

# The Power of Partnerships

## Improving Air Quality in the Puyallup River Watershed

Puyallup White River Lead Integrating Organization Quarterly Meeting

Sept. 11, 2024

Cindy Haverkamp

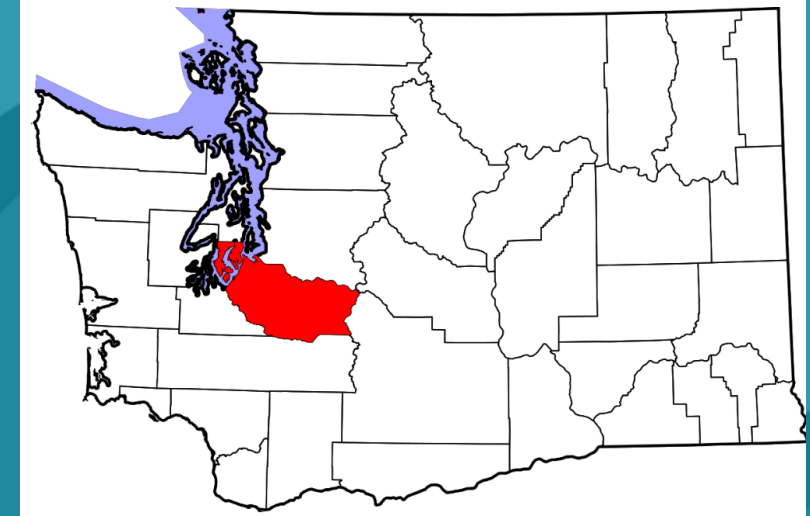
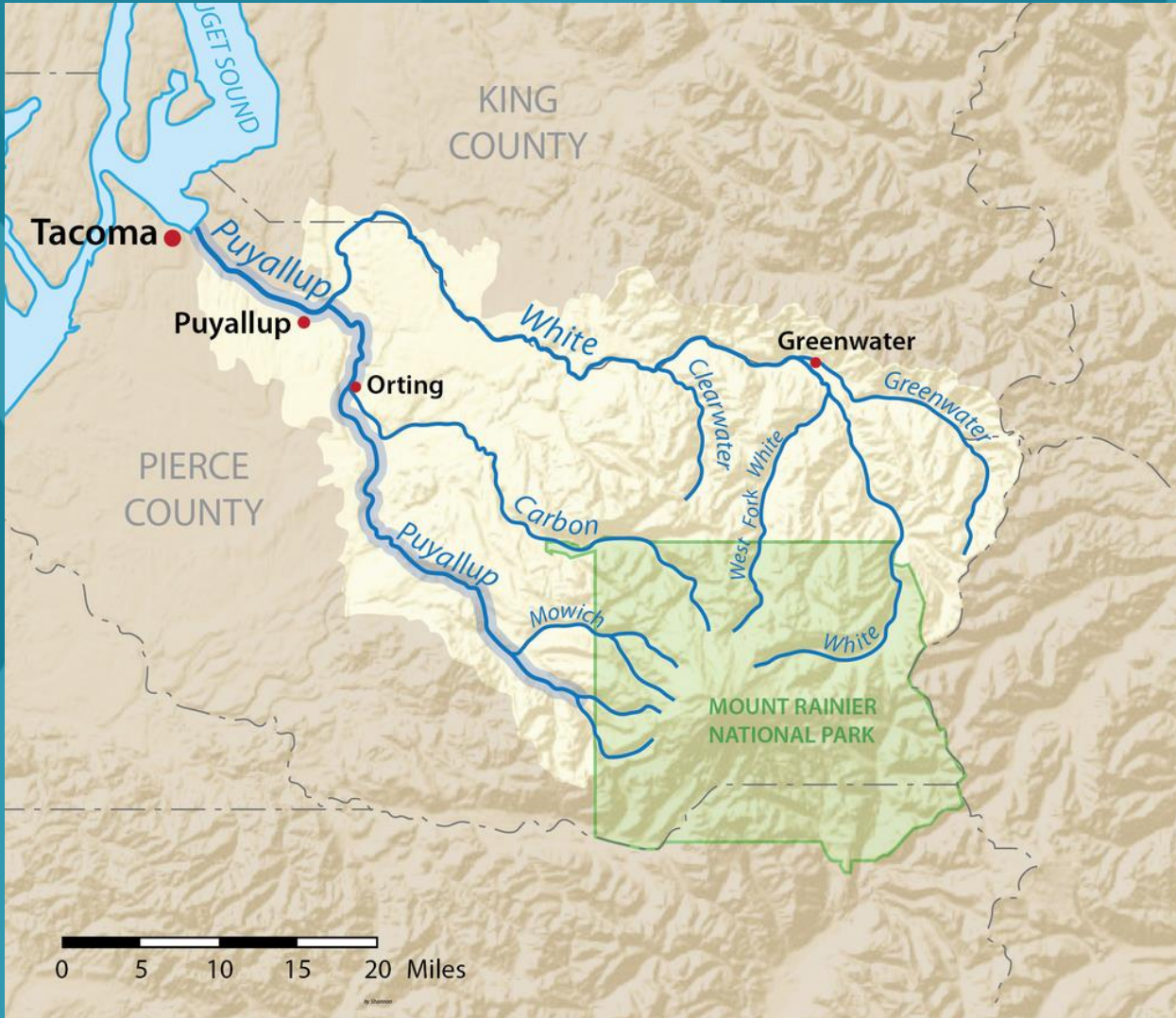


