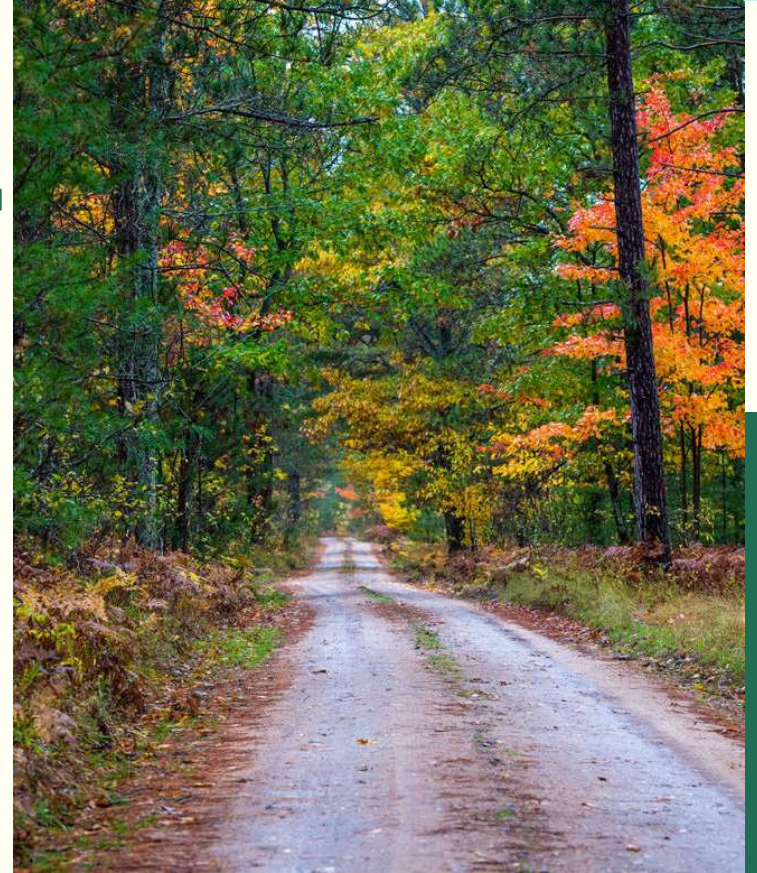


CLIMATE, ENVIRONMENT & HEALTH LEGISLATIVE FORUM



SCHOOL OF PUBLIC HEALTH
LIFESTAGE ENVIRONMENTAL EXPOSURES AND DISEASE CENTER
UNIVERSITY OF MICHIGAN

CO-FACILITATORS



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MPH, MSW

*Executive Director at Detroiters Working
for Environmental Justice*



Amy Schulz

PhD, MPH, MSW

*University of Michigan
Professor University Diversity and
Social Transformation Professor, Health
Behavior and Health Education*

FORUM OVERVIEW

- **Welcome**
- **What is M-LEEaD?**
- **Purpose: Research and recommendations related to Michigans most pressing climate issues**
- **Assure decision makers have access to scientific information about pressing environmental health issues related to the MI Healthy Climate Plan**

M-LEEAD'S STAKEHOLDER ADVOCACY BOARD



Yolanda Hill-Ashford
Detroit Health Department



Ricky Ackerman
Eastside Community
Network



Erma Leaphart
Sierra Club



Monica Lewis-Patrick
We the People of Detroit



Angela Reyes
Detroit Hispanic
Development Corporation



Brenda Jegede
Michigan Department of
Health & Human Services



Felix Valbuena, Jr
CHASS Center



Laprisha Daniels
Detroiters Working for
Environmental Justice



Donele Wilkins
Green Door Initiative



Kathryn Savoie
Ecology Center

FORUM AGENDA

- **Welcome**
- **Opening Comments from Sponsors**
- **Panel presentation**
- **Q&A**
- **Open discussion**

➔ https://mleead.umich.edu/Event_LegislativeForum2023.php

PANELISTS



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Payne-Sturges

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CO-SPONSORS



Rep. Abraham Aiyash

Michigan State Representative (D)



Rep. Gregory Markkanen

Michigan State Representative (R)

