METHOW VALLEY CLEAN AIR PROJECT

May 30th, 2019

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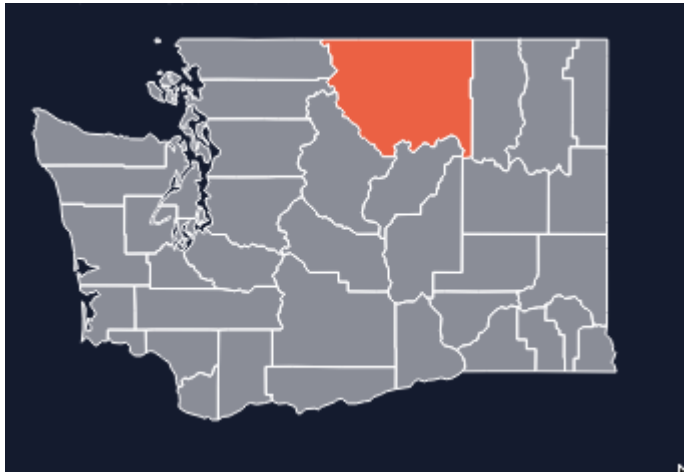
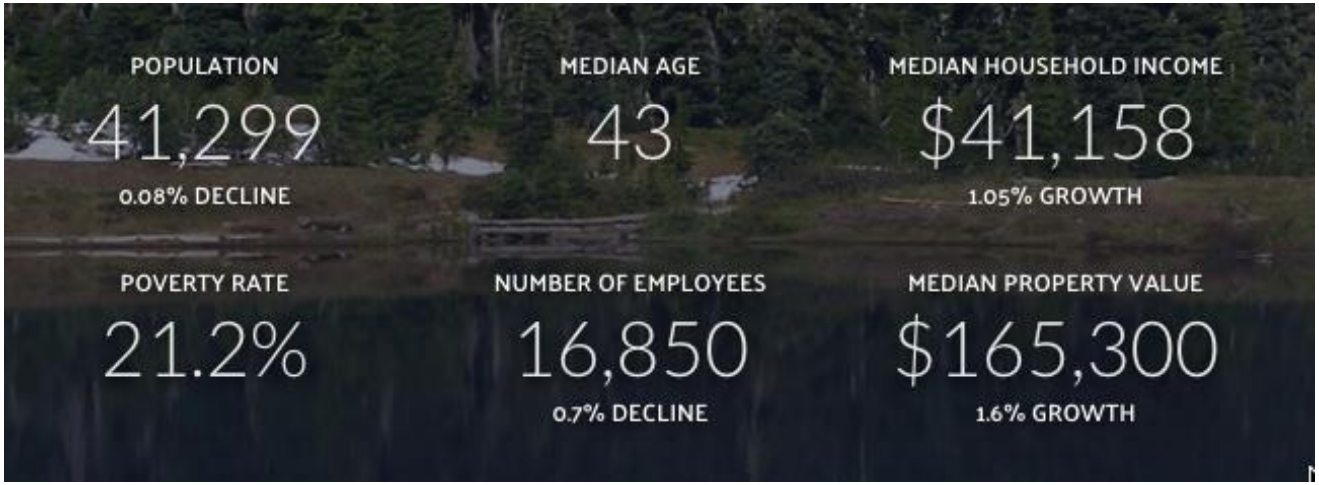
Disclaimer

The views expressed in this presentation are those of the director of a grassroots project created by and for a **small, isolated, rural** community that has lived through severe wildfires four of the last five years.


Methow Valley
Vancouver
CANADA
Mt Baker
Bellingham
20
Winthrop
Omak
Colville
IDAHO
Port Angeles
Everett
97
Seattle
Mt. Olympus
Bellevue
2
Wenatchee
Sookane
90
Moses Lake
Aberdeen
Tacoma
Ellensburg
Olympia
Mt. Rainier
Pullman
Yakima
Tri-Cities
Mt Adams
Kelso
Mt. St. Helens
Walla Walla
Vancouver
Portland
OREGON

Okanogan County

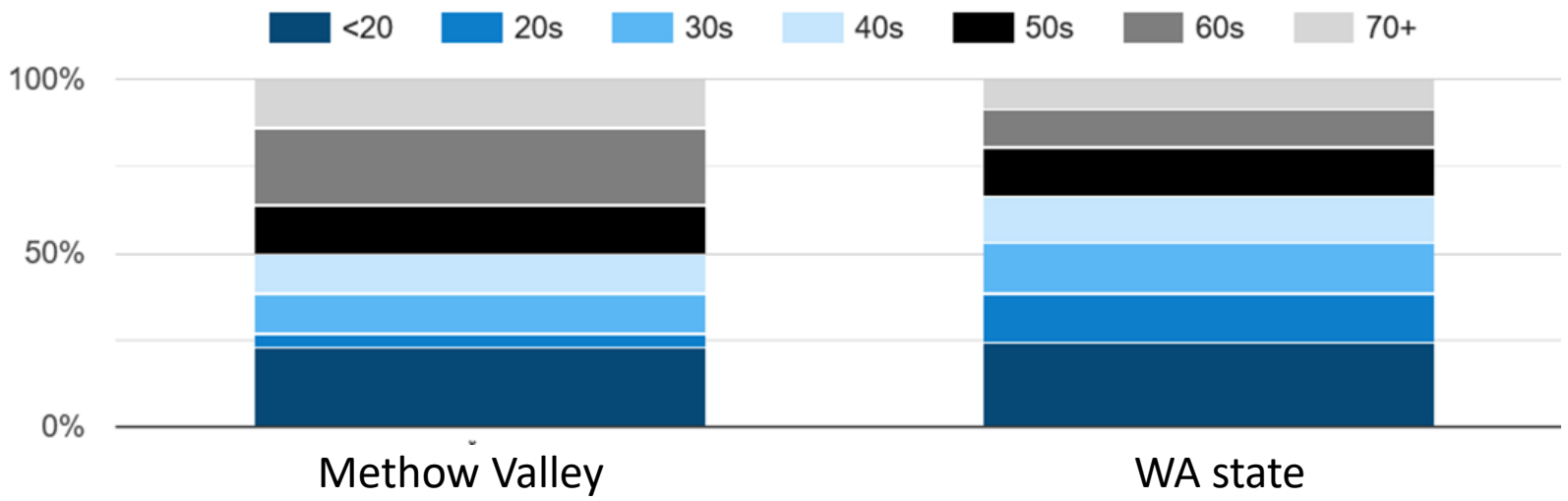




- 1/3 children live in poverty ($24k for a family of four)
- 1/2 children in MVSD qualify for free or reduced lunch