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# Puyallup Watershed



Source: [Pierce County, Washington - SimpleEnglish Wikipedia, the free encyclopedia](#)

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# Pierce County air quality challenges



Extreme heat events are becoming more common.



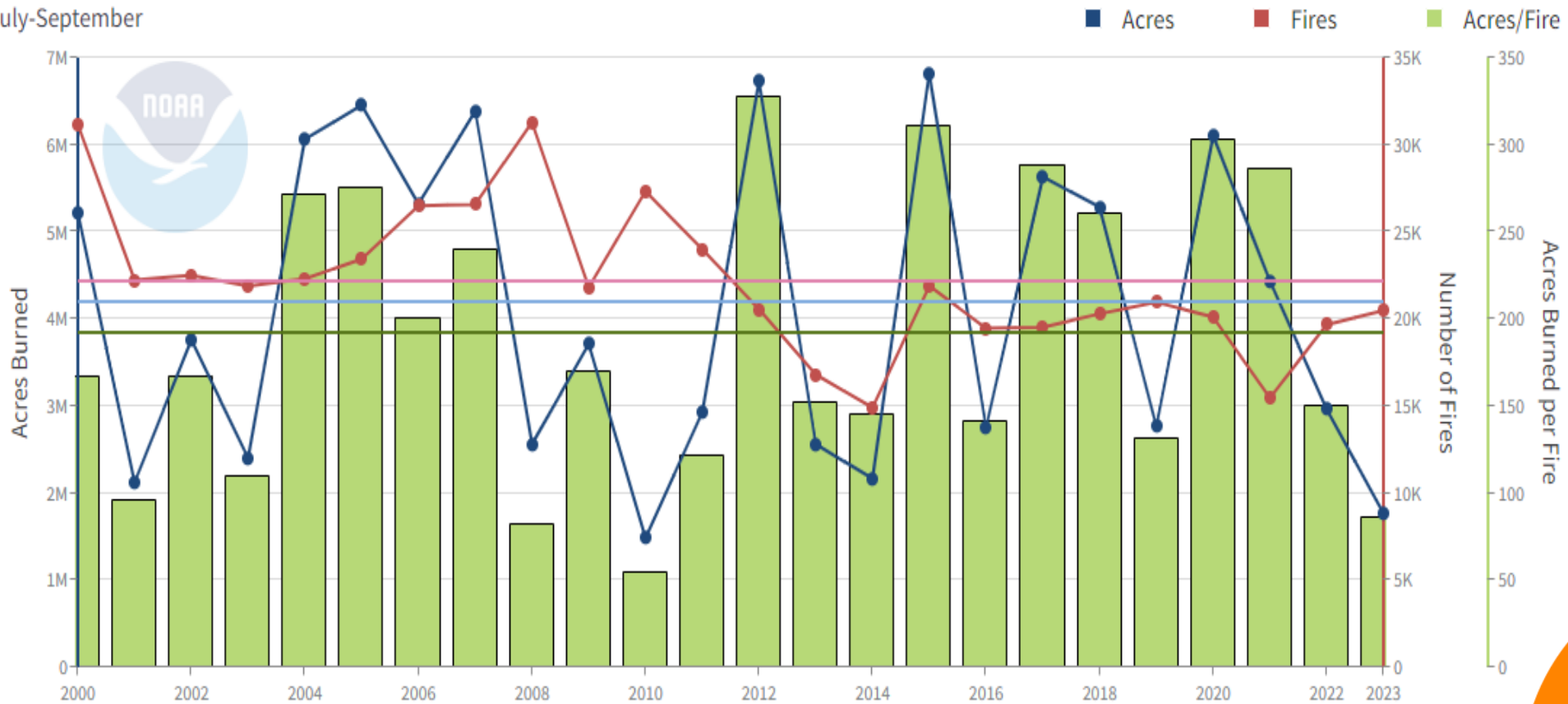
Wildfire smoke events are becoming more common.



