Coalition</li> <li>• Spokane Low Income Housing Consortium</li> <li>• Spokane Association of Hispanic Business Professionals</li> <li>• Refugee &amp; Immigrant Connections Spokane</li> <li>• Spokane's United We Stand</li> <li>• World Relief</li> <li>• YWCA</li> <li>• The ZoNE Project</li> <li><b>Native American Organizations</b></li> <li>• American Indian Community Center</li> <li>• The Native Project</li> <li>• Spokane Tribal Network</li> <li>• Upper Columbia United Tribes</li> <li><b>Health Organizations</b></li> <li>• Community Minded Enterprises</li> <li>• Empire Health Foundation</li> <li>• National Alliance on Mental Illness (NAMI) Spokane</li> <li>• Naomi</li> <li><b>Faith-based Institutions and Community Organizations</b></li> </ul>	
<p><b>Business &amp; Development</b></p>	<ul style="list-style-type: none"> <li>• Downtown Spokane Partnership</li> <li>• Visit Spokane</li> <li>• Greater Spokane Incorporated</li> <li>• Spokane Home Builders Association</li> <li>• Spokane Realtors</li> <li>• University District Public Development Authority</li> <li>• Northeast Public Development Authority</li> </ul>	<p><b>Involve Collaborate</b></p>

Participant & Description	Groups	Engagement Goal/Level of Engagement
	<ul style="list-style-type: none"> <li>• Northwest Business Development Association</li> <li>• West Plains Public Development Authority</li> <li>• East Spokane Business District</li> <li>• Greater Hillyard Business Association</li> <li>• Spokane Business Association</li> <li>• Spokane Independent Metro Business Alliance (SIMBA)</li> <li>• AHANA – Multi-Ethnic Business Association</li> <li>• Spokane Workforce Council</li> <li>• Building Owners and Managers Association (BOMA)</li> <li>• Associated General Contractors (AGC) Inland Northwest Chapter</li> <li>• National Association of Women in Construction (NAWIC) Spokane Chapter</li> </ul>	

\*Expertise considerations for community climate advisory board members:

- Developing and implementing zoning, land use, housing policy;
- Expertise with a climate nexus in:
  - transportation and public works;
  - hazard mitigation and emergency management;
  - sustainability, environment, and natural resources;
  - public health;
- Other areas of expertise as prioritized;
- Community members and leaders within overburdened and frontline communities;
- Environmental justice, climate justice, and resilience expertise and lived experience;
- Tribal governments;
- Indigenous communities and organizations, such as urban Native organizations;
- Community engagement specialists;
- Public schools and youth engagement;
- Economic and community development specialists;
- Businesses and minority entrepreneurs;
- Interested residents and neighborhood representatives;
- Legal advisors to make sure goals and policies are consistent with state and local laws; and,
- Elected officials who will provide oversight and can champion the project from beginning to end.

## Appendix B: Spokane Community Characteristics

This section provides background data on Spokane’s demographic characteristics, to inform an inclusive CEP for the City’s climate resiliency planning work.

### Population Estimates

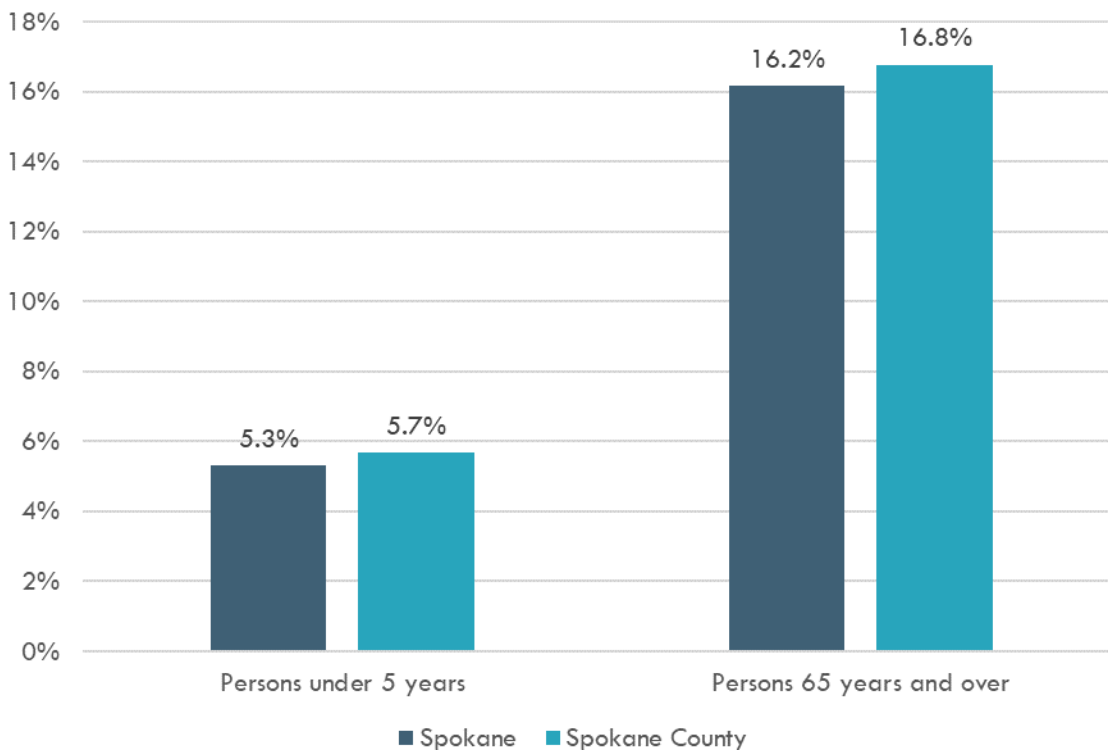
City of Spokane: 232,700

Spokane County: 554,600

Source: [Washington OFM April 1 Population Estimates, 2023](#).

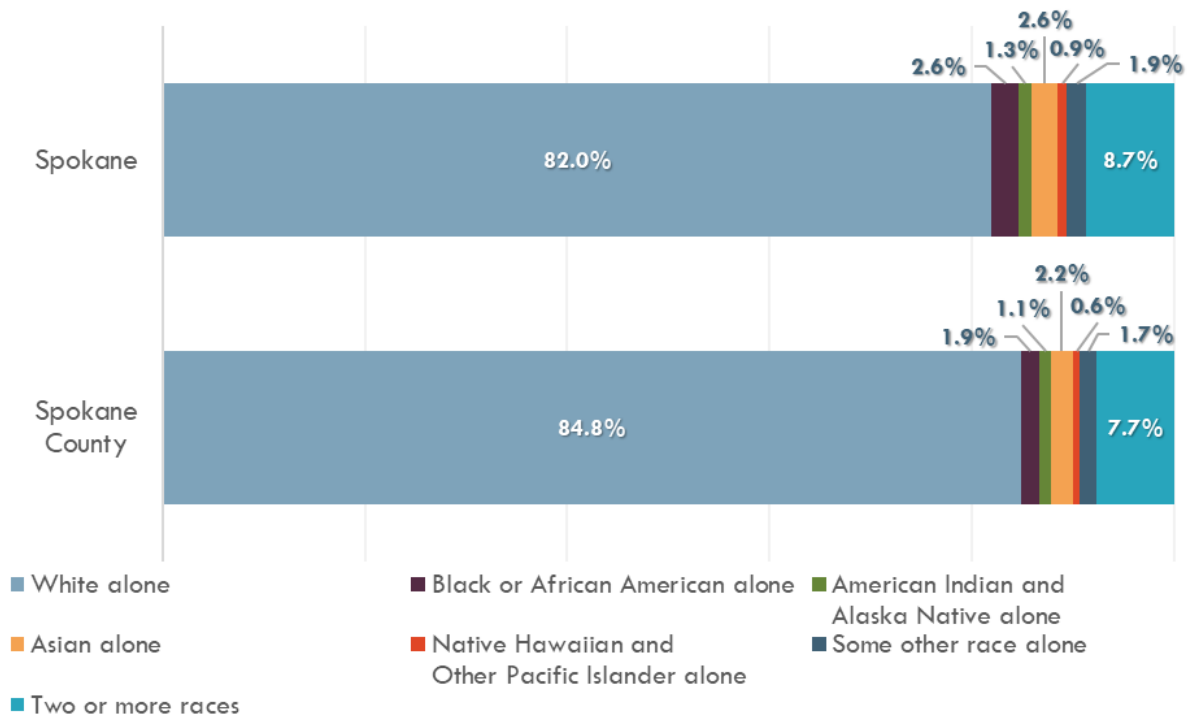
### Socio-Economic Profile

Exhibit 1. Population by Age



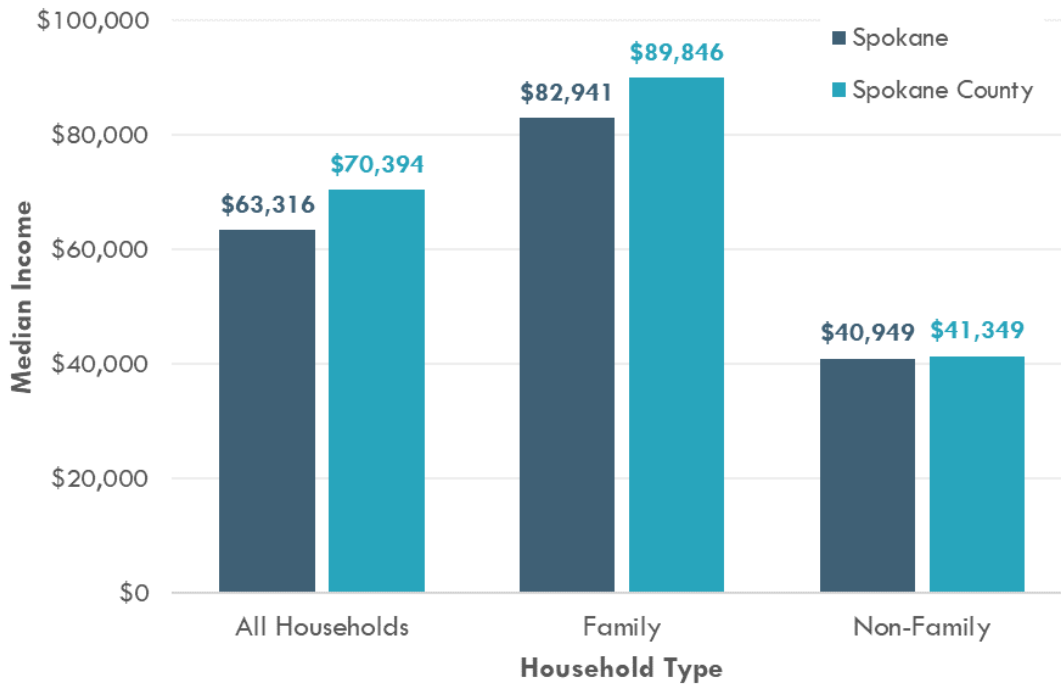
Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

Exhibit 2. Population by Race and Ethnicity



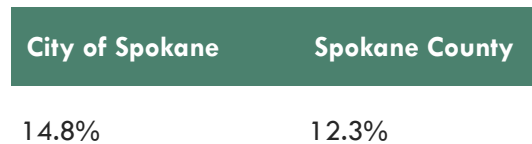
Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