2016 Data, reported by datausa.io
Methow Valley Longterm Recovery

Smoke sensitive populations in the Methow Valley



- <18 yrs; >65 yrs; pregnant; heart or lung issues; previously suffered a stroke = **50% of population**
- High exposure: ↑ percentage of outdoor workers and recreationalists





Methow Valley, WA

Advantages and disadvantages in rural communities

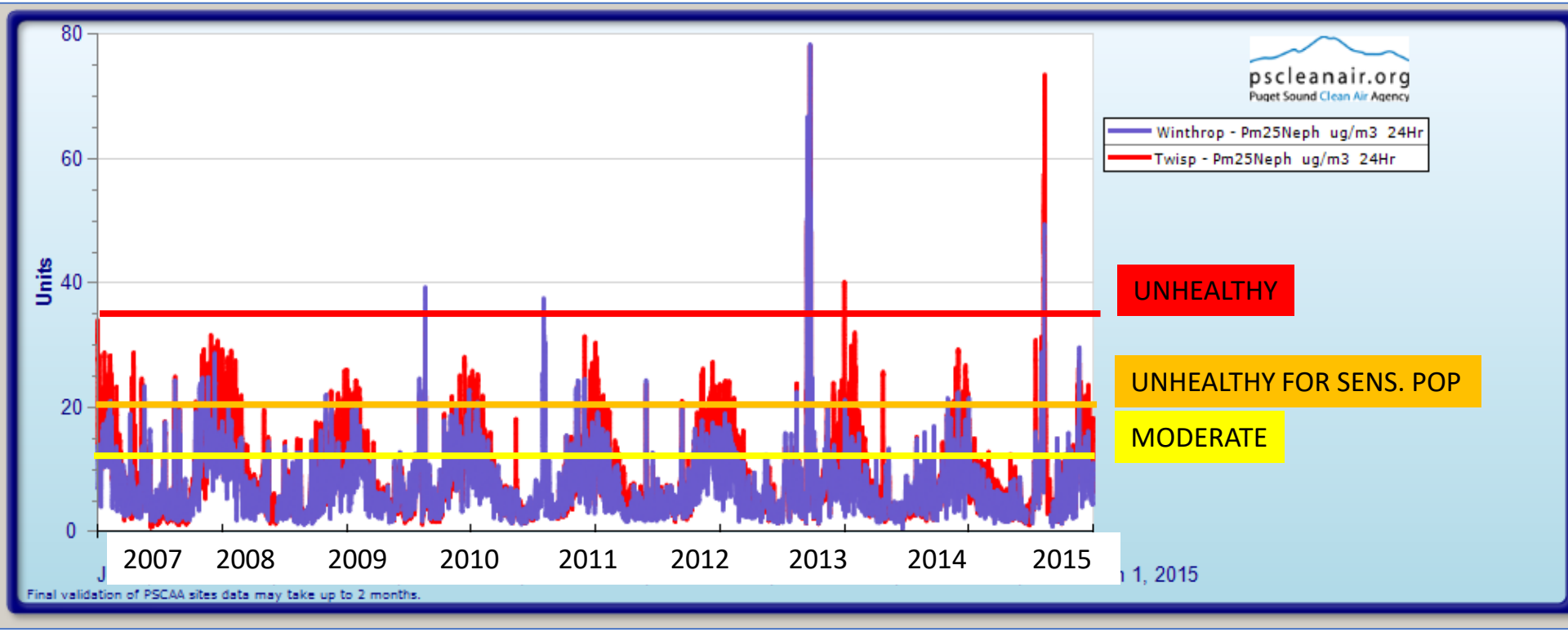
Advantages

- Small – finite number of groups to reach
- Strong social networks
- Value self-sufficiency