Steps Towards Affordable Water: A Policy Agenda

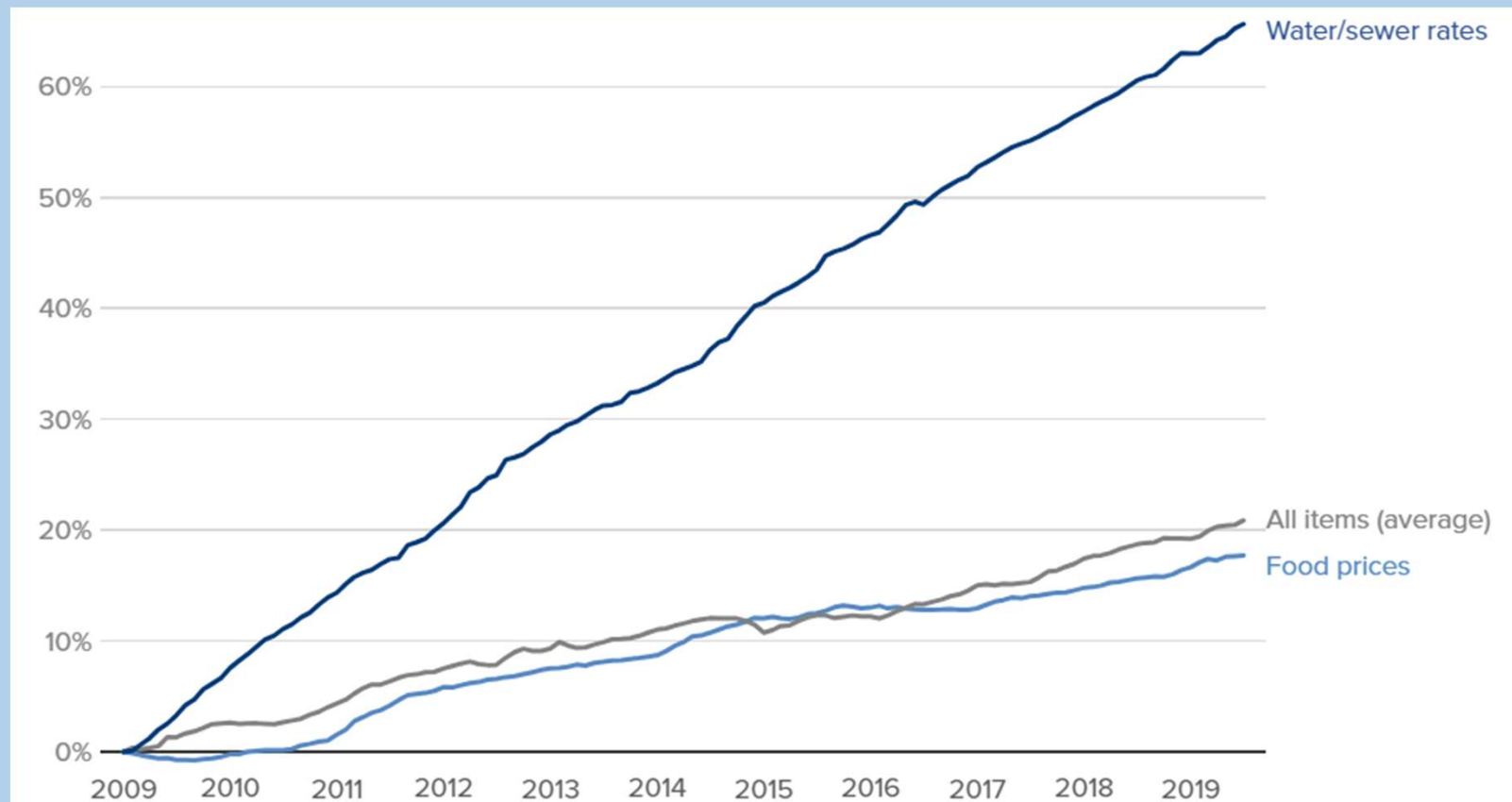
**Climate, the Environment & Health Legislative
Forum**

Tuesday September 19th, 2023

Elizabeth A. Mack

**Professor: Department of Geography, the Environment and
Spatial Sciences
Michigan State University**

Rising Cost of Water and Sewer Services



Source: Bureau of Labor Statistics—Consumer Price Index

Graphic from: Layne (2019)

<https://www.cbsnews.com/news/water-bills-rising-cost-of-water-creating-big-utility-bills-for-americans/>