Exhibit 3. Median Income



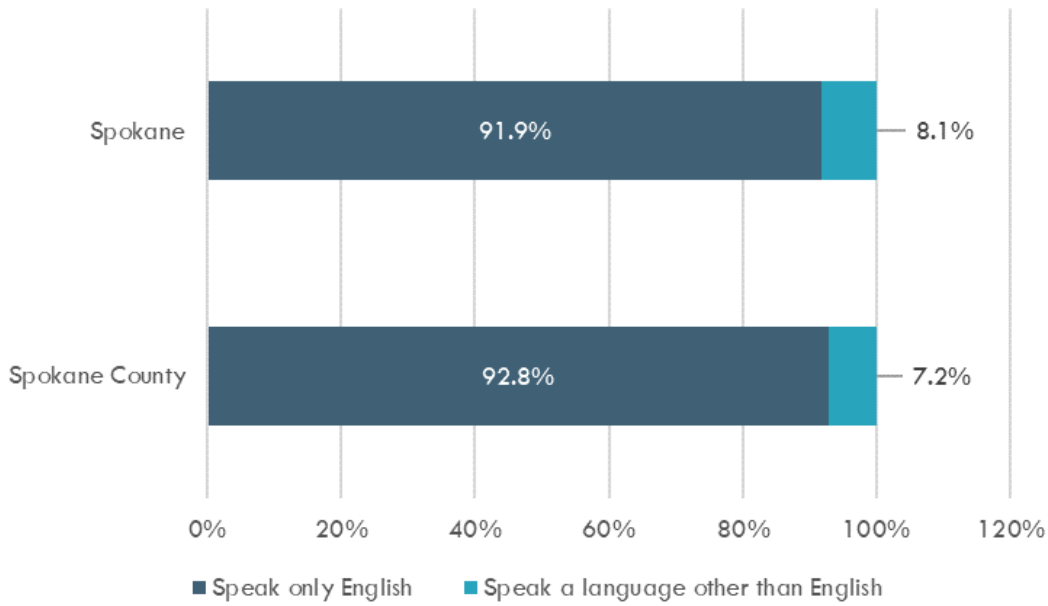
Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

Exhibit 4: Percent of Population Below Poverty Level



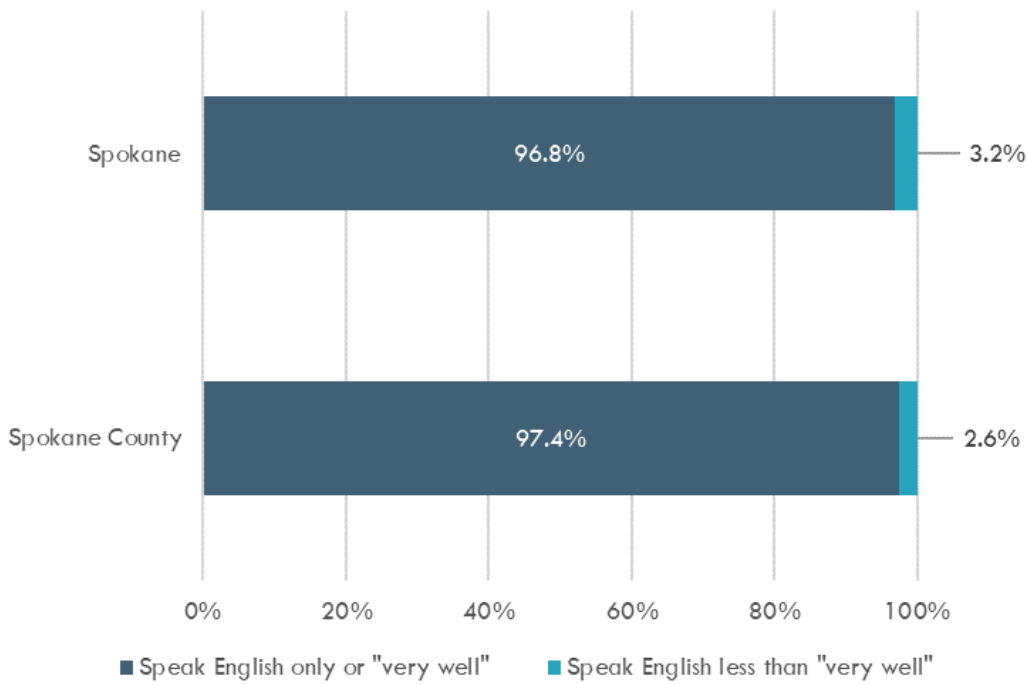
Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

Exhibit 5. Languages Spoken at Home



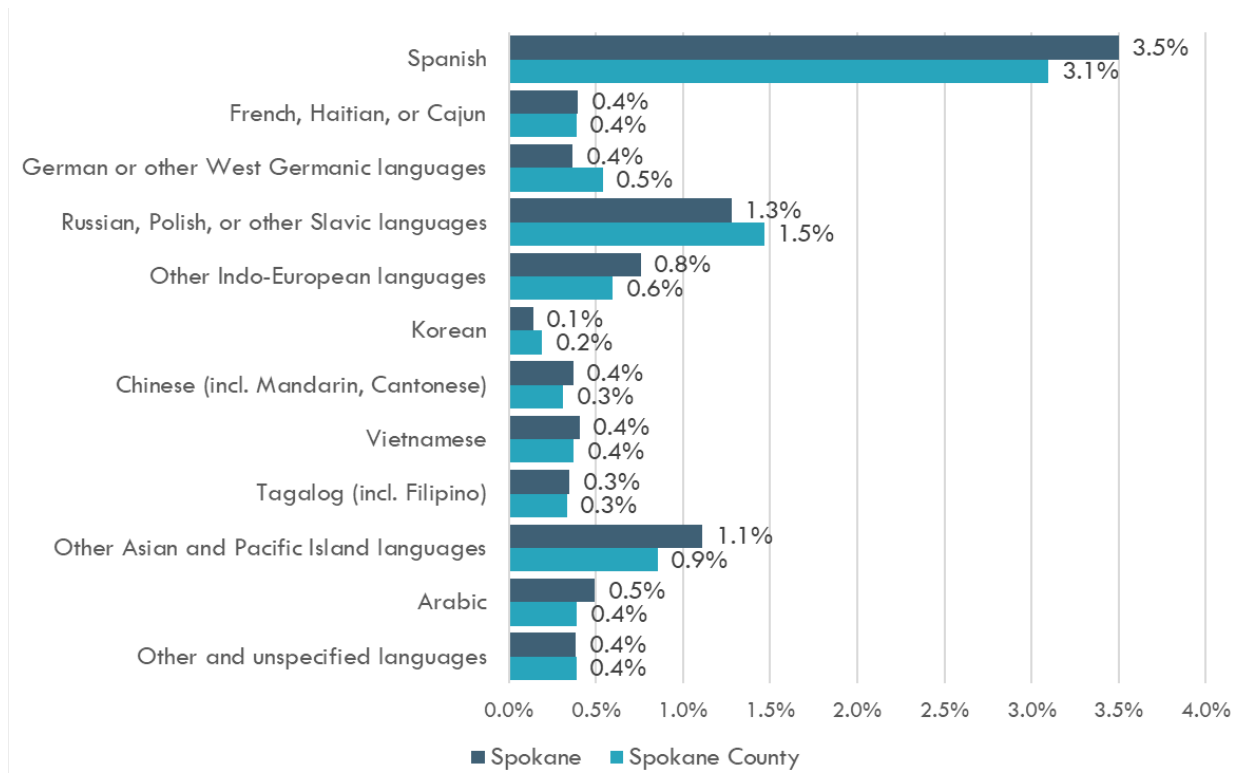
Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

Exhibit 6. Speak English Less Than "Very Well"



Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

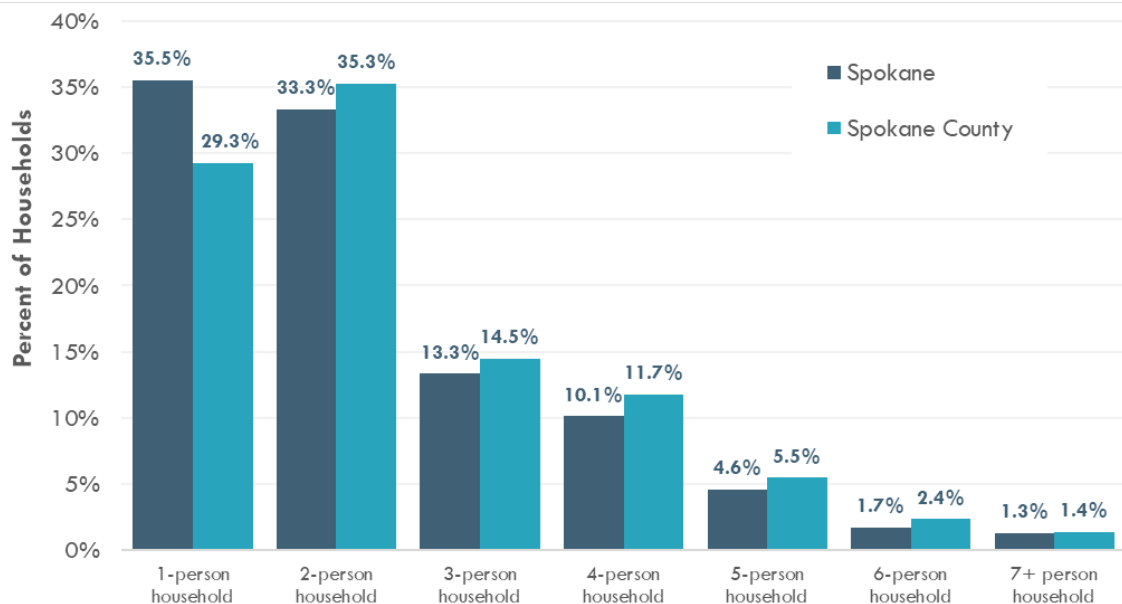
**Exhibit 7. Household Language Other Than English**



Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

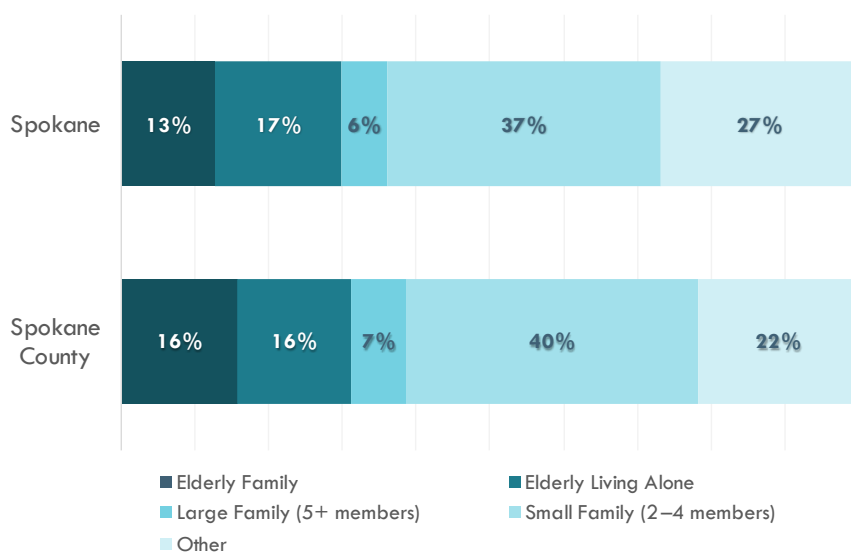
## Households

Exhibit 8. Household Size



Sources: [US Census Bureau, 2018-2022 American Community Survey 5-Year Estimates](#); BERK, 2024