# U.S. wildfires, 2001-2023

## U.S. Wildfires

July-September



2001-2020 Average: 4,201,098.65 Acres 22,220.75 Fires 192.58 Acres/Fire

Source: National Interagency Fire Center (NIFC)

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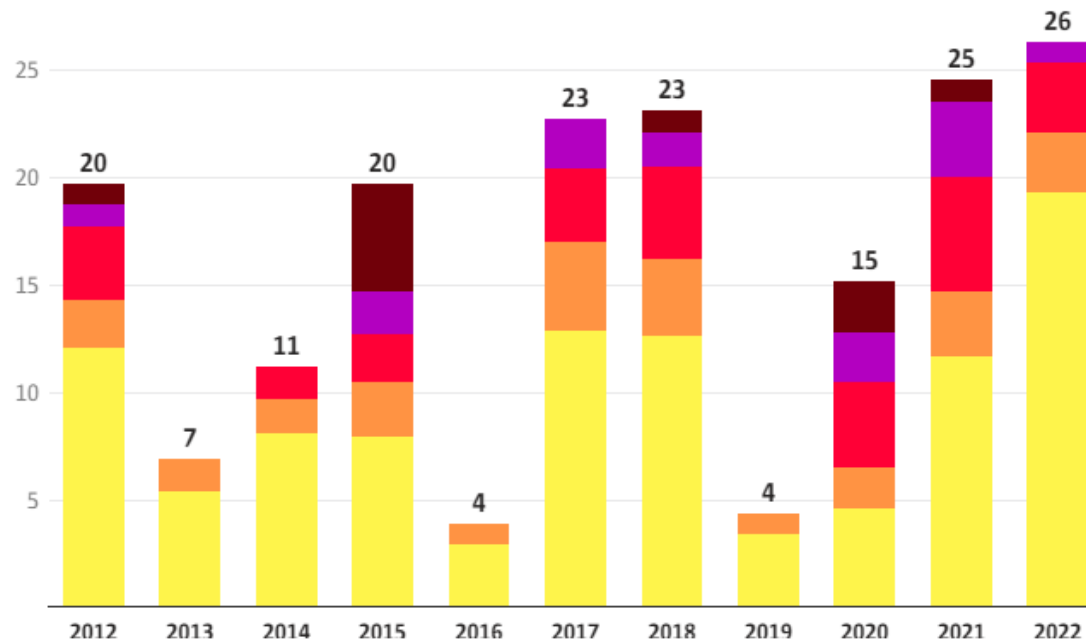
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# Where there's fire there's smoke

## Poor AQI readings for Washington summers over the decade

2022 recorded the greatest average of moderate or worse readings on the Air Quality Index, and 2015 had the greatest average of hazardous readings.

■ Moderate ■ Unhealthy for Sensitive Groups ■ Unhealthy ■ Very Unhealthy  
■ Hazardous



Note: Counts refer to average number of days per air quality index category across all Washington Network monitoring sites. AQI categories above moderate are generally attributed to wildfire smoke during the summer months. Data from 2012 to 2021 is for the period of June 1 to Sept. 30. Only 2022 includes data stretching into October.