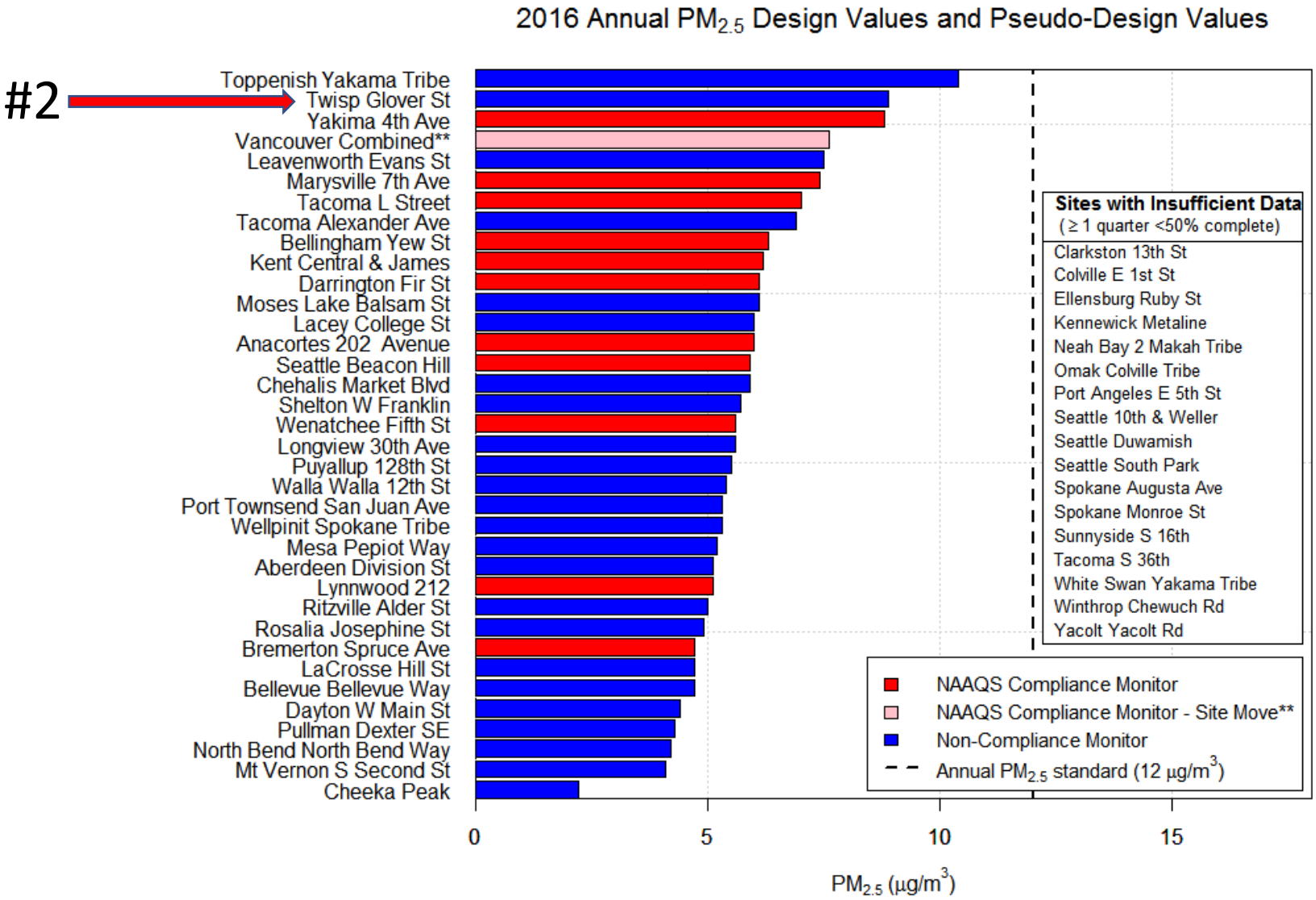
Disadvantages

- Lack of resources
- Too self-sufficient; suspicious of outsiders
- Highly diverse modes for seeking information
- Stoicism and cultural tolerance of smoke
- Geographically dispersed

What does the Methow's air pollution look like?



Twisp air pollution compared to other monitors in Washington

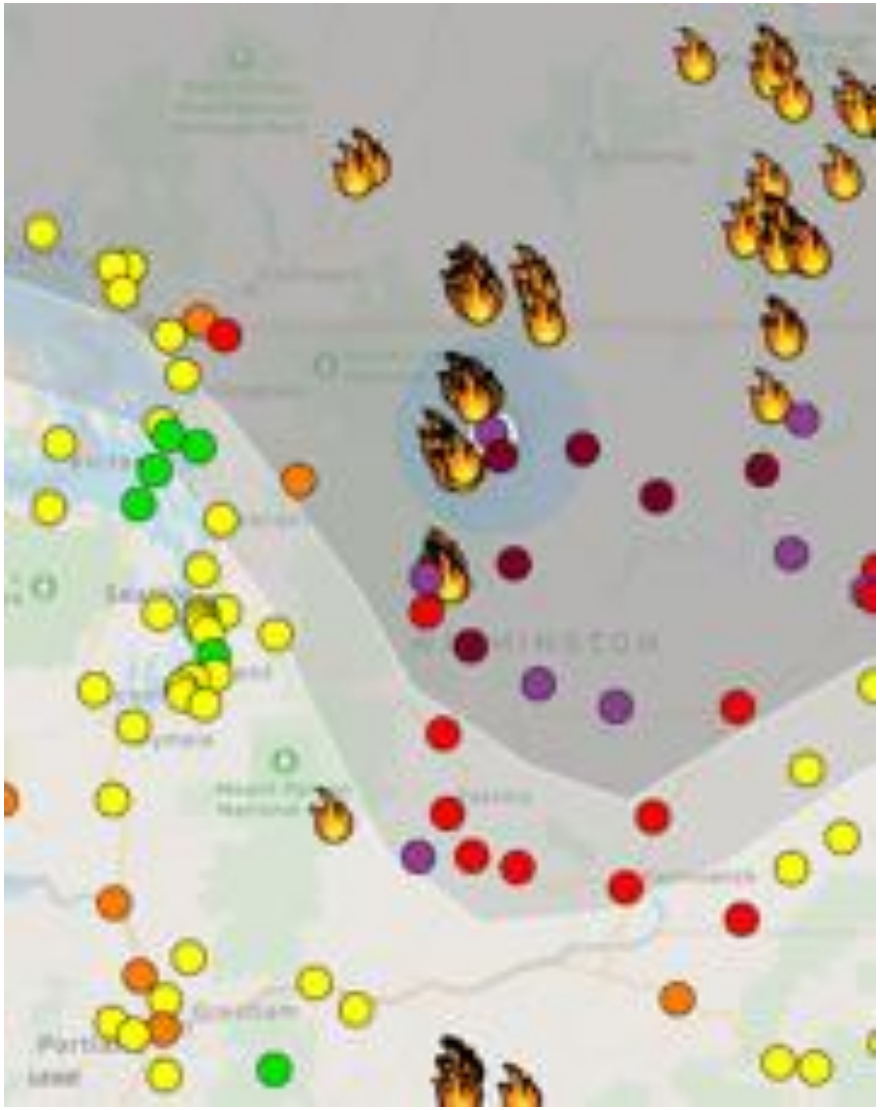


METHOW VALLEY CLEAN AIR PROJECT

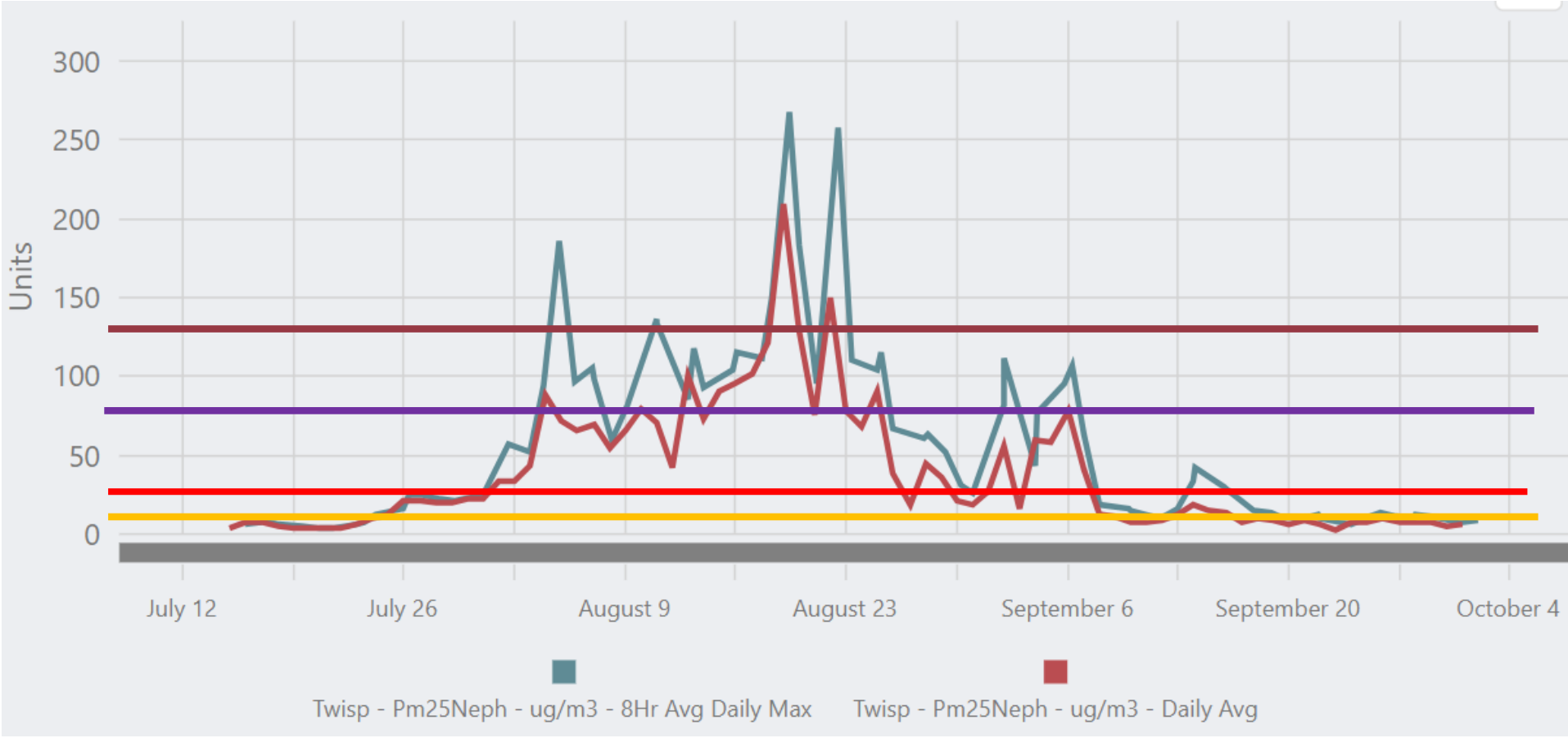
- ESTABLISHED: 2014
- ORIGINAL MISSION: To improve the air quality of the Methow Valley during the home heating season (October – March).
- METHODS:
- Community outreach to gather support for our vision of a sustainably clean airshed. Work in partnership to provide solutions.
    - Daily air quality signs in Twisp and Mazama
    - Methow Air app
    - Providing alternatives to outdoor burning
    - Teaching best practices to reduce smoke from indoor and outdoor burning