Factors Behind Rising Water Costs

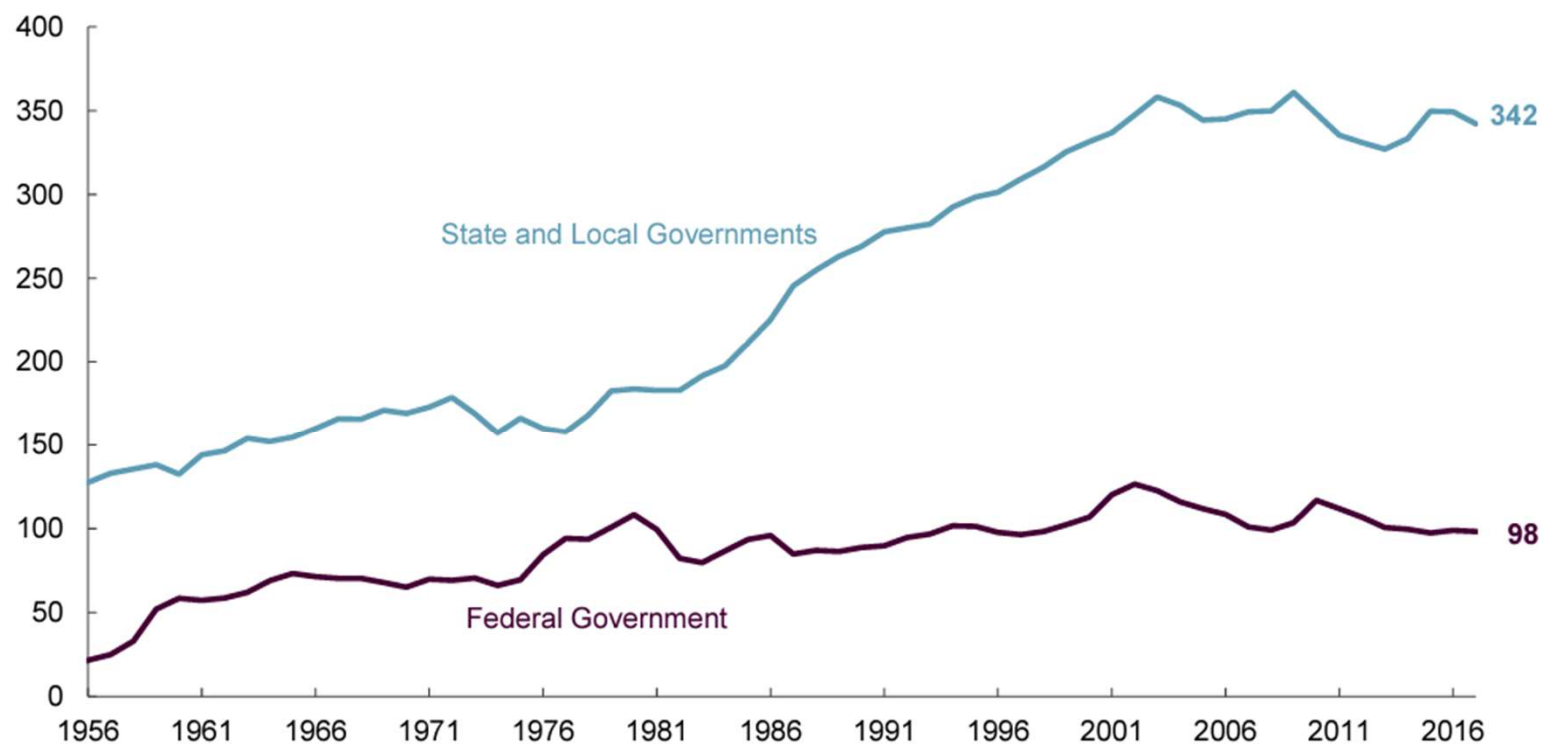
- Repairs to aging infrastructure, size of customer population
- Climate change (Jones and Moulton, 2016):
 - “Climate change adaptation measures for drinking water, sewerage, and storm-water services will cost the United States more than \$36 billion by 2050.”
 - “Maintaining, replacing, and improving waste-water facilities to deal with storm waters from weather events could cost \$5–10 billion through 2050 alone.”

Climate Change is Raising Water Costs

- Saltwater intrusion into coastal aquifers as a result of sea level rise (EPA, 2023)
- Modifications to sewer systems to mitigate sewer overflows from extreme rain events
- Drought surcharges put in place to incentive people to reduce water use can negatively impact low-income households who are already struggling to pay for water services (Jones and Moulton, 2016)

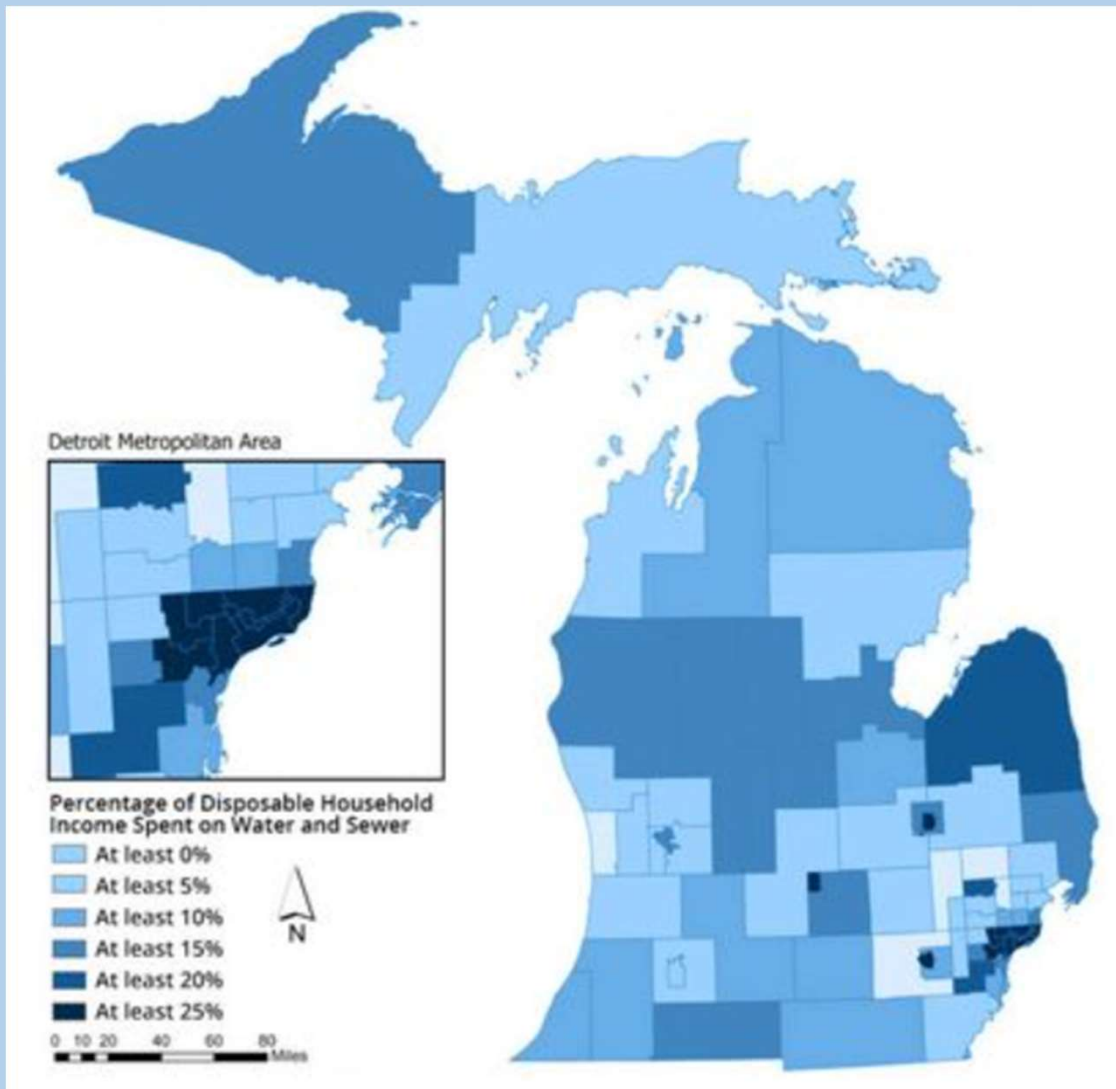
Public Spending on Transportation and Water Infrastructure, by Level of Government, 1956 to 2017