Chart: Alison Saldanha / The Seattle Times • Source: Washington State Department of Ecology, Air Quality Program



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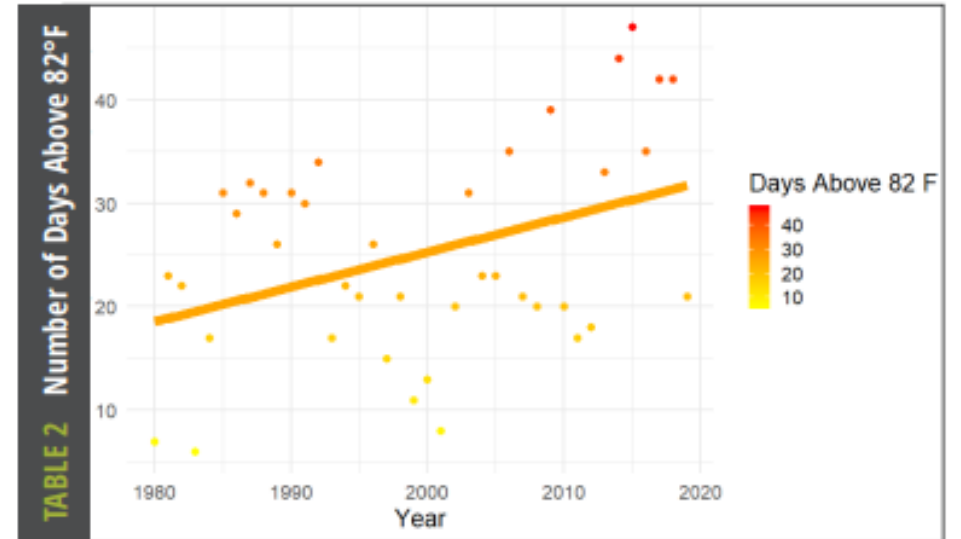
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# Extreme heat events

Contribute to:

- Higher daytime temperatures.
- Reduced nighttime cooling.
- Increased air-pollution.

Number of days above 82 degrees F has doubled over the last 20 years!



## REFERENCES

- <sup>1</sup> Anderson, B. G., & Bell, M. L. (2009). Weather-related mortality: how heat, cold, and heat waves affect mortality in the United States. *Epidemiology (Cambridge, Mass.)*, 20(2), 205.
- <sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5071163/>
- <sup>3</sup> <https://trid.trb.org/view/1488373>



# Think and share

- **Think**

- Take a minute to think of an example of how wildfires, wildfire smoke, or extreme heat have affected the watershed.

- **Share**

- Share your story in the chat, if desired.



# Health effects of wildfire smoke

- Shortness of breath.
- Wheezing.
- Chest pain.
- Headaches.
- Asthma attack.
- Tiredness.
- Fast heartbeat.
- Coughing.
- Trouble breathing.
- Stinging eyes.
- Scratchy throat.
- Runny nose.
- Irritated sinuses.
- Pre-term births.
- Stress and anxiety.
- Reduced ability to learn.







# Health effects of extreme heat

- Heat-related deaths and
- Heat-related illnesses:
  - General discomfort.
  - Respiratory difficulties.
  - Heat cramps.
  - Heat exhaustion.
  - Non-fatal heat stroke.



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# Especially bad if you're:

- Under 18.
- Over 65.
- Pregnant.
- Living with heart or lung disease or COPD.



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# Other vulnerable populations

- People living homeless.
- Outdoor workers.
- People doing outdoor recreation.
- Tribal nations and people of color.
- People with lower incomes.



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# Watershed impacts



- Reduction in biodiversity—  
invasives thrive, native  
species struggle.
- Stronger storms increase  
flooding and erosion.
- Shift from snow-dominated  
to rain-dominated leads to  
changes in stream flow and  
water temperature.
- Drier summers lead to  
reduced soil moisture and  
increased fire risk.



- Drinking water sources,  
lakes, and streams can be  
contaminated by ash, debris,  
and firefighting byproducts.
- Increased sediment damages  
fish habitat.
- Burn scars and faster stream  
flows contribute to erosion.
- Harmful algal blooms are  
more prevalent  
after a fire.



# What we're doing

- Building strong partnerships.
- Monitoring air quality at schools.
- Box fan/filter outreach and education.
- Urban heat mapping.
- Applying for grants and leveraging existing funds.



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# Building Strong Partnerships



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# Pierce Conservation District (PCD)



- Leveraged Department of Natural Resources (DNR) Firewise grant.
- Hired wildfire project manager.
- Joined PCD to share wildfire smoke health impacts.
- PCD hosted tabling events and shared space with us.