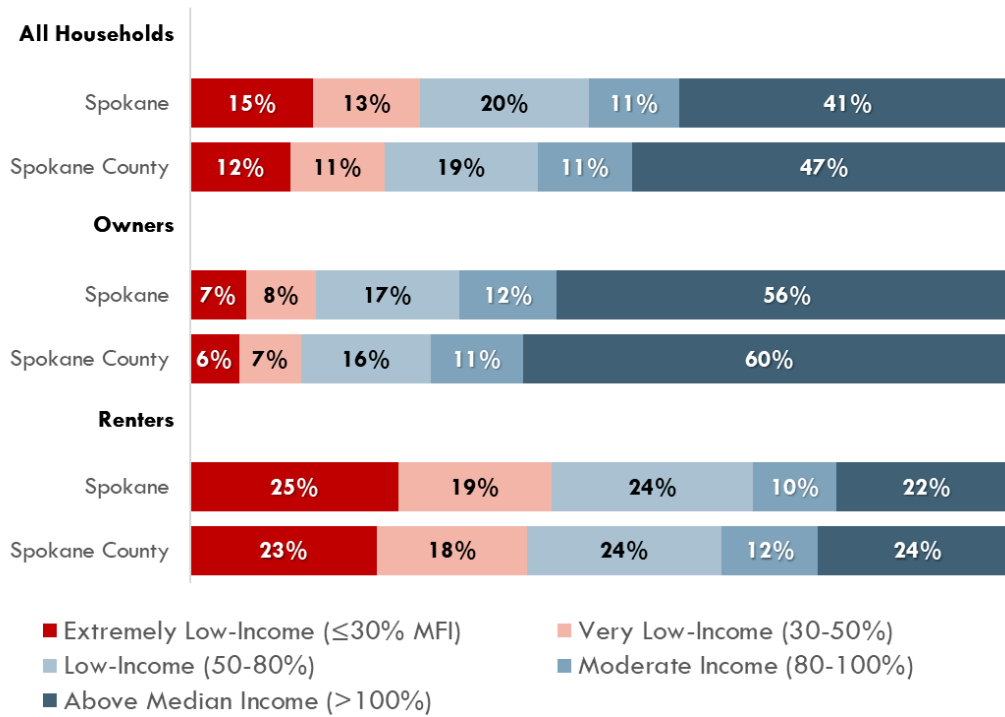
Exhibit 9. Household Type



Sources: US HUD (CHAS - Table 7: [County](#) and [Place](#)), 2016-2020; BERK, 2024

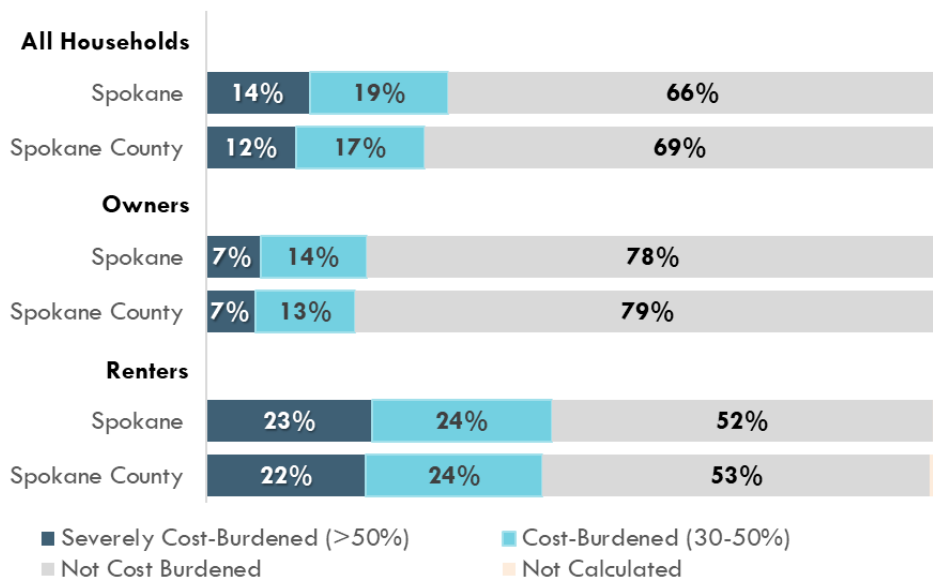


Exhibit 10. Proportion of Households by Income and Tenure



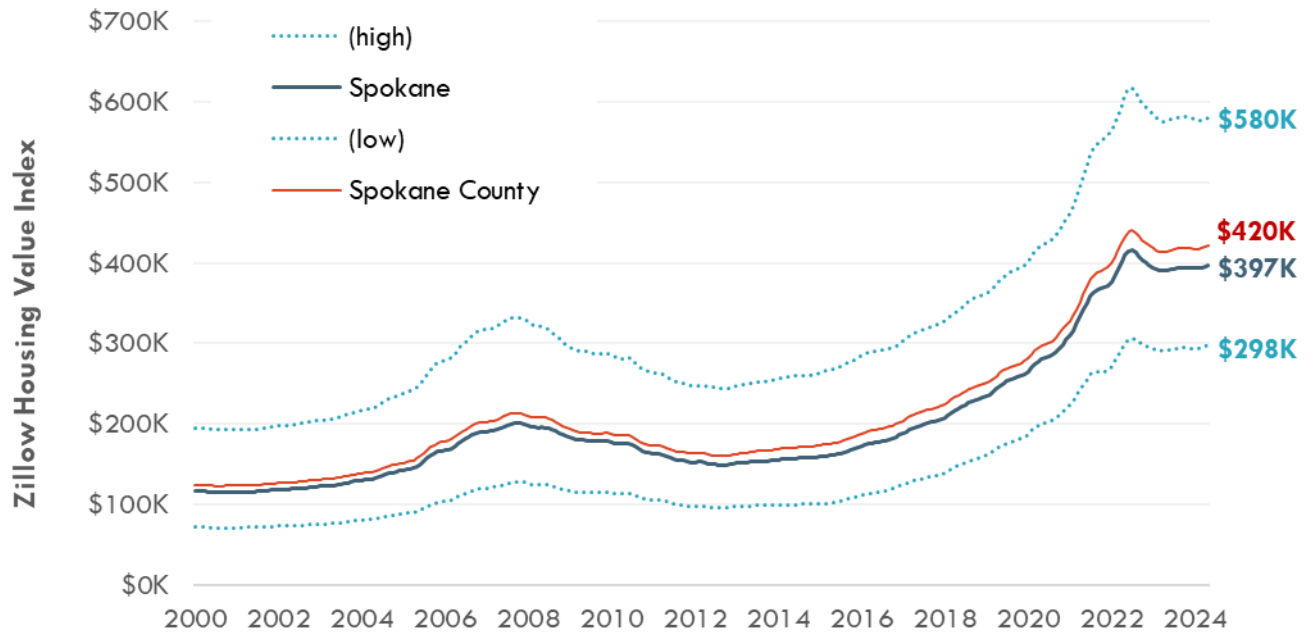
Sources: US HUD (CHAS - Table 8: [County](#) and [Place](#)), 2016-2020; BERK, 2024

Exhibit 11. Proportion of Households by Cost Burden and Tenure



Sources: US HUD (CHAS - Table 8: [County](#) and [Place](#)), 2016-2020; BERK, 2024

Exhibit 12. Residential Housing Value Index (Zillow)



Source: [Zillow, 2024](#); BERK, 2024

# Spokane Climate Vulnerability Index

## Indicators Description

**Draft:** January 2, 2025

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.

The Spokane Climate Vulnerability Index 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 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.

## 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

Population density is shown with 1 dot equaling 20 people. 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.

## Critical Assets

### Exhibit 2. Critical Assets – Layer List

Spatial Layer	Source
<b>Public Facilities</b>	
Airports	<a href="#">WSDOT</a>
Public Schools	<a href="#">Washington State</a>
Levees	<a href="#">Washington State Department of Ecology</a>
<b>Environmental Resources</b>	
10-Year Wellhead Protection Areas	<a href="#">Washington State Department of Ecology</a>
Aquifer	<a href="#">City of Spokane (Water Dept)</a>
<b>Emergency Services and Medical Facilities</b>	
Emergency Response & Law Enforcement	<a href="#">City of Spokane</a>
Hospitals	<a href="#">Washington State</a>
Clinics	<a href="#">Washington State DOH</a>
<b>Energy Facilities</b>	
Dams	<a href="#">Dams   ArcGIS Hub</a> (USDOT)
Easements-Yellowstone Pipeline	<a href="#">City of Spokane Valley</a>
<b>Key Community Locations</b>	
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
<b>Transportation Infrastructure</b>	
City Streets	City of Spokane
Bridges – WSDOT	<a href="#">WSDOT - All Bridge and Tunnel Inventory (State &amp; Local)</a>
Bridges – City of Spokane	<a href="#">Bridge   City of Spokane</a>

Spatial Layer	Source
Sidewalks	City of Spokane
Trails	City of Spokane
Bike Lanes and Paths	<a href="#">City of Spokane</a>
WSDOT Proposed State Highways	<a href="#">WSDOT - Functional Class - Overview</a>
WSDOT State Route Climate Vulnerability	<a href="#">WSDOT</a>
Railroad	<a href="#">City of Spokane</a>
<b>Utilities</b>	
Water Main	<a href="#">City of Spokane</a>
Wastewater Treatment Plants	City of Spokane
Wastewater Sewer Overflow (CSO)	<a href="#">City of Spokane</a>
Sewer Gravity Main	<a href="#">City of Spokane</a>
Waste to Energy & Landfills	<a href="#">Entered manually from DOE</a>

## Exposure Indicators

### Exhibit 3. Exposure Indicators – Layer List

Indicator	Description	Source
Average Land Surface Temperature	Illustrates Urban Heat Islands. Grid cell values averaged by block group.	LANDSAT8 / BERK Consulting. <a href="#">Heat Severity - USA 2023 - Overview (arcgis.com)</a> (source data for the previous Trust for Public Land heat severity data)
Area within Flood Zone	100- and 500-yr Floodplains; potentially exacerbated by extreme precipitation. Percent area of intersection calculated.	FEMA/City of Spokane <a href="https://my.spokanecity.org/projects/floodplain-management-update/">https://my.spokanecity.org/projects/floodplain-management-update/</a> <a href="https://www.fema.gov/flood-maps">https://www.fema.gov/flood-maps</a>
Area within Urban/Wildland Urban Interface	Percent area of intersection calculated with Interface and Intermix areas.	Washington Department of Natural Resources: <a href="#">DNR WUI Maps</a>
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 Webpage); Washington

Indicator	Description	Source
		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
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 <a href="https://data.cig.uw.edu/climatemapping/">https://data.cig.uw.edu/climatemapping/</a> .

## Sensitivity Indicators

Exhibit 4. Sensitivity Indicators – Layer List

Indicator	Description	Source
Population Under 5 years old	Percent of block group with population under 5 years.	<a href="#">ACS 2022 5-Year estimates for block group, Table B01001.</a>
Population Over 65 years old or Older	Percent of block group with population over 65 years.	<a href="#">ACS 2022 5-Year estimates for block group, Table B01001.</a>
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).	<a href="#">CDC Places</a>
Asthma		
Coronary Heart Disease		
COPD (Chronic obstructive pulmonary disease)		
Diabetes		
Poor Mental Health		

Indicator	Description	Source
Poor Physical Health		
Area within Potential Geologic Hazard	Percent of block group area intersecting hazard area.	<a href="#">City of Spokane</a>
Area with Steep Slopes	Percent of block group area intersecting hazard area.	<a href="#">UW DEM files (to cover both city and UGA)</a>
Coverage by Impaired Waterbodies	Percentage of block group intersecting a 303d-listed freshwater stream or water body.	<a href="#">Ecology (303d)</a>

## Adaptive Capacity Indicators

### Exhibit 5. Adaptive Capacity Indicators – Layer List

Indicator	Description	Source
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).	<a href="#">ACS 2022 5-Year estimates for block group, Table B03002</a>
Limited English-Speaking Ability	Percent of block group population living in a household where <u>no one</u> speaks English at least “Well.”	<a href="#">ACS 2022 5-Year estimates for block group, Table B16004</a>
People Living Alone	Percent of block group households.	<a href="#">ACS 2022 5-Year estimates for block group, Table B11001</a>
Population Living in Poverty	Percent of block group population experiencing poverty	<a href="#">ACS 2022 5-Year estimates for block group, Table B17021</a>
Persons with Disabilities	Percent of block group population with a disability.	<a href="#">2024 EJ Screen</a>