Billions of 2017 Dollars

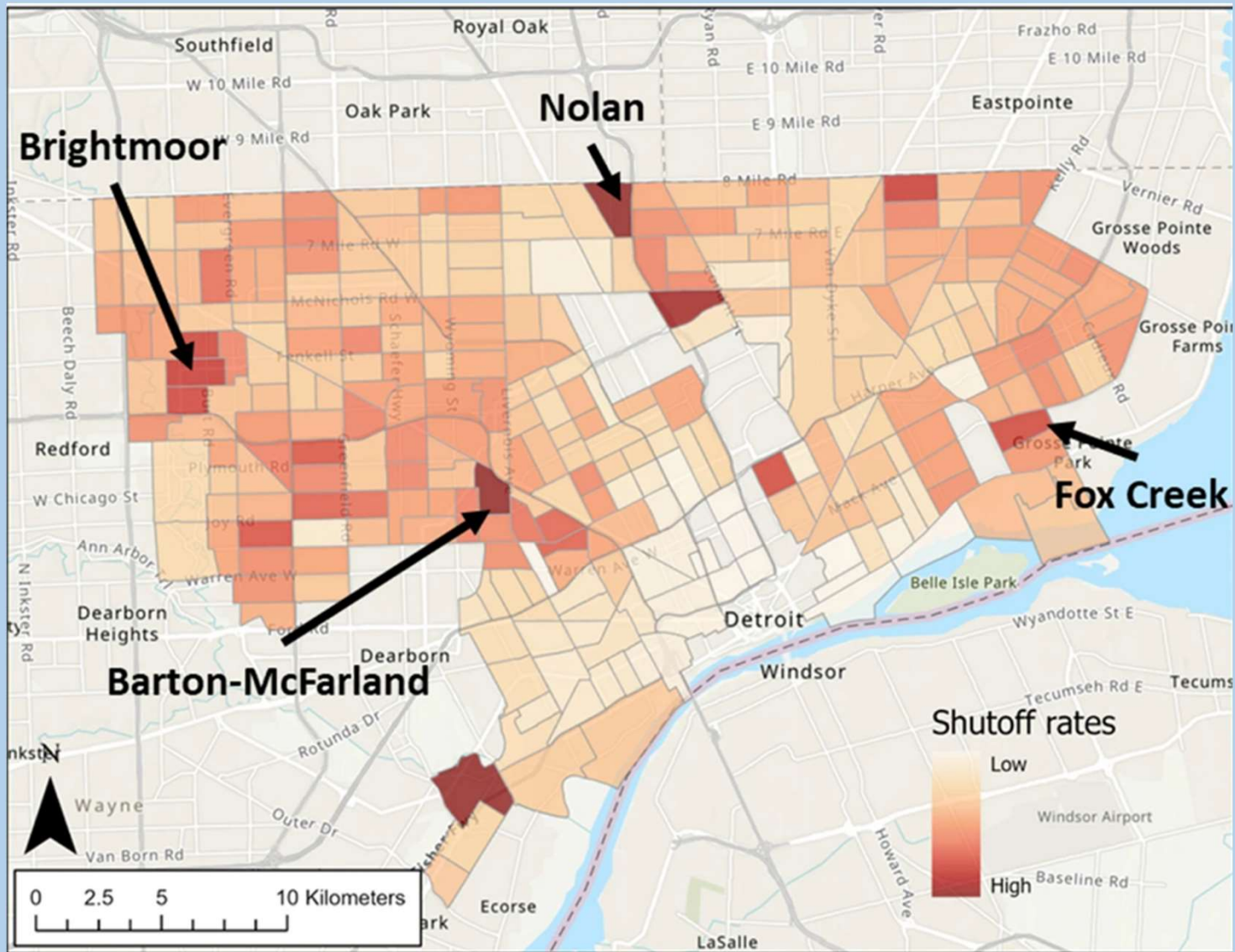


Source: Congressional Budget Office (CBO) <https://www.cbo.gov/publication/54539>

Affordability of Water Services Michigan



Source: <https://graham.umich.edu/project/MI-statewide-water-affordability->



Consequences Unaffordable Water: Shutoffs In Detroit, MI

Source: Helderop, Mack and Grubestic, GeoJournal (2023)

Solutions to Affordability Problem

Establish affordability criteria to assess impact water and sewer rates:

Senate Bill 0025 (2023)

Encourage enrollment
Customer assistance programs

Income based billing:
Tiered-Assistance Program (TAP) Philadelphia



SCAN ME!