# National Environmental Health Association

Interns, Sophie Goodgion (2023) and Eleonora Frokic (2024).

- Extended our reach with 800 hours of staff time.
- Leads for PCD partnership activities.
- Help plan and implement box fan filter giveaways.
- Updated our outdoor air quality communications plan.
- Completed literature reviews.



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# Puget Sound Asthma Coalition

- Box fan filter demos at Tacoma libraries for children and families.
- Gave away 72 box fans and filters in 2023.
- Posted poor air quality infographic in Tacoma and Pierce County Libraries.



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# Public Health Emergency Preparedness and Response (PHEPR)

Environmental Health and PHEPR staff work together on climate-related preparedness and response.

- PHEPR funds support work.
- Liaise with local emergency management partners.
- Partner on community trainings.



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# Discussion

- What partnerships do you currently have?
- What partnerships would you like to build?
- Please put your thoughts in the chat.



# Air Quality Monitoring



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# PurpleAir sensors



Low-cost PurpleAir sensor



Regulatory air monitor

- Partnered with 29 agencies to install and maintain low-cost air sensors.
- Focus: youth-centered facilities.
- Goal: equitable access to healthy learning environments.
- All sensor data is online.



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[www.purpleair.com](http://www.purpleair.com)



# Schools and Childcare

- We share resources from:
  - Washington State Department of Health.
  - Puget Sound Clean Air Association.
  - Environmental Protection Agency's Healthy Schools Program.



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# Outreach and Education



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# Outreach and education

## Our main tool—The box fan filter.

- Easy and affordable solution to poor indoor air quality.
- Filters out:
  - Small particles of wildfire smoke (PM2.5).
  - Dust, pollen, and viruses.
- In a small room, 90% reduction in air pollution within 15 minutes.
  - With windows and doors closed.

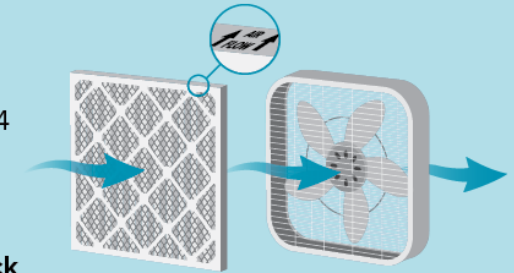
## Prepare for Wildfire Smoke!



### Make your own box fan filter.

#### You'll need:

- 20" box fan.
- 20" furnace filter with 11-14 MERV rating.
- Bungee cord or tape.



**Attach filter to back of fan with bungee cord or tape.**

*Make sure the air flow arrows on filter point to front.*

- Use in a small room with windows and doors closed.
- Change filter when dirty.
- Do not leave on when you aren't in the room.

**Sign up for air quality alerts at [enviroflash.info](https://enviroflash.info)**

Learn more at  
[tpchd.org/wildfiresmoke](https://tpchd.org/wildfiresmoke)





# Outreach and education

**Poor Air Quality**  
How wildfire smoke can affect your health

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**Wildfire smoke creates tiny particles in the air that can cause health concerns.**

**Poor air quality can affect your health.**

It can cause chest pain, irregular heartbeat, shortness of breath, headaches, sore throat, coughing and eye irritation.

**You are most at risk if you are:**

Under 18, over 65, pregnant, living with heart or lung disease.

**Protect your health.**

Limit time outside. Close windows and doors when possible. Set air conditioner to recirculate and use a HEPA filter. Drink plenty of water. If you are sick, call your doctor.

**Check your local air quality at [pscleanair.org](https://pscleanair.org).**

Good Moderate Unhealthy for Some Unhealthy for All Very Unhealthy for Some Very Unhealthy for All

Learn more about wildfire smoke and poor air quality at [tpchd.org/wildfiresmoke](https://tpchd.org/wildfiresmoke).

English | Rev. July 27, 2023

## Other tools.

- Educate about Air Quality Index (AQI).
- Websites to follow:
  - [Airnow.gov](https://airnow.gov)
  - [Map.purpleair.com](https://map.purpleair.com)
  - [Wasmoke.blogspot.com](https://wasmoke.blogspot.com)
- Poor air quality infographic.
  - [tpchd.org/wildfiresmoke](https://tpchd.org/wildfiresmoke)



# Urban Heat Mapping Campaign



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# Urban heat mapping

- 14 local partners.
- Led by the National Integrated Heat Health Information System.
- Conducted heat mapping campaign within urban growth boundary.
- Successes:
  - 80 community members were trained on urban heat impacts.
  - 32 volunteer drivers and navigators drove 16 routes.