Indicator	Description	Source
Cost-Burdened Households	Percent of renter households spending more than 30% of income on housing	<a href="#">ACS 2022 5-Year estimates for block group, Table B25070</a>
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.	<a href="#">Energy.gov</a>
No High School Diploma	Percent of Population Age 25 or older with less than a high school degree	<a href="#">ACS 2022 5-Year estimates for block group, Table B15003</a>
College Degree	Percent of block group population	<a href="#">ACS 2022 5-Year estimates for block group, Table B15003</a>
Unemployment	Unemployment rate	<a href="#">ACS 2022 5-Year estimates for block group, Table B23025</a>
Median Household Income	Median annual income of households in the block group	<a href="#">ACS 2022 5-Year estimates for block group, Table B19013</a>
No Health Insurance	Percent of block group population	<a href="#">CDC Places</a>
Outdoor Professions	Percent of jobs in sectors likely to be performed outdoors (NAICS 11, 21, 23)	<a href="#">ACS 2022 5-Year estimates for block group, Table C24030</a>
Poor Housing Condition	Percent of housing units built before 1960	<a href="#">ACS 2022 5-Year estimates for block group, Table B25034</a>
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.
No Access to Vehicle	Percent of block group population <u>without</u> regular access to a vehicle.	<a href="#">ACS 2022 5-Year estimates for block group, Table B25044</a>
Access to Transit	Number of transit stops within the block group.	<a href="#">Spokane Transit</a>



Indicator	Description	Source
Tree Canopy	Percent tree canopy coverage	NLCD - <a href="#">National Land Cover Database</a>
Impervious Surface	Percent impervious surface coverage	NLCD - <a href="#">National Land Cover Database</a>

## Climate Context Data

### Exhibit 6. Planning Source Data – Layer List

Spatial Layer	Description	Source
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 <a href="https://data.cig.uw.edu/climatemapping/">https://data.cig.uw.edu/climatemapping/</a> . Due to level of granularity in data and availability of other sources, this layer is not included in the Exposure sub-index.
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 <a href="https://data.cig.uw.edu/climatemapping/">https://data.cig.uw.edu/climatemapping/</a> . 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, <a href="#">DNR WUI Maps</a>
Flood Zones	FEMA 100-Year and 500-Year data.	FEMA and City of Spokane <a href="https://my.spokanecity.org/projects/floodplain-management-update/">https://my.spokanecity.org/projects/floodplain-management-update/</a> <a href="https://www.fema.gov/flood-maps">https://www.fema.gov/flood-maps</a>

Spatial Layer	Description	Source
Redlining	<p>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.”</p> <p>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.</p>	<p><a href="#">Spokane Housing Action Plan</a>, 2021 and City of Spokane GIS</p> <p>Data source, Digital Scholarship Lab, University of Richmond, <i>Mapping Inequality: Redlining in New Deal America</i>:  <a href="https://dsl.richmond.edu/panorama/redlining/">https://dsl.richmond.edu/panorama/redlining/</a></p>
Gonzaga Urban Heat Island Mapping, July 2022	2022 Heat Watch Spokane	<p>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.</p> <p><a href="https://www.gonzaga.edu/climate-institute/our-work/climate-resilience-project/beat-the-heat/understanding-extreme-heat/spokane-heat-maps">https://www.gonzaga.edu/climate-institute/our-work/climate-resilience-project/beat-the-heat/understanding-extreme-heat/spokane-heat-maps</a></p>

# Combined Sewer Overflow & Next Level of Treatment How far we have come with clean water for the River

CRSB Meeting  
January 9, 2025





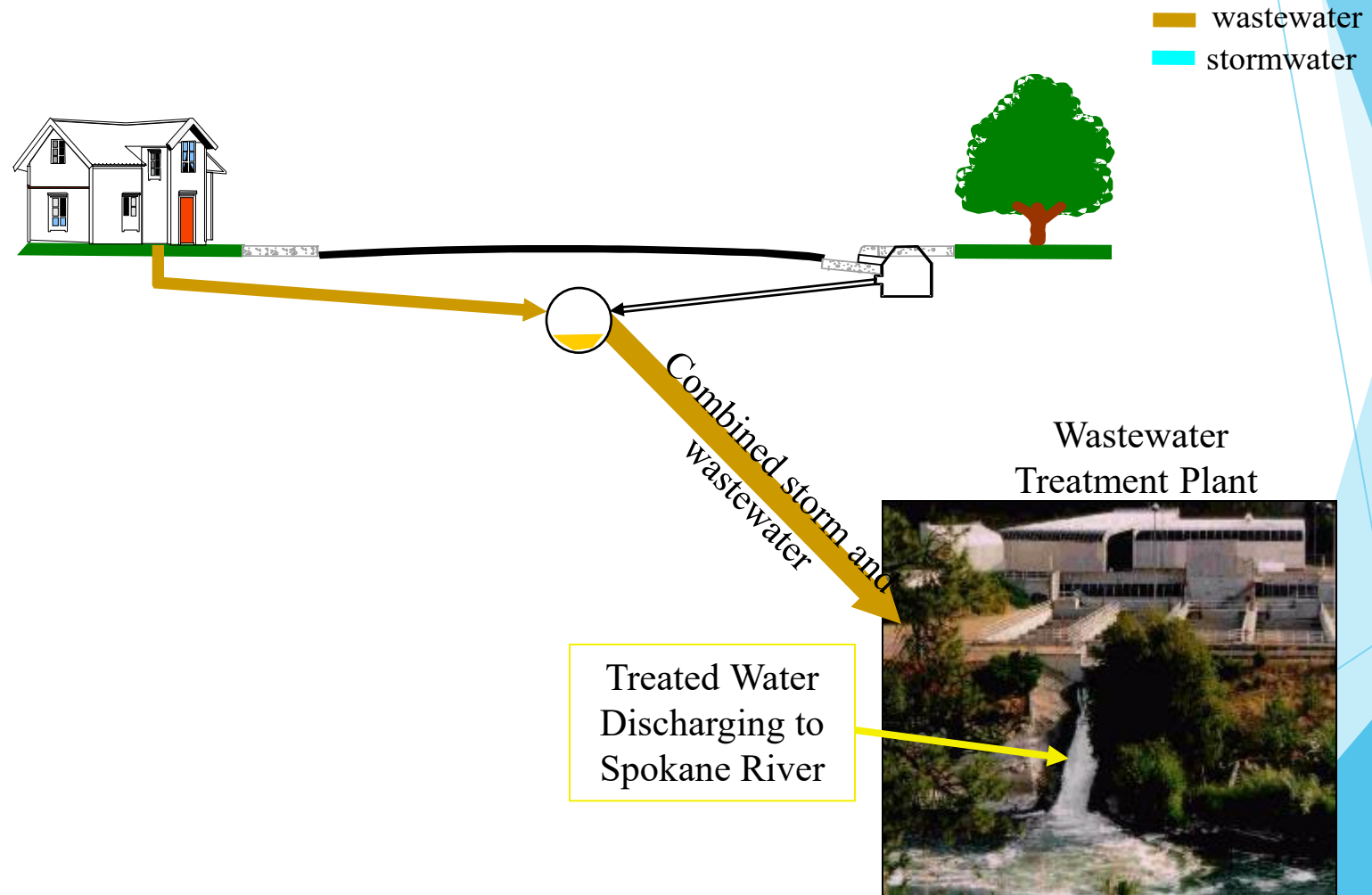


# Wastewater Look Back In Time

- ▶ Everything to the River
- ▶ 1958 Treatment plant
- ▶ 1972 44 Outfalls
- ▶ 1980 24 Outfalls after Stormwater Separation
- ▶ 2014 20 Outfalls
- ▶ 2024 17 Outfalls