Do you, or someone close to you, have limited income or a recent decrease in income?
Click or call **(313) 386-9727** for the **DWSD Lifeline Plan**
[Learn More >](#)

Are you impacted by a plumbing leak or monthly water bills that are unusually high?
Click or call **(313) 386-9728** for **plumbing repairs** on low-income households.
[Learn More >](#)

Do you need help paying your water or sewerage bills but aren't low-income?
Enroll today in the **10/30/50 Plan**
Click or call **(313) 267-8000**
[Learn More >](#)

The Lifeline Plan
Are you experiencing poverty and need assistance with your water bill? The Detroit Water and Sewerage Department (DWSD) and community partners offer Water Assistance Programs for eligible households, including Detroit's income-based water affordability program — the **Lifeline Plan**.
Residents who are enrolled in or applied for an assistance program will continue in a moratorium. For other households with delinquent accounts and who have the ability to pay, the water shutoff moratorium was lifted on December 31, 2022.

A photograph of a sign for a 'DWSD Lifeline Plan Enrollment Fair'. The sign is blue and white with the DWSD logo and text that says 'Enroll onsite TODAY!'. In the background, there are parked cars and trees.

City of Philadelphia English

to Water Bill Help

Water Customer Assistance

Grants Available! Our partners offer grants for eligible customers to help with utility costs.
[Learn more & apply](#)

We use a single application for all water bill assistance programs, including the Senior Citizen Discount and the Tiered Assistance Program (TAP). If your income is too high for those programs, a Special Hardship can make you eligible for TAP. Customers in TAP can work toward Debt Forgiveness.

Contact Information



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Solutions for Cumulative Risks & Impacts: Prescriptions for Improving Community Environmental Health

Devon Payne-Sturges, DrPH
September 19, 2023





Definitions for Cumulative Impacts

Cumulative Impacts are defined as the totality of exposures to combinations of chemical and non-chemical stressors and their effects on health, well-being, and quality of life outcomes.

Cumulative Impact Assessment is defined as a process of evaluating both quantitative and qualitative data representing cumulative impacts to inform a decision.

U.S. EPA. Cumulative Impacts Research: Recommendations for EPA's Office of Research and Development. U.S. Environmental Protection Agency, Washington, D.C., EPA/600/R-22/014a, 2022.
Frey CH. "Update on ORD Cumulative Impacts Research Recommendations and Plans". Presentation to EPA's Science Advisory Board. Nov 3, 2022.

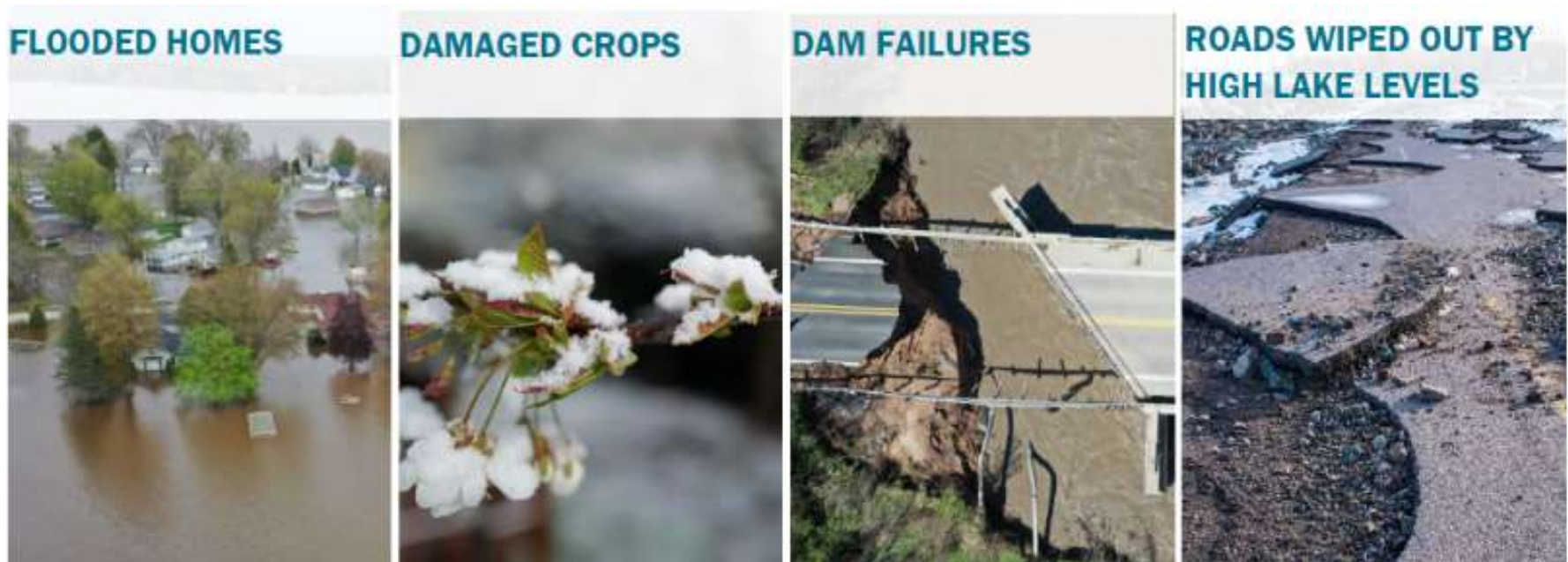


The Reality

- Exposed daily to multiple chemical compounds in our air, food, water, and consumer products
- Higher exposures continue to be documented in minoritized and disadvantaged communities
- Growing evidence mixtures-toxicity and cumulative effects of low-level chemical exposures and non-chemical stressors