Okanogan County, WA
Five Years of Fires and Smoke

- 28% of Okanogan County burned in 2014 and 2015 fires
  - Carlton Complex: largest wildfire in WA history: 250,000 acres; 350 homes
  - Fire and emergency medical expenses up by 223% in 2014
  - Loss of lodging and sales taxes
  - Loss of real estate tax income
- State of Emergency 2016
- Diamond Creek Fire 2017
- Crescent Fire and McCloud Fire 2018
- 600 fires burned in BC in 2018



Twisp, Summer 2018 – 40 days of smoke



PC: Brent Walker

KAARIN,
BOLO,
GWENDOLYN

MARIAH

Ashley St Leger
August 17 ·

I very much would like to escape from this terrible air. The garden is covered in ash. The dog is covered in ash when she goes out for one minute. Air purifier on, all fans on, essential oils diffusing, and still it smells like smoke inside. 😭😭😭🔥🔥🔥If this is our new norm, how do we manage our health?

Geva McAdow, Barbara Vaughn Grubb and 3 others — 7 Comments

Like · Comment

[redacted] Same here but no dog. Joe who has respiratory problems, thinks we might have to move.

Like · Reply · 7w

[redacted] First step is to take the hazard warnings seriously. I was horrified today in Twisp seeing no one with a mask on. Bicycle riders!!! Kids playing on outdoor equipment... hazardous is HAZARDOUS!!!

Like · Reply · 7w

Ashley St Leger It's hard to keep the littles cooped up for weeks. Everyone's going stir crazy! Still won't let Mina play outside, especially on days like today.

Like · Reply · 7w

[redacted] GOOD ON YOU! Yes, keeping them cooped up is hard but essential. Maybe some yoga or some such. There isn't much in the way of indoor space that has good air.

[redacted] Thinking the same thing - how to enjoy summer without contracting lung disease.

Like · Reply · 7w · 1

Ashley St Leger It's not feasible to take off work, etc every year in the middle of the summer in order to get some relief. If I can't be out in the garden during harvest then what is the point of even starting it? Ugh.

Like · Reply · 7w

[redacted] respirators are us...

Like · Reply · 7w

Write a reply...

[redacted] I usually do canning out on my deck to keep the heat out of the cabin. Just stashing stuff in the freezer this year.

Like · Reply · 7w

[redacted] We don't.

Like · Reply · 7w

[redacted] Marti described it to me. I can't imagine what it 's like. I hope you get some relief soon. John said it's bad there too. We are finally getting some much needed rain as we were a tinderbox waiting for disaster.

Like · Reply · 6w

Public health policy in practice:
Creating smoke-readiness for this community

- **Ask the community what they care about and what they need**
- Promote health protective strategies
- Create partnerships and functional networked model to create solutions

Community questions and priorities

- Is the smoke going to make me sick?
- How do I survive indoors during wildfire season?
- What do I do with my children? Should I really keep them inside?
- Should I have my child or baby wear a mask?
- How do I know my indoor air is clean?
- Where can I go to find clean air?
- Why are the air quality numbers I look at online different?
- What does several weeks of bad air per year from wildfires mean for our long-term health?
  - Lung; CV; neuro; mental
- Am I going to have to move away from my home?

Smoke-readiness: investment in priorities

- Target sensitive populations and those who care for them
  - Schools; senior centers/homes; health care providers
- Promote the importance of clean indoor air
- Make finding cleaner outdoor and indoor air easier
- Address mental health and well-being impacts of prolonged smoke episodes
- Coordinate and enable key partners to build disaster preparedness and response systems
- Improve risk communication from fire management agencies
- Build self-sufficiency through emphasis of how to protect health

Improving risk communication

Wildfire Smoke Impacts Advisory Group

Background

Wildfire smoke is an increasing threat to public health in Washington. For many years, wildfires have caused heavy smoke impacts to members of the public. In recent years, climate change and forest management practices have led to longer wildfire seasons with increased fuels, resulting in more smoke and increased air pollution impacts from fine particulate matter. The need for increased wildfire smoke preparedness to protect public health is clear with each passing year of increased exposure to poor air quality attributed to wildfire smoke.

Prolonged exposure to smoke from fires is linked to negative health impacts. Minor symptoms include coughing, headache, and sore throat. Severe smoke impacts can trigger asthma, cause tightening of the chest, impact fetal health, lead to increased hospitalizations, and even death. People most at risk for severe impacts make up more than 40 percent of Washington states' population and include:

- People with heart and lung disease
- Children
- Pregnant women
- People over age 65

Purpose

In a wildfire smoke incident local health jurisdictions, tribal governments, and Washington State Department of Health provide health related information to the public and media in their communities. They coordinate with decision makers throughout their communities, including but not limited to: school administrators, school nurses, local government agencies, community organizations, and health care providers to make informed decisions in order to reduce smoke related health impacts.