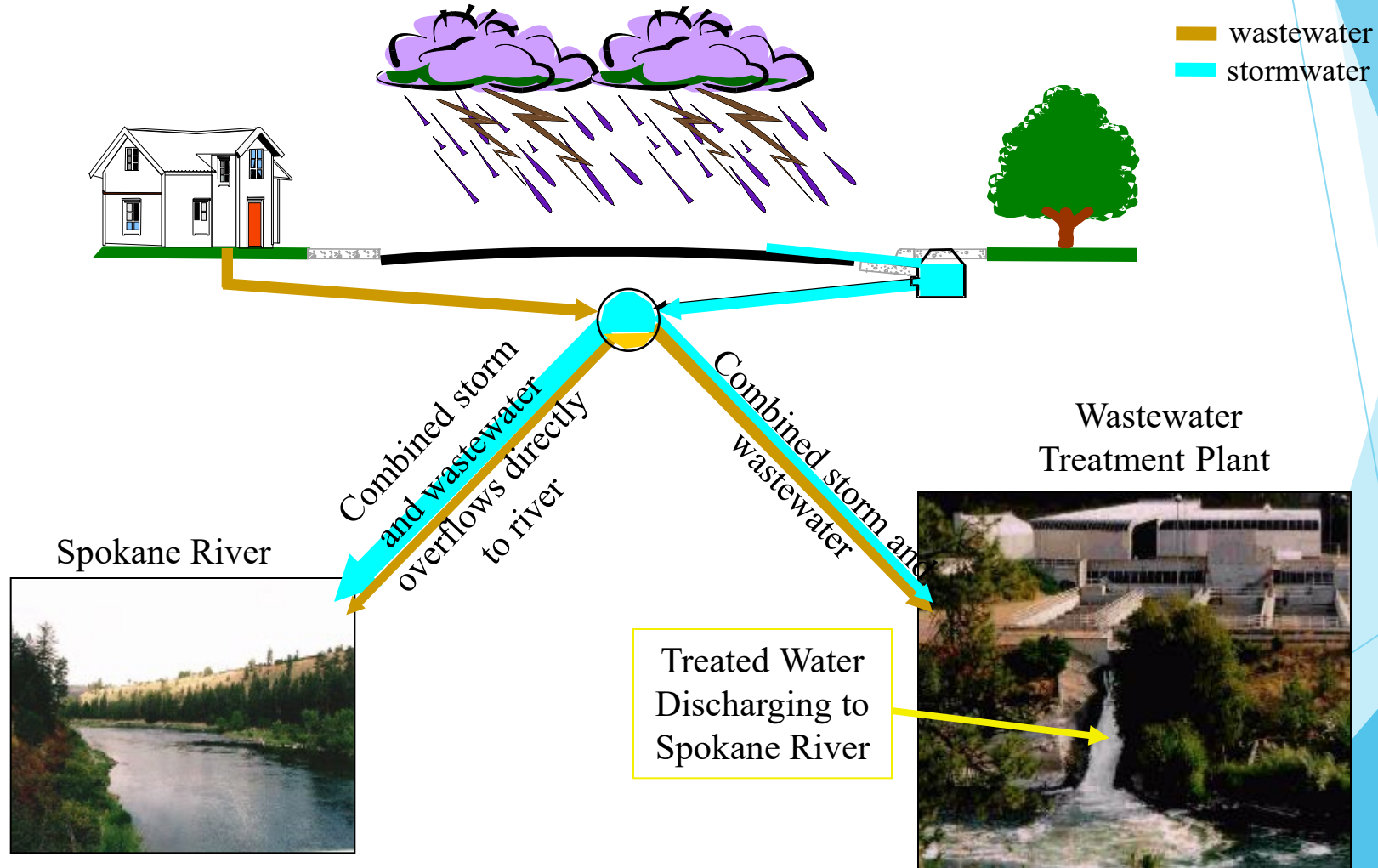


# What is a **Combined Sewer System**?



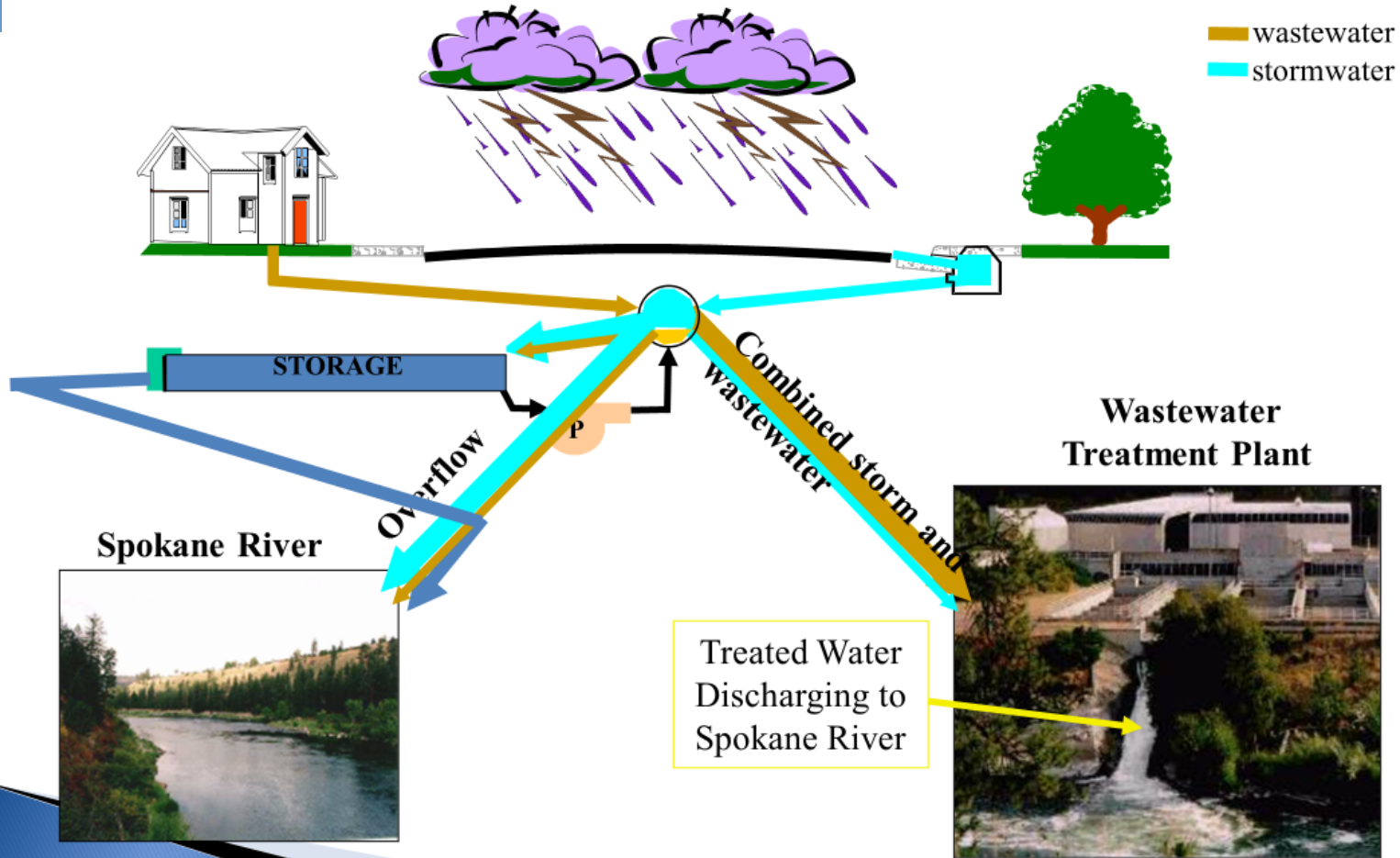


# Combined Sewer Overflow (CSO) from Excess Storm water





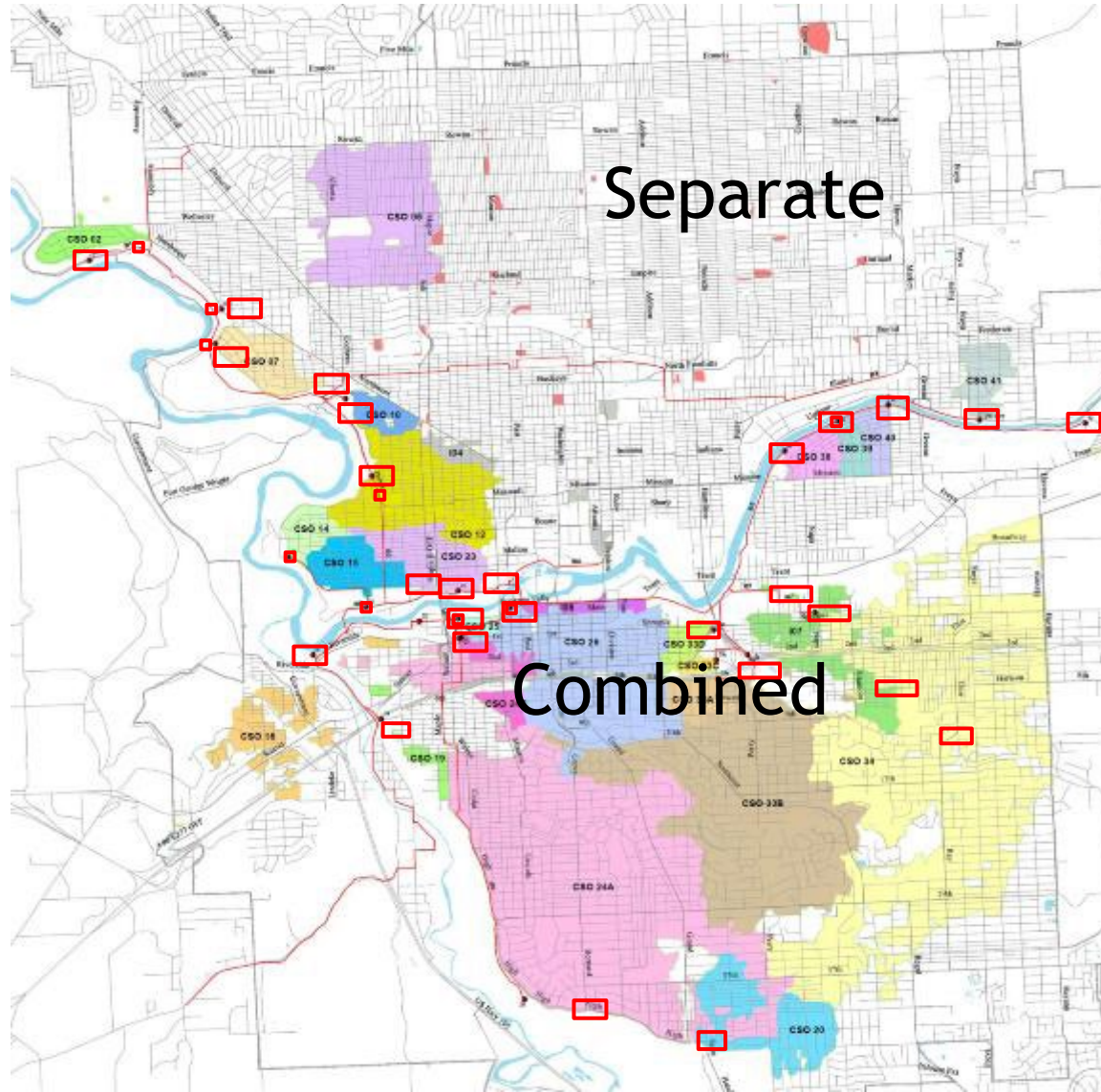
# CSO Storage of Excess Storm water



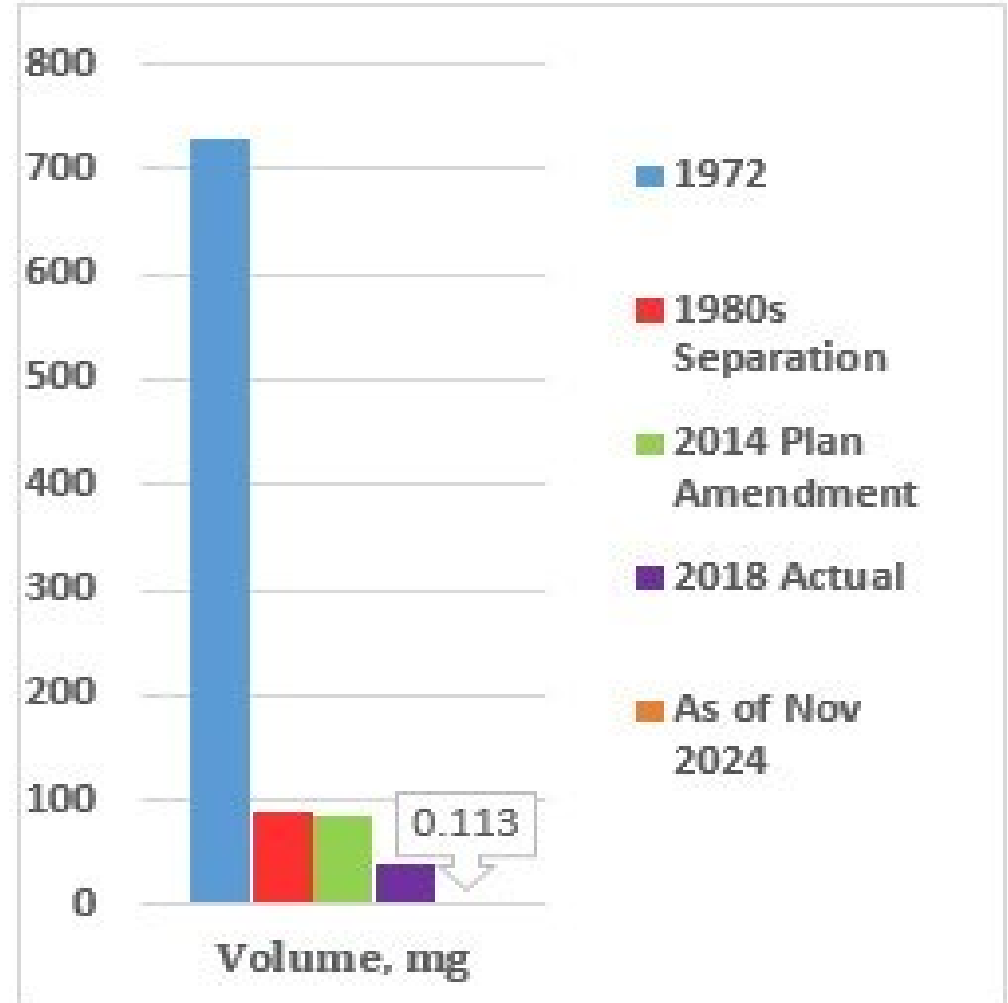
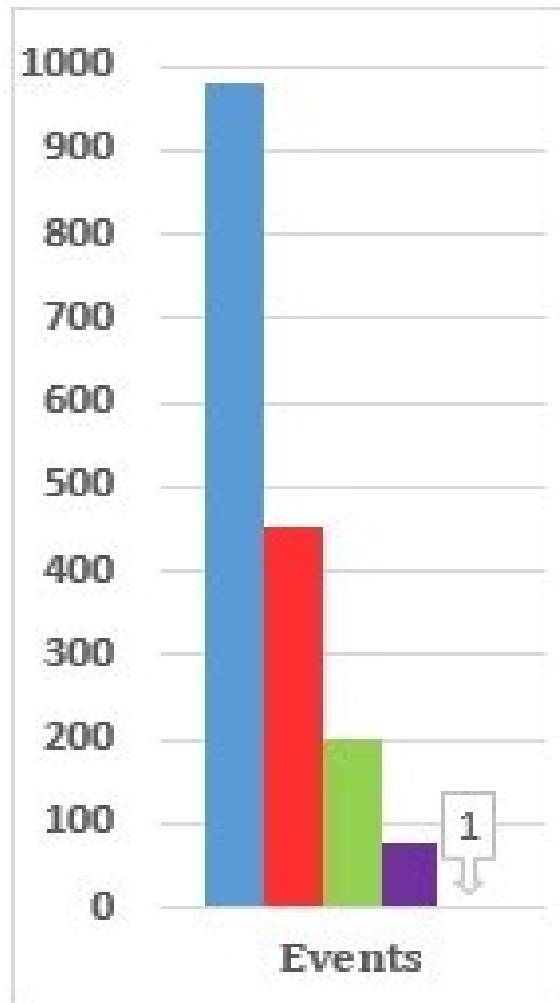
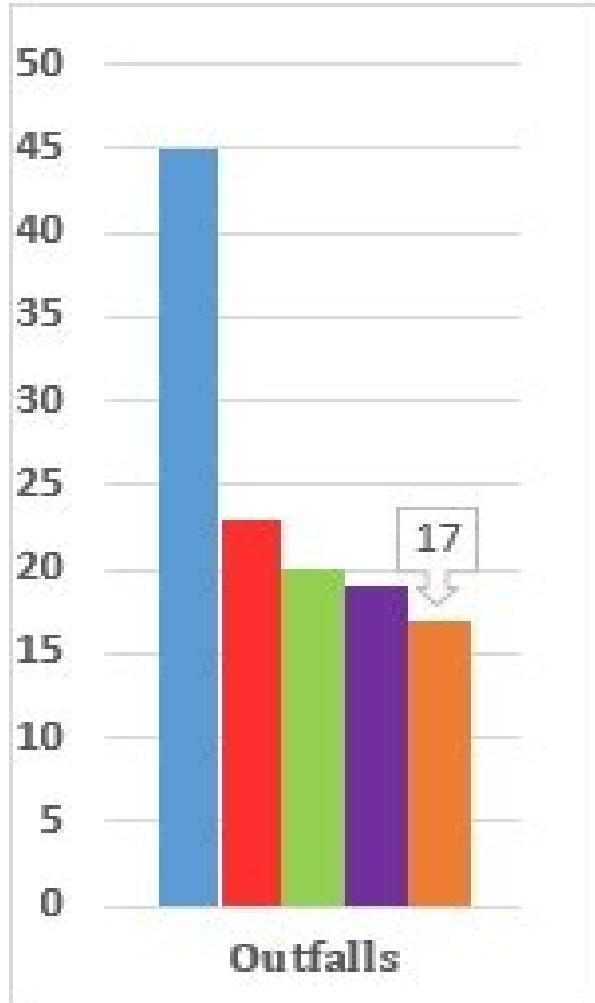