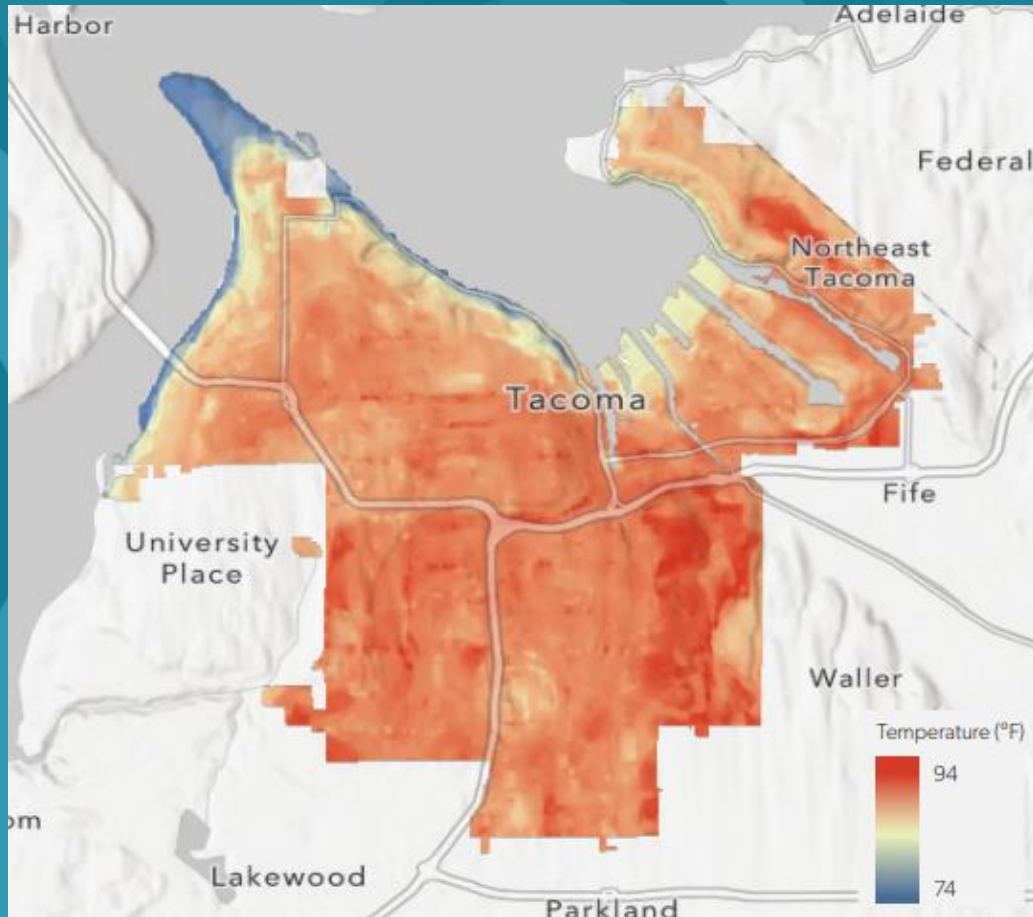


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# Data usage



- Data will:
  - Inform urban forestry plans.
  - Determine locations for tree planting events.



# Funding



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# Funding: Grant #1

## Grant Source: City of Tacoma

Title: Box Fan and Filter Outreach

- Funding through 2025.
- Will distribute to Tacoma zip codes based on:
  - Equity.
  - Topography.
  - Proximity to pollutants.
- Distributed 229 kits last year and 604 so far this year!



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# Funding: Grant #2

## Grant Source: EPA Government to Government Environmental Justice Grant Program

Title: Community led wildfire preparedness initiative

- \$1 million dollars over 3 years.

Partners:

- Center for New Democratic Processes.
- Pierce Conservation District.
- Clean Air Methow.
- University of Washington.