Climate Change as a “Threat Multiplier”



Michigan Department of Environment, Great Lakes, and Energy. 2022. MI Healthy Climate Plan.



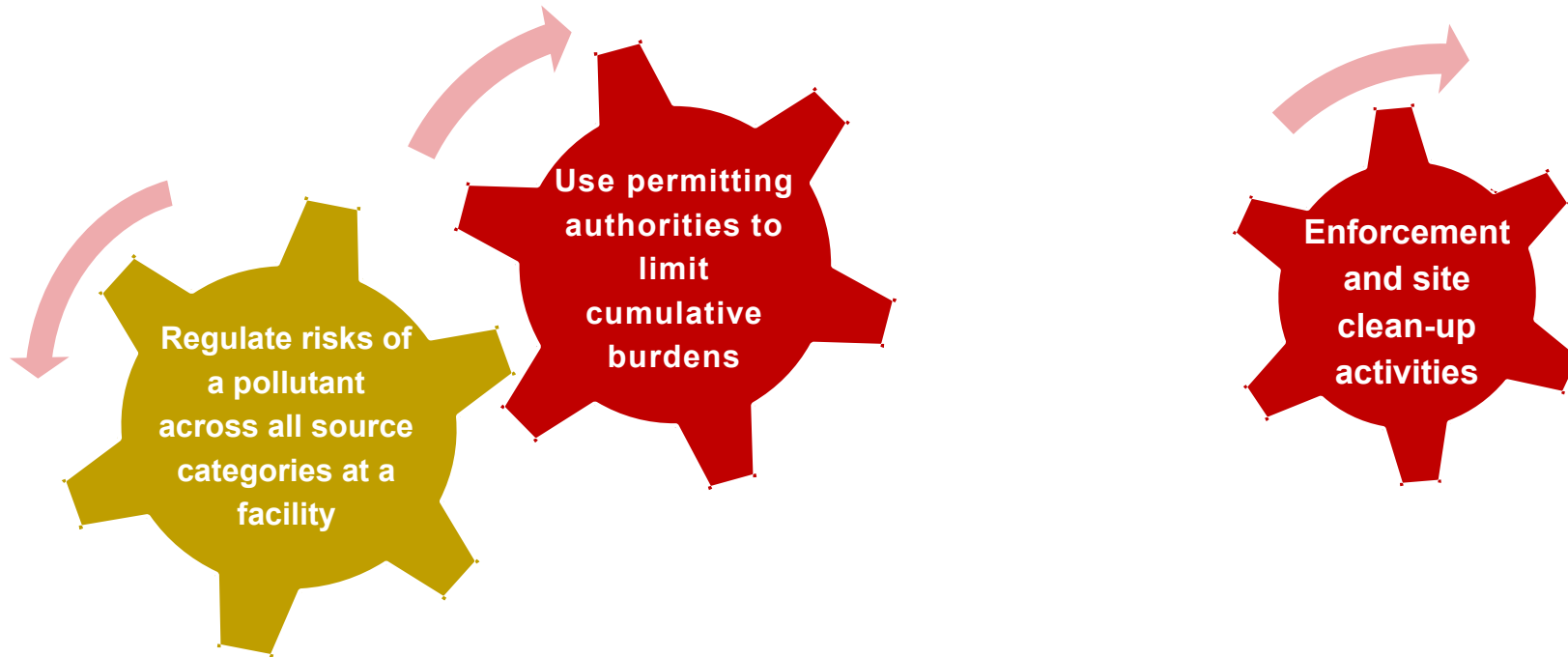
Policy Prescriptions – Requires a Systems Approach