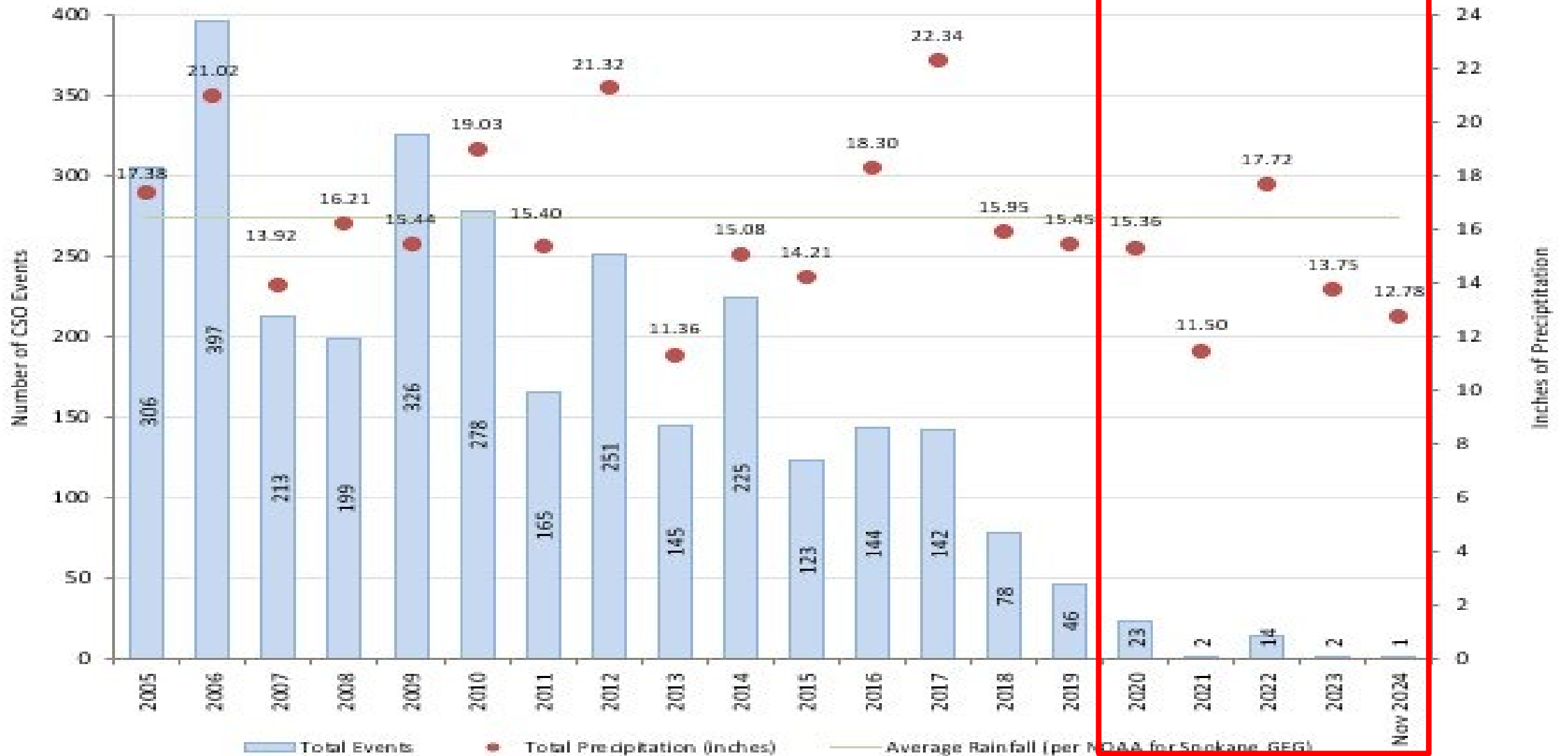
# CSO/IPT Facility Locations in the Combined Sewer Areas