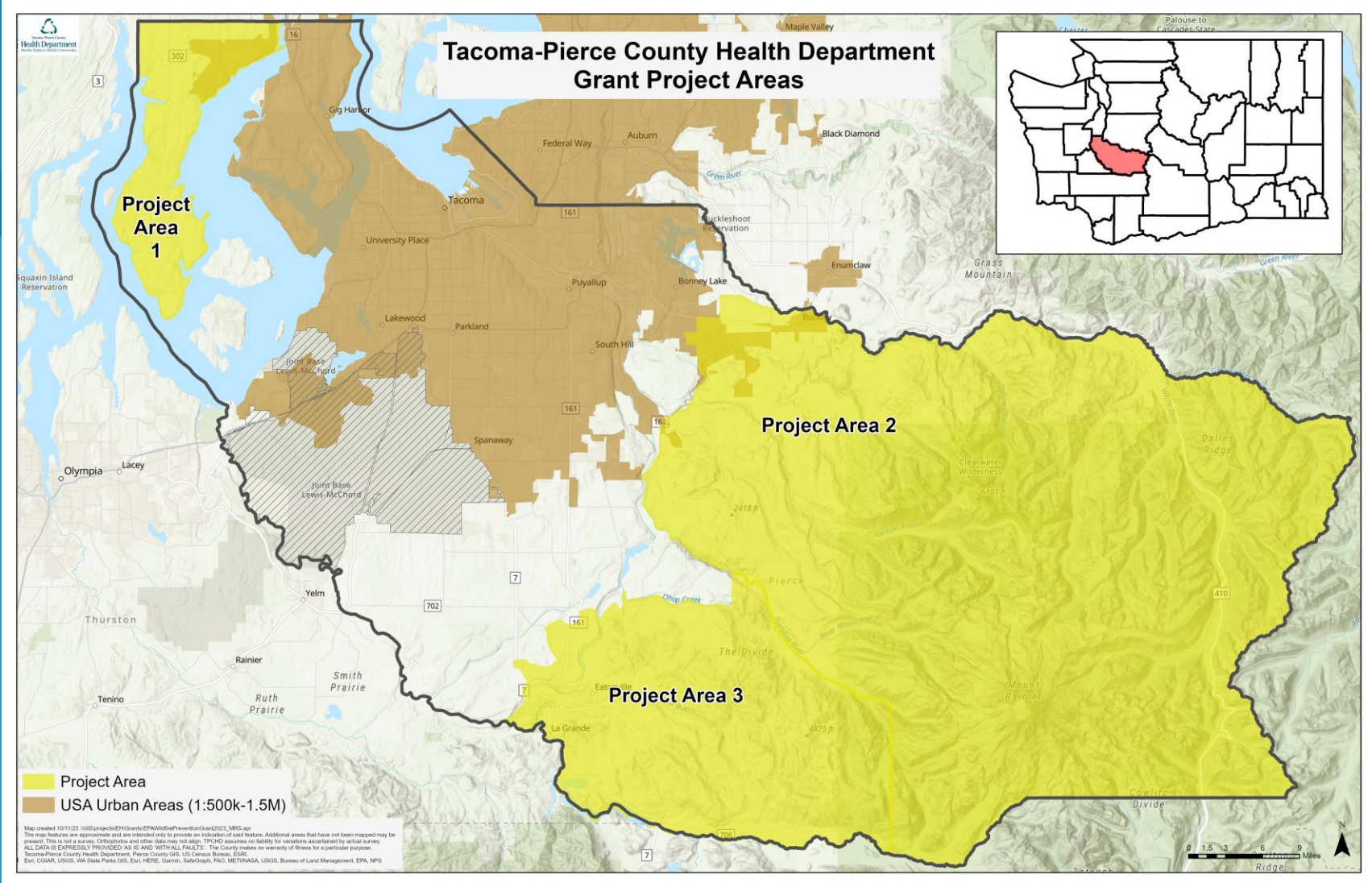


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# Grant #2 project areas





# Grant #2 details

## Goals

- Year 1—Build relationships and decrease risk of wildfires smoke exposure through education and outreach.
- Year 2—Co-create community-adaptive solutions in each project area. Host countywide wildfire summit.
- Year 3—Assist community to implement solutions developed in year 2. Evaluate data to assess project success.



# Discussion

- What sources of funding have you found most helpful?
- What challenges have you faced around finding, applying for, and managing grants?
- Please share your thoughts in the chat.



# Questions?

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