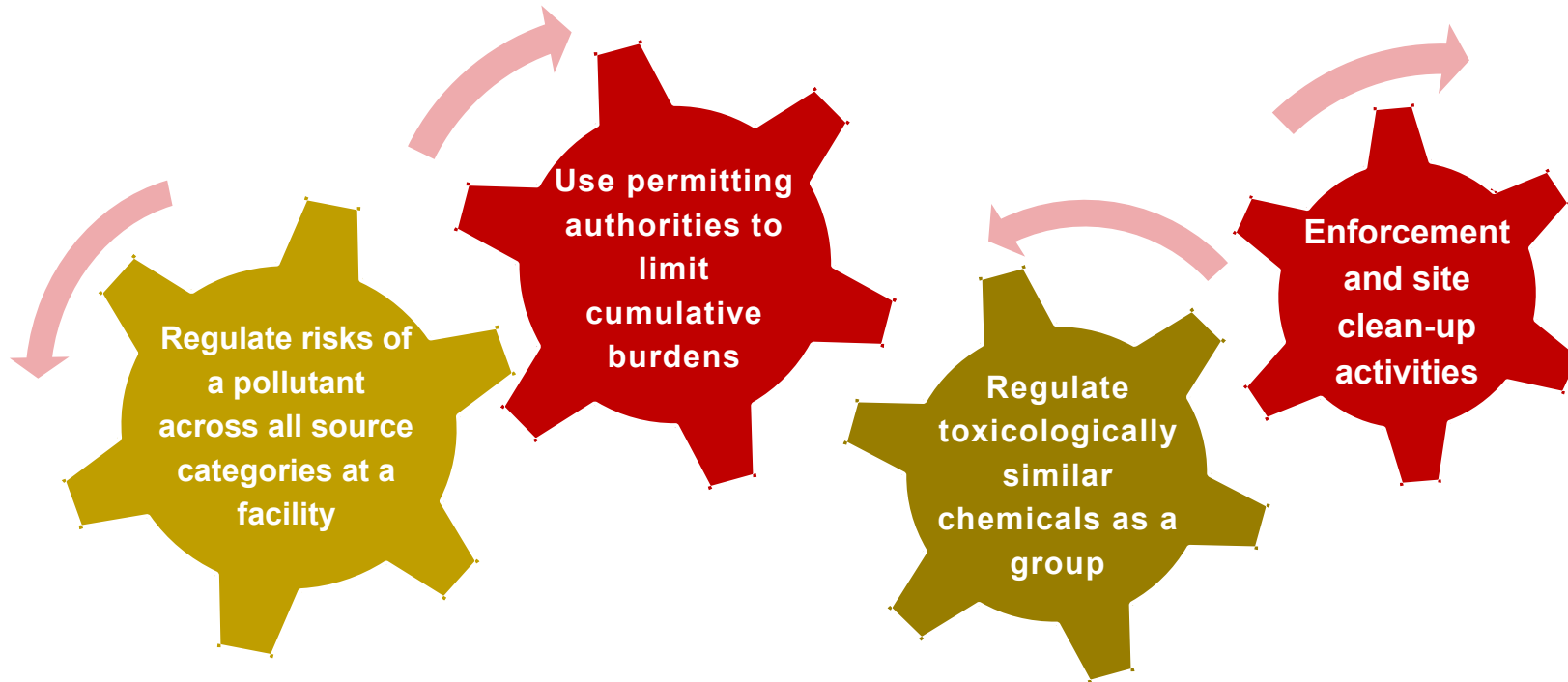
Policy Prescriptions – Requires a Systems Approach



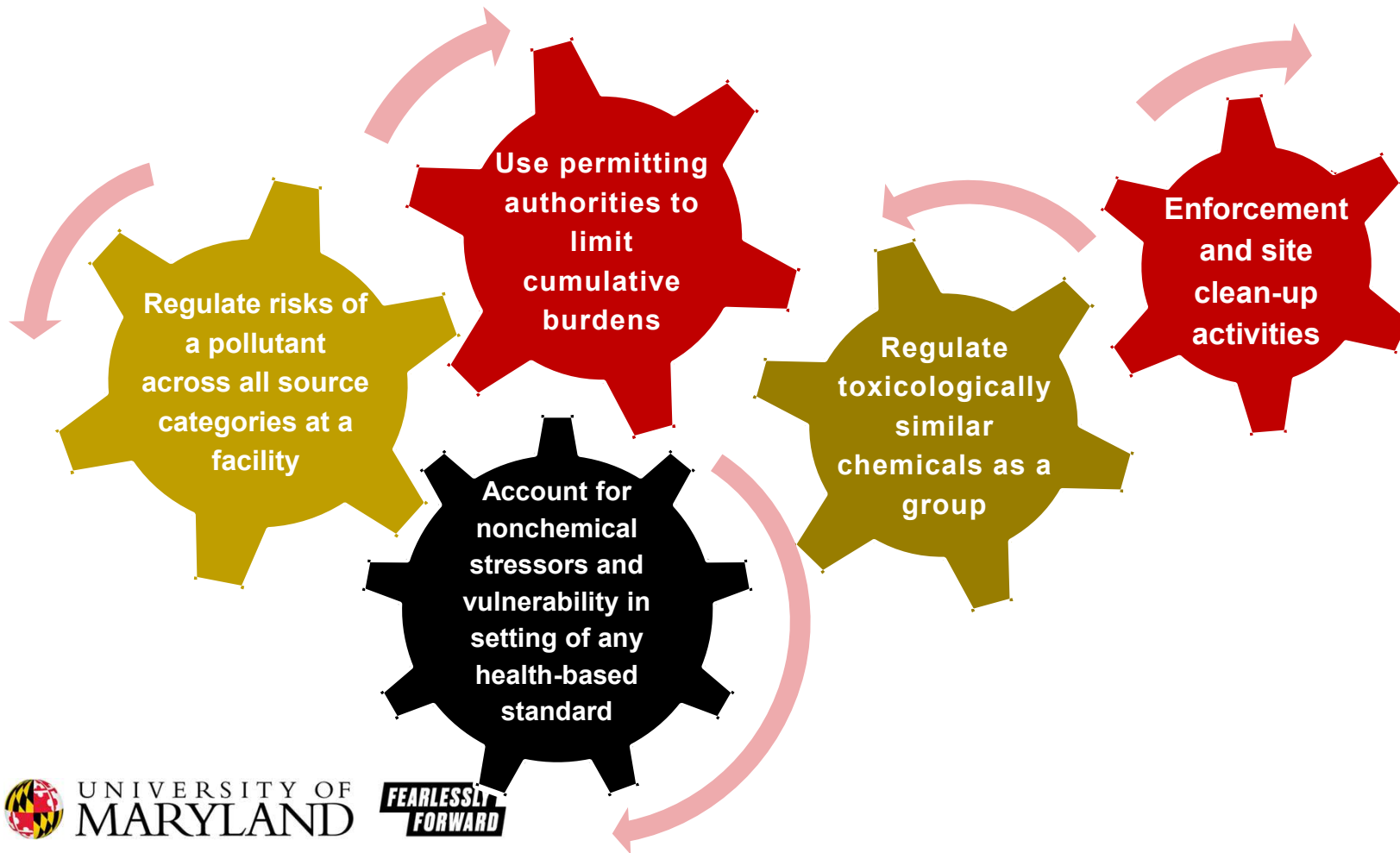
Policy Prescriptions – Requires a Systems Approach