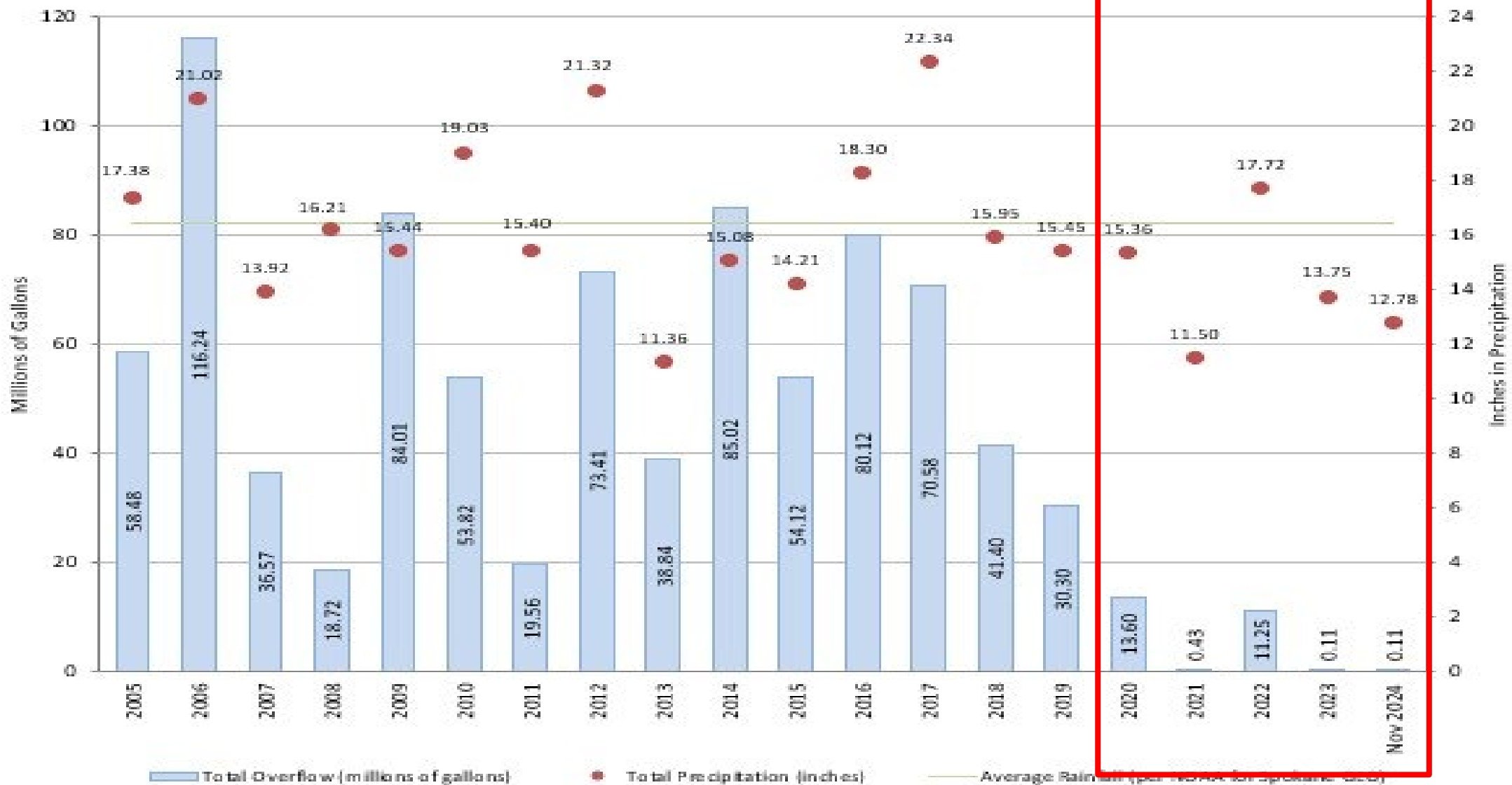
# CSO REDUCTION HISTORY



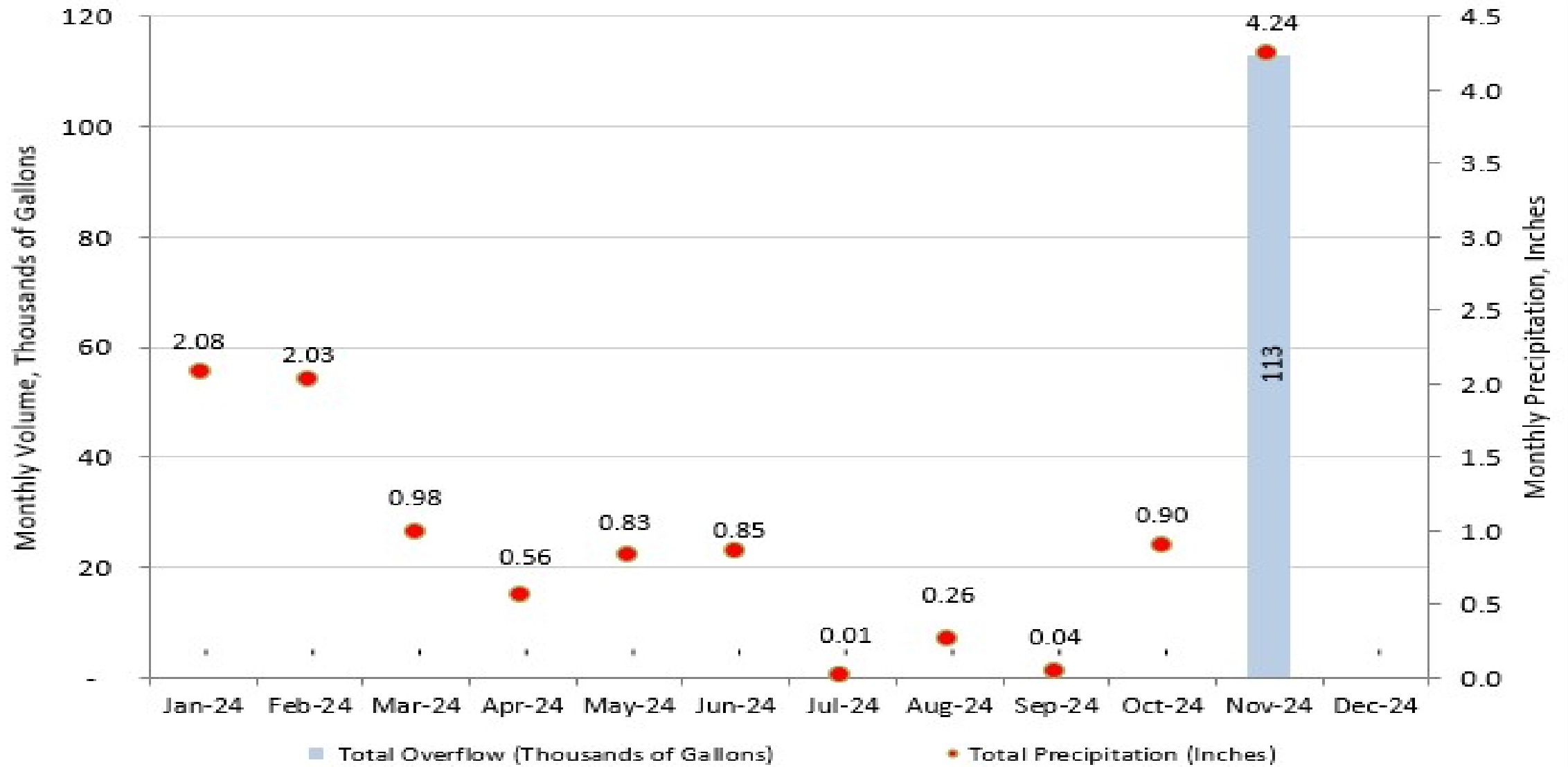
Annual CSO Events & Precipitation 2005 - 2024



Annual CSO Volume & Precipitation 2005 - 2024



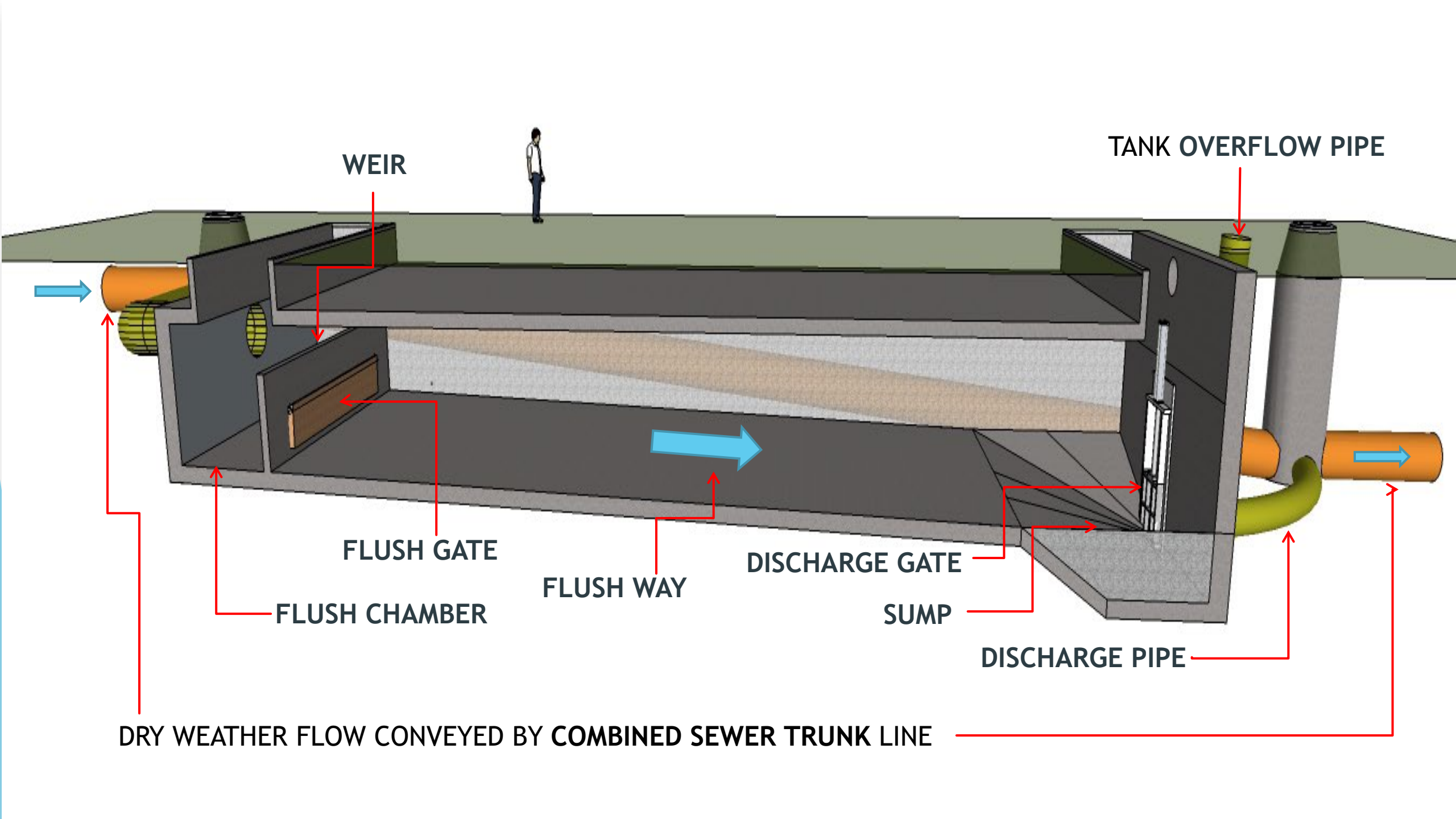
# CSO Volume & Precipitation 2024 by Month





# Tanks & Regulators

- ▶ 29 CSO Regulator/Tanks & Interceptor Protection Tanks
  - ▶ 7 Tanks have Pump Stations
- ▶ 17 outfalls
- ▶ 14 million gallons CSO Storage Capacity
- ▶ 2.4 million gallons IPT Storage Capacity
  
- ▶ 2 Stormwater Tanks
  - ▶ Pump Stations in both





# CSO 24-1: Sprague & Adams







# CSO 24-1: Sprague & Adams

(2.4 million gallons)





# CSO 34-1: Riverside @ Crestline

(1.5 million gallons)





# Interceptor Protection Tank I04

(815 thousand gallons)



## CSO Overflow and CSO Tank Usage





# Fun Facts

Most of the CSO/IPT tanks came online between 2018-2020

As of December 31, 2023, 17 of 19 CSO sites are meeting annual overflow frequency performance standards. Adjustments have been made to bring the last two sites into compliance. The overflow frequency 5-year rolling averages of these two sites continue to improve since the adjustments were introduced.

CSO/IPT tank storage during storm events has outpaced CSO overflows since 2016.



# More Fun Facts

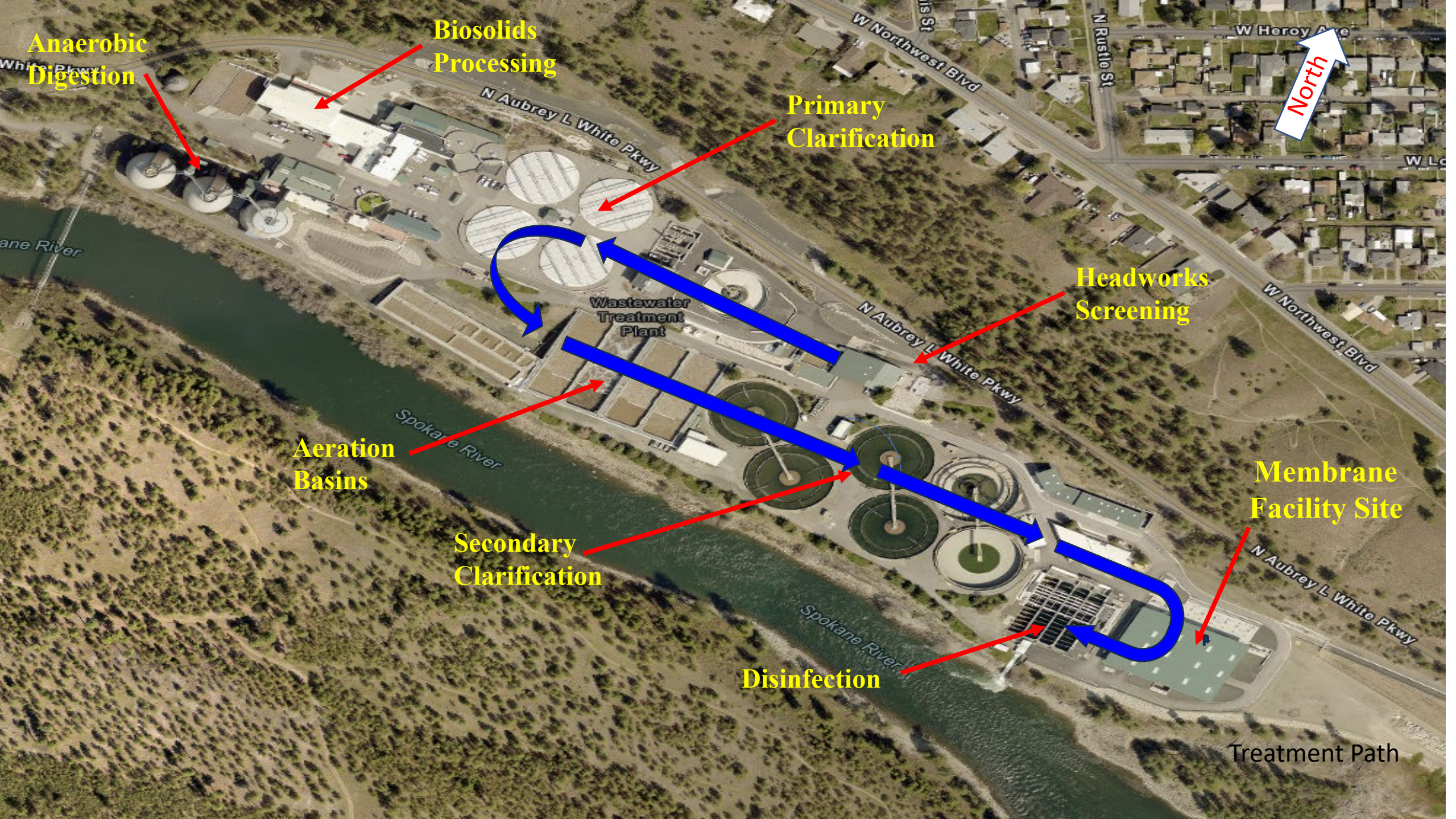
As of the end of November 2024 we had 1 event which is the least; followed by 2021 and 2023 with 2 events. 2023 had the smallest volume of overflow since we started tracking yearly amounts in 2003.

The five biggest CSO tanks can hold almost 10 million gallons of combined stormwater and sewage.