In 2017, the local and state public health jurisdictions identified a need for more communication resources and greater statewide coordination of messages surrounding wildfire smoke impacts. In response, the Wildfire Smoke Impacts Advisory Group was established in 2018 by convening state and local health jurisdictions, tribal representatives, public information officers, health officers, and academic professionals. This group is charged with developing consistent messaging and providing fact-based health guidance to the respective agencies that provide resources and recommendations to the public. The group has three objectives:

- Objective 1: Develop ready-to-use communication templates that can be customized by local agencies. Items in the templates include:
  - Listed audiences and mechanisms for communicating to specific audiences.
  - Audience-specific messages related to pre, during, and post wildfire season.
  - Roles and responsibilities of resource providers (monitoring network, fire location reports, and weather forecasting).
  - Summary of available communication resources.
- Objective 2: School closures and outdoor event cancelations during wildfire smoke episodes. Support for local decision-makers prior to wildfire season. The closures guidance document will include:
  - An action level of indoor air quality for recommendation of school closures.
  - An action level of outdoor air quality for event cancelation or alternative actions.
  - Guidance about factors to consider in closure decisions.
- Objective 3: Provide recommendations for low-cost air sensors used for health risk evaluation of indoor and outdoor activities. The low-cost air sensor guidance document will include:
  - A summary of measurement reliability and accuracy of various low-cost sensors.
  - Options for addressing reliability issues.
  - Guidance about how, when, and where to use monitors indoors and outdoors.

Wa…tion

Air Pollution Categ…	
Good	
Moderate	…g or heart disease, or …ctivities that take less
Unhealthy for Sensitive Groups	…se, asthma, diabetes, …, or who have had a
Unhealthy	…ould avoid exercising …uous indoor activities. …g or heart disease, or … pregnant women and
Very Unhealthy	…d keep windows closed if … close the outside air …able. If you must be …ronic diseases should …nask. …rmation. People with …ould check with their …nyone with shortness of …e fatigue, or difficulty …r or call 911.
Hazardous	…d keep windows closed if … close the outside air …able. If you must be …ronic diseases should …nask. …rmation. People with …ould check with their …nyone with shortness of …e fatigue, or difficulty …r or call 911.

Publication Number: 0…

Build self-sufficiency

- Heavy use of social media and community engagement opportunities during wildfires
  - Schools, churches, farmer's markets, other events
- Promote behavioral change to protect health
  - Air purifiers, masks

Targeting sensitive populations

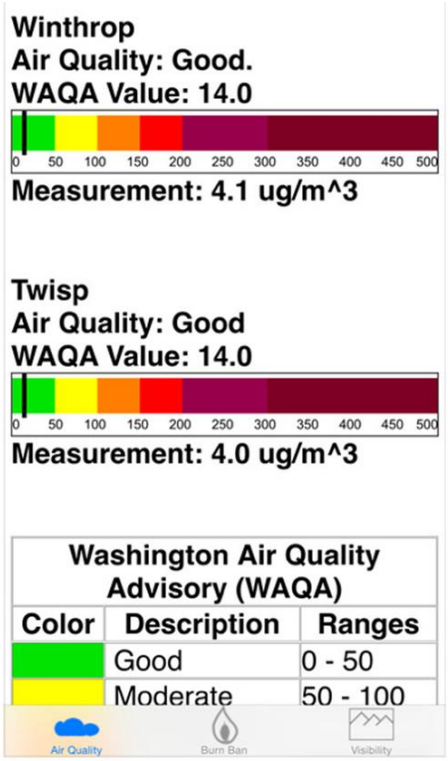
- School opened in 2017 during one of the worst weeks of air pollution from wildfire. Across the west, school and athletic practices were canceled, or students were kept indoors.
- MVSD and Little Star Montessori worked to protect student health
  - Updated and implemented recess and athletic practice policies
  - Tested indoor air quality
  - Purchased air purifiers for every classroom and active space
  - Installed outdoor and purchased indoor air quality monitors
  - Annual training of staff on policies and procedures; communication to school community.
  - Building learning modules around air quality

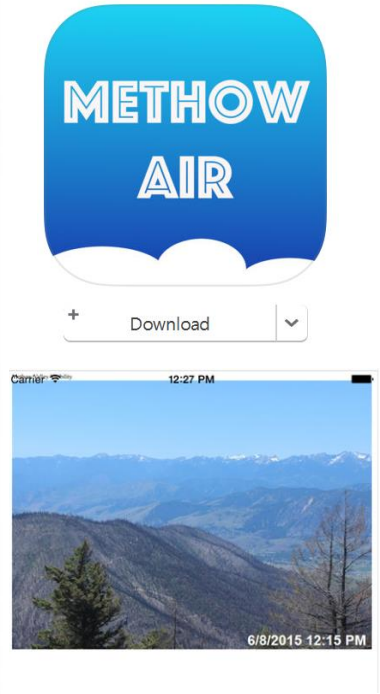
Little Star SCHOOL

Make air quality information more accessible

Low-tech: signs in Twisp, Mazama, and Carlton

Hi-tech: Methow Air app for iOS





Make finding clean(er) air easier

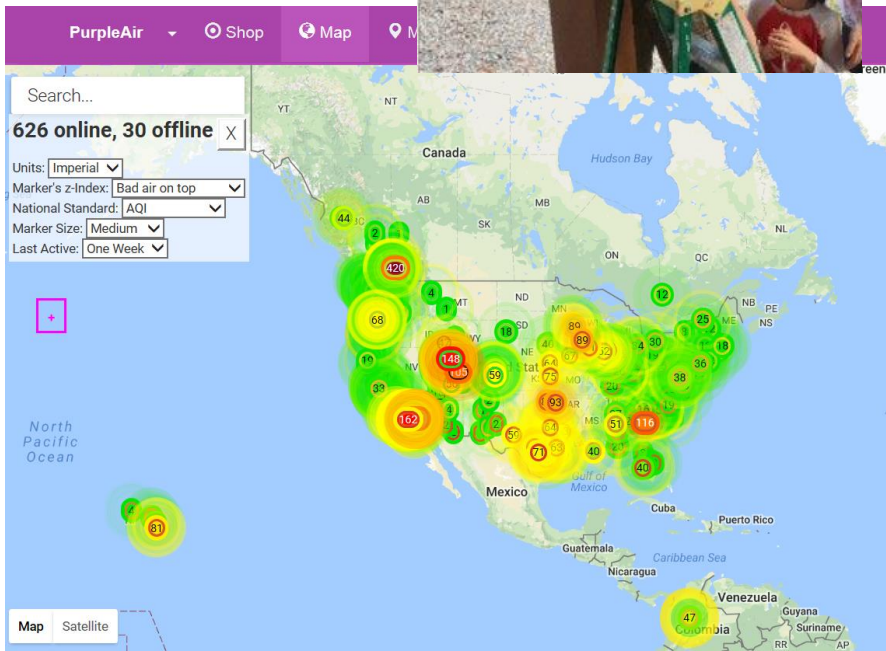
Clean Air Ambassador Program

Vision:

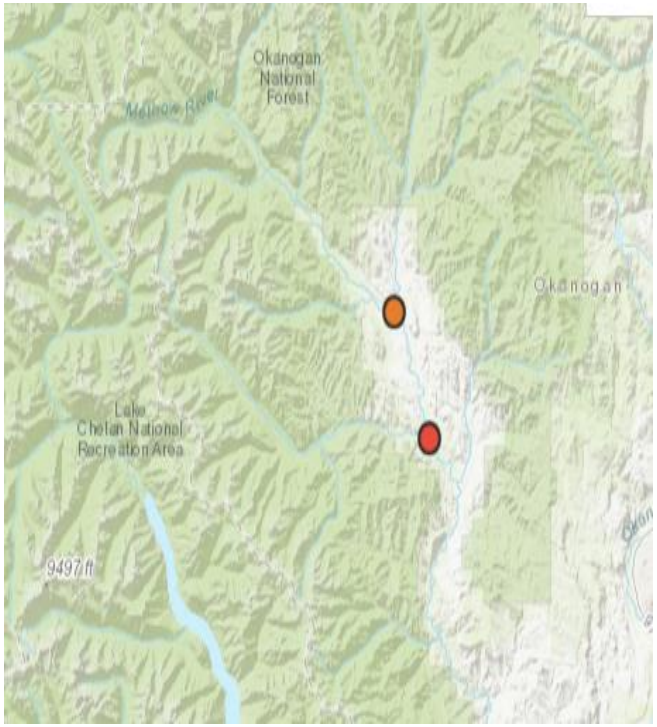
- Create a rich dataset of air quality data from the Methow Valley Airshed with Purple Air sensors.
- Cultivate a network of ambassadors for clean air.
- Data widely and freely accessible.

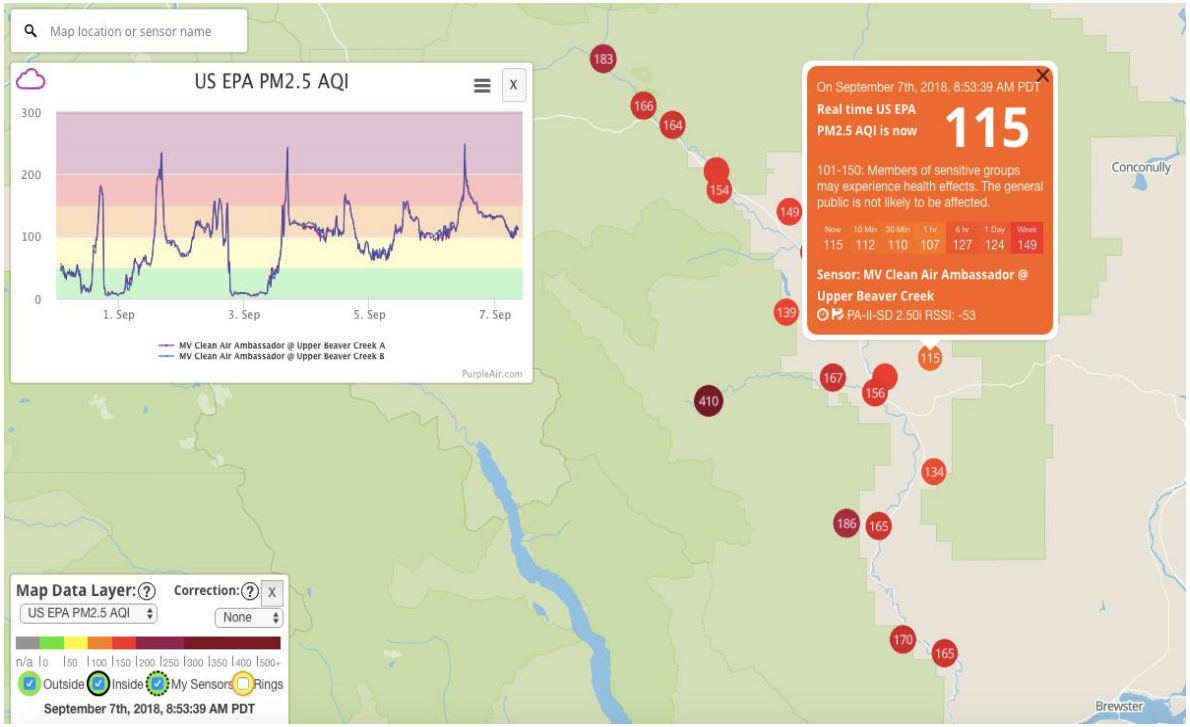
Impacts:

- Creates more comprehensive understanding of air quality throughout Methow.
- In air pollution episodes, can show areas for safe outdoor activity.
- Enables research projects including looking at relationship to indoor and outdoor air quality



Make finding clean(er) air easier:
Clean Air Ambassador Sensor Network





Holistic approach to “health effects” of smoke

- “Coping with smoke: addressing well-being” workshops to be held in August, 2019
- Partnering with mental health providers, family medicine docs, mindfulness meditation practitioners, social services, and yoga instructors.
- Workshops tailored to specific audiences
  - Location, language, focus
- Findings to inform public health messaging

Conclusions

- Rural communities are small percentage of total population but disproportionately impacted by smoke due to vulnerabilities and proximity.
  - Stewards of land, forests, watersheds, food producers, and voters!
- Given radically increased exposures to smoke from wildfire and Rx burns, where air quality can be improved, it MUST be.
- Opportunity: connect fire and forest health to smoke awareness, and then to air quality more generally.
- Inter-agency coordination is critical and impactful.
- Supporting local community-based groups can amplify efforts.

What's next?