Only the overflow in 2024 😊



Next Level of Treatment  
@ Riverside Park Water  
Reclamation Facility



Anaerobic Digestion

Biosolids Processing

Primary Clarification

Headworks Screening

Membrane Facility Site

Disinfection

Secondary Clarification

Aeration Basins



Wastewater Treatment Plant

Treatment Path

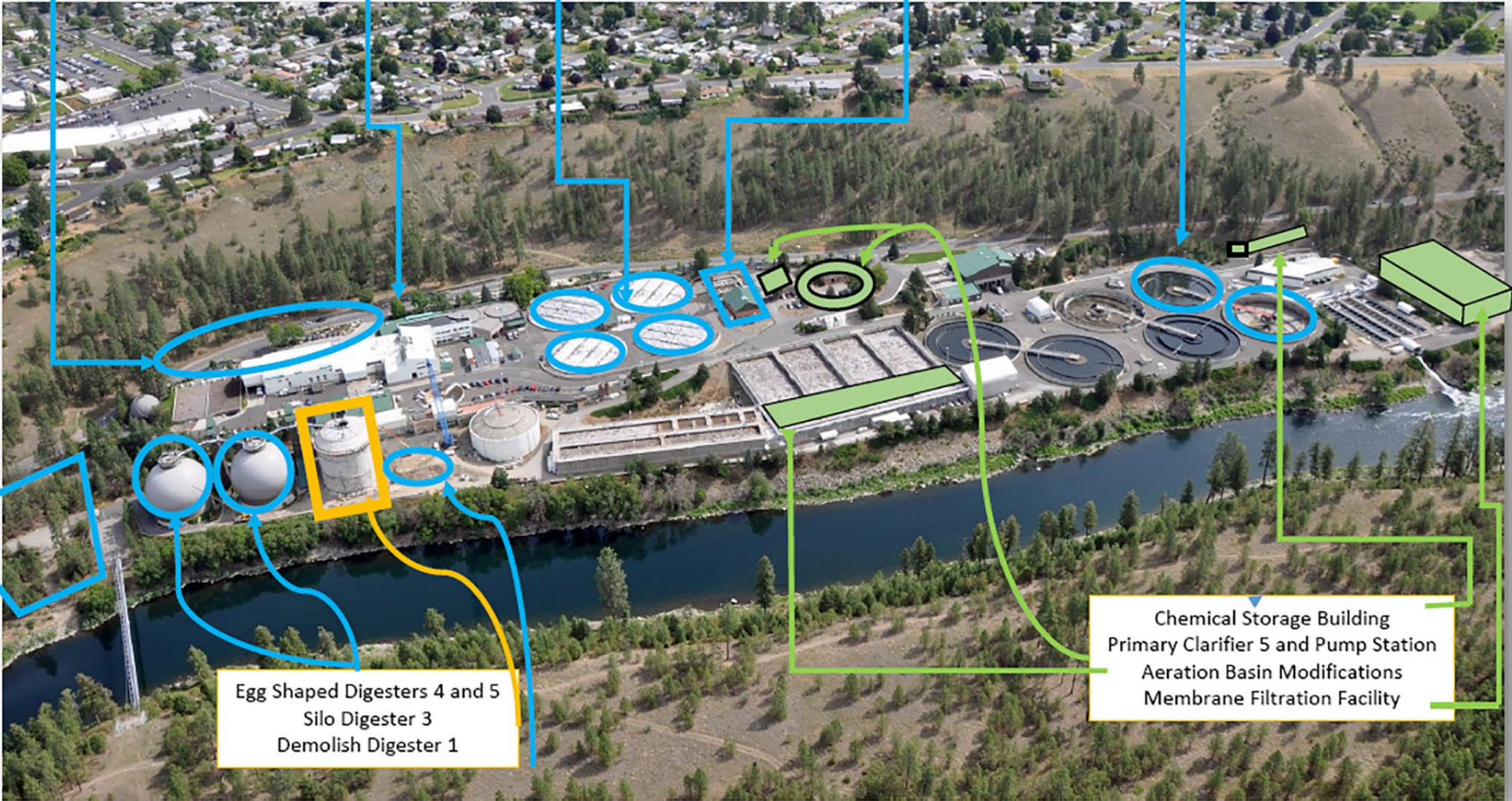


**LEGEND:**

- Projects Completed 2002 – 2015
- Current Projects
- Projects to be Completed by 2020

Habitat Conservation Area  
Entry Landscape Enhancements  
New Water Feature

Primary Clarifier Covers  
Odor Control System  
Convert Clarifiers to CSO



Egg Shaped Digesters 4 and 5  
Silo Digester 3  
Demolish Digester 1

Chemical Storage Building  
Primary Clarifier 5 and Pump Station  
Aeration Basin Modifications  
Membrane Filtration Facility



# Dissolved Oxygen TMDL

## Total Maximum Daily Load

TMDL is based on “assimilative capacity” of the Spokane River & Long Lake

Total Phosphorus – **0.042 mg/l** vs. 0.63 mg/l\* = **17.8 lbs/day**

Prior permit “2016” requirement allowed up to 157 lbs/day

**30 MGD with secondary treatment approximately 75 lbs/day**

Starting March 1, 2021 permit requires discharge to meet **17.8 lbs/day**

**30 MGD with Next Level of Treatment approximately 2 lbs/day**

Critical Season for TP is March 1 through October 31

# Membrane Facility (Tertiary Process)





## 10 Years of Piloting – Crucial to Success

Single stage tertiary treatment vs. dual stage

Capacity re: Net Environmental Benefit

Reduced flocculation basins and chemical dosing

Deferred additional solids processing capacity

Certainty of Design and Compliance

**Piloting Saved \$20~50MM**

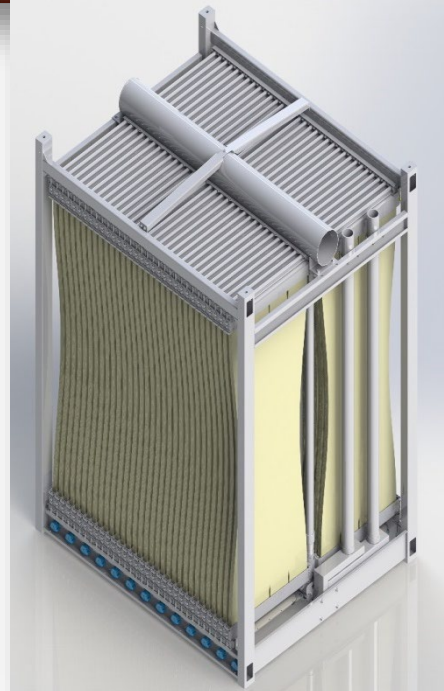
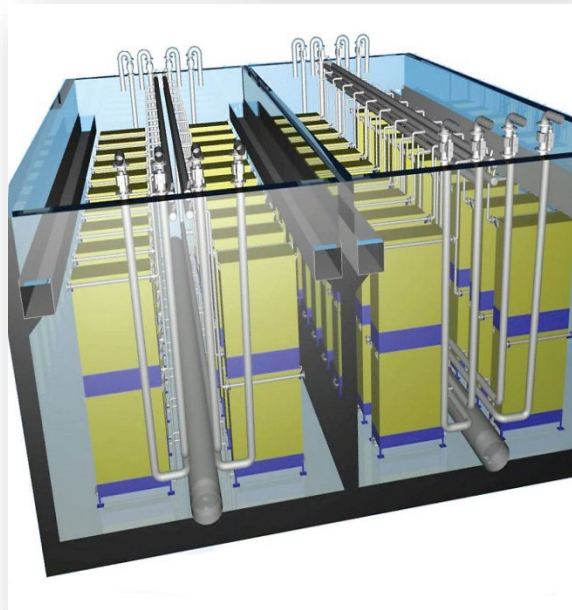
(Irrespective of which Membrane System was selected)



# Side – by – side piloting of GE and PALL systems Treated “run of the plant” flow

VACUUM SYSTEM  
(then GE)

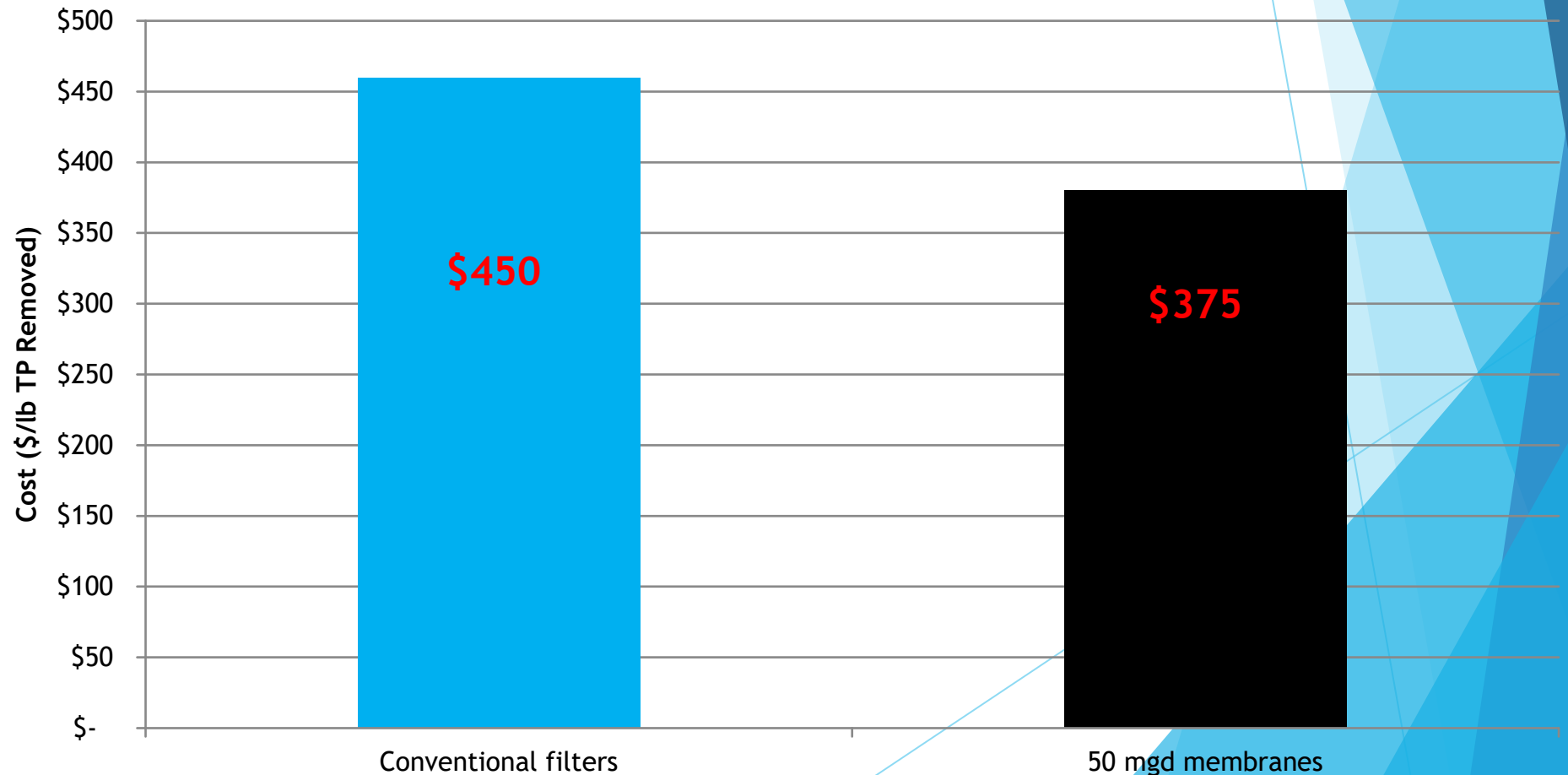
PRESSURIZED SYSTEM  
(PALL)





# 50 MGD of Membranes has Lower Cost per Pound of Total Phosphorus Removed

Cost of Phosphorus Removal During Critical Season







# Membrane Fun Facts

16 Membrane racks – each roughly the size of semi-truck trailer

6900 membrane “fibers” in each module, approximately 6.5 feet long

38,000 miles of membrane fiber, laid end to end (1.5 x earth circumference)

538 sq. feet of filter surface in each module

55 acres total surface area (each fiber split lengthwise, unrolled and laid flat)