- Funding:
  - NIEHS Research to Action R01: "Building Resilience to Wildfire Smoke: A Partnership for Response To New Exposures in Rural Communities (PARTNER-Communities). Nicole Errett, PI, UW
  - EPA Environmental Justice Grant:"Use of a community-based air monitoring network to develop wildfire smoke resilience and build air quality awareness"
- Community-based climate resiliency planning: Methow Valley Climate Action Plan
- Public health preparedness: understand relationship of indoor air quality and outdoor air quality focusing on vulnerable populations
  - What can we do to make clean indoor air more accessible?
  - How can we best prepare for the next air pollution episode?
- Continue and enhance established seasonal air quality programming
  - Blogging, radio, and newspaper to further stimulate and inform community conversation about clean air concerns, needs, and solutions
  - Vegetation drives
- Pilot woodstove exchange and support woodstove buy-back with ECY
- Other ongoing activities for sustainable solutions to deal with organic waste
  - Community workshop: "Alternatives to and best practices for outdoor burning"
  - Participate on Zero-waste future for the Methow working group
- Enhance website: more curated content on relevant air pollution issues and health

Collaborators

Winthrop Washington

City of PATEROS

DEPARTMENT OF ECOLOGY State of Washington

Confluence HEALTH

TWISPWORKS

THE MAZAMA STORE

OKANOGAN COUNTY FIRE DISTRICT 6 — WINTHROP · MAZAMA · CARLTON · TWISP

FOREST SERVICE US DEPARTMENT OF AGRICULTURE

OKANOGAN WENATCHEE NATIONAL FOREST Washington

TWISP

WASTEWISE METHOW

OKANOGAN Conservation District

Methow Conservancy

FAMILY HEALTH CENTERS YOUR FAMILY, YOUR HEALTH, YOUR CHOICE

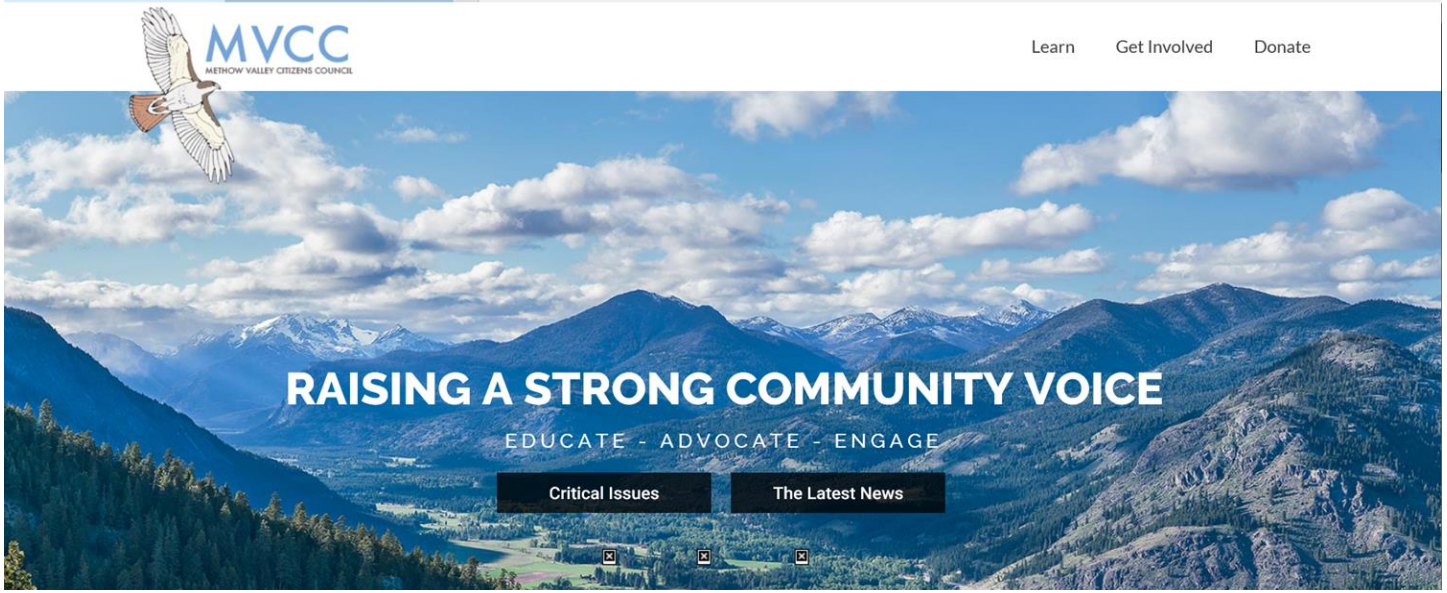
Methow Valley Trails Collaborative

ROOM ONE

KIRI The 97.5 Root FM

AERO METHOW RESCUE SERVICE

Methow Valley News Online



Advisory Group

- Dr. Raleigh Bowden
- Chris James, PhD
- Rachel Levi
- Phil Millam
- Craig Olsen
- Jason Paulsen
- Kelly Edwards, PhD
- George Wooten

METHOW VALLEY CLEAN AIR PROJECT

Methow Valley Citizen's Council:

- Jasmine Minbashian
- (Brian de Place)
- Lorah Waters
- Raechel Youngberg

WA Dept. Ecology

- Sean Hopkins
- (Jay Carmony)
- Kimi Matsushima
- Sanjay Barik

Funding from:

- Washington State Department of Ecology, Air Quality and Waste to Resources Groups
- Community Foundation of North Central Washington Methow Valley Fund
- UW Environmental Health Research Experience Program summer internship
- Mini-pilot award and additional support from the Community Engagement Core of the University of Washington Interdisciplinary Center for Exposures, Diseases, Genomics and Environment (Grant #: P30ES007033).

Increase community awareness

Methow Valley News

LOCALLY GROWN, INTERNATIONALLY KNOWN SINCE 1903 WWW.METHOWVALLEYNEWS.COM

COMMUNITY NEWS

Take care – Methow Valley has unhealthy air

by ADMIN *on* Jan 5, 2017 • Comments Closed

The Methow Valley Clean Air Project is asking for help. The Methow Valley is experiencing unusually unhealthy air recently, according to a press release from the Clean Air Project. Twisp and Carlton have been consistently in the "unhealthy" range. Unhealthy air has the most impact on: • hearts and lungs, especially people with pre-existing lung...

Alternatives to outdoor burning: vegetation drives

HUGE SUCCESS: Collected many tons of brush, branches, leaves, pine needles, weeds, etc.. avoiding hundreds of hours of smoke from burn piles.
Partnered with Okanogan Conservation District and Pine Forest in support of Firewise efforts.

Clean air project will collect vegetation as alternative to burning

by ADMIN on Oct 26, 2016 • 3:12 pm No Comments

What can I do to improve air quality?

- Talk to your neighbors and friends about your passion for clean air.
- Consider alternatives to outdoor burning. If you must burn, learn and follow best practices.
- Participate in vegetation drives; consider neighborhood or community partnerships for renting or purchasing chippers.
- Wood stoves and home heating
  - Properly season your wood
  - Have your chimney cleaned yearly
  - Build small, hot fires: don’t damp down
  - Monitor for burn bans
  - Upgrade to certified stove or wood-burning alternative
  - Consider weatherizing your home
- Learn more about forest health initiatives e.g. prescribed burning
- Support the Methow Valley Clean Air Project!

Challenges in managing a smoke disaster

- Flames, not smoke: Traditional emergency management of fire has focused on human safety
- Lack of resources and coordination
  - Myriad agencies involved with little coordination and funding (USFS, DNR, Ecology, Health Dept, EMS)
- Under-resourced public health infrastructure
  - Ex. Mask distribution, communication
- Ineffective risk communication
  - Public health messaging insufficient for smoke disasters: stay inside, wear a mask, leave the area.
  - Cultural factors of rural West populations
- Air quality monitoring challenging with dispersed population

METHOW VALLEY CLEAN AIR PROJECT

GOALS (2014)

To reduce the number of “bad air days” (=PM2.5>50) by 50% over 3 years

- To increase community awareness of impact of poor quality air
- To improve communication (and enforcement?) of burn bans
- To increase community awareness of opportunities to improve air quality
- Increase wood-alternative heating sources and/or increase number of certified stoves
- Serve as a model for other rural communities in WA State/US

Effective risk communication

How to protect your health when air is bad

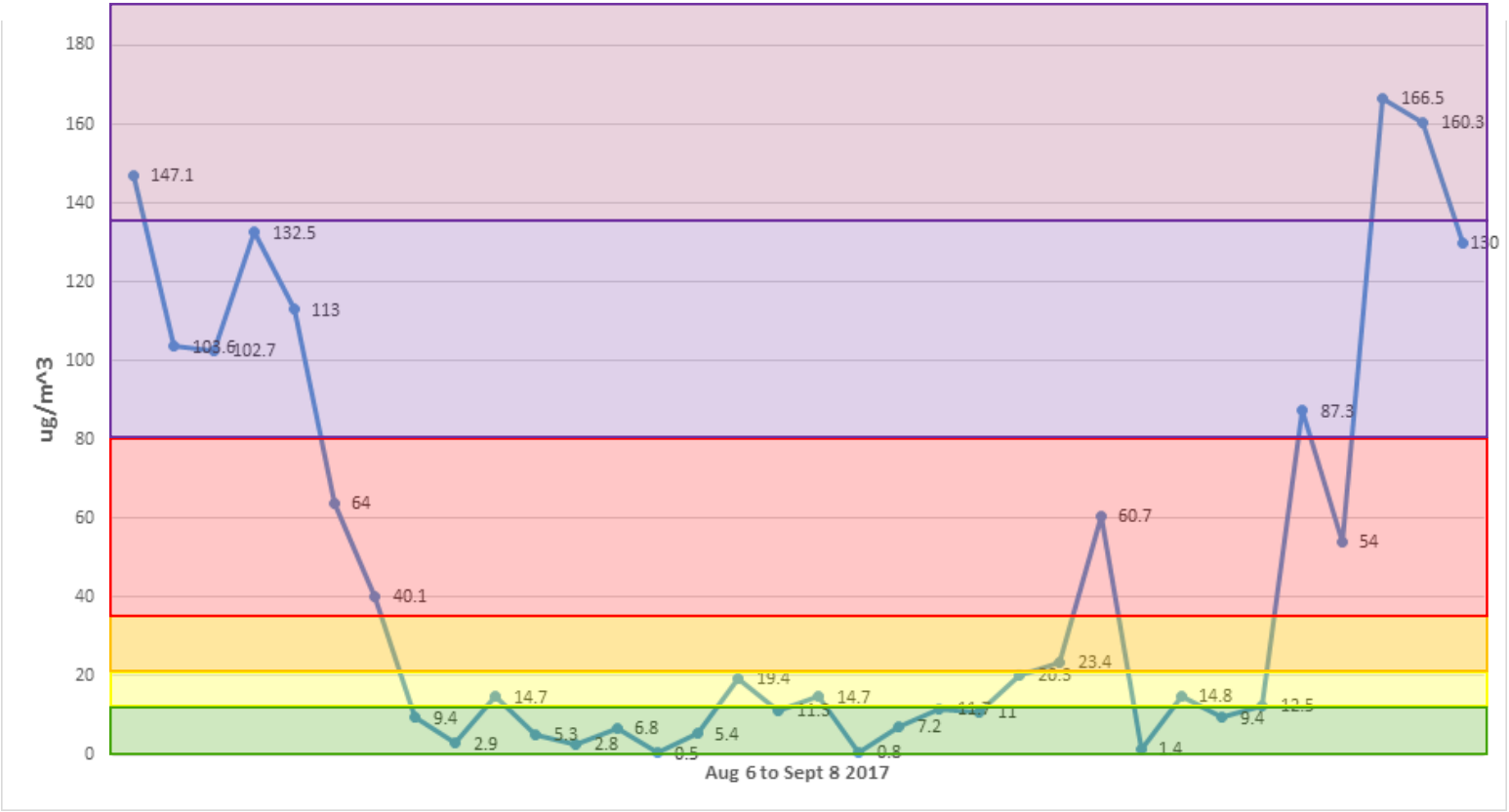
Clean your indoor air

- Use HEPA air purifiers
- Avoid further polluting indoor air by limiting frying/sautéing/broiling; burning candles, incense or oil lamps; or operating fireplaces and fuel-burning space heaters.

Outdoors

- Limit time outdoors/exercising
- If you must be outside, wear a N95 or 100 mask

Temporary Mazama smoke monitor
24h PM2.5 averages
August 6-September 8, 2017



The WAQA is more protective of health than the AQI

Category	Index Value	WAQA Concentration ($\mu g/m^3$)	AQI Concentration ($\mu g/m^3$)
Good	0-50	0 to 12.0	0 to 12.0
Moderate	51-100	12.1 to 20.4	12.1 to 35.4
Unhealthy for Sensitive Groups	101-150	20.5 to 35.4	35.5 to 55.4
Unhealthy	151-200	35.5 to 80.4	55.5 to 150.4
Very Unhealthy	201-300	80.5 to 135.4	150.5 to 250.4
Hazardous	301-400	>135.4	250.5 to 350.4
	401-500		350.5 to 500

Questions for community discussion

- What are you most concerned about?
- How do you get information about air quality and health issues?
- Do you know how to find out if there is a burn ban?
- What are some success stories or ideas you've had about interacting with neighbors or others in the community?
- What should priorities for our community be to keep our air clean?
- What information or services can MV Clean Air Project try to provide?
- What can we learn from other small rural communities? What can we teach other communities?