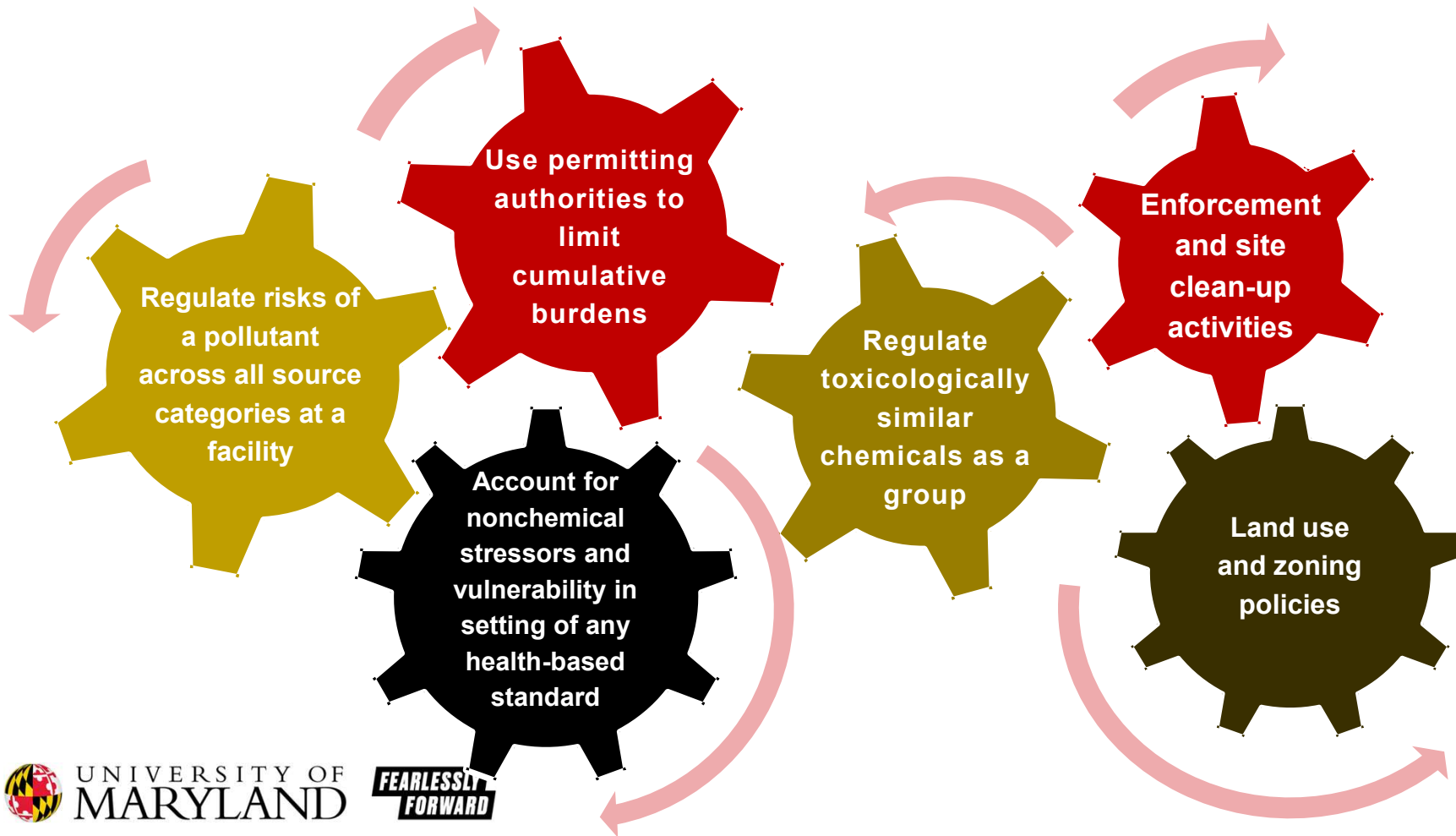
Policy Prescriptions – Requires a Systems Approach



Policy Prescriptions – Requires a Systems Approach



Policy Prescriptions – Requires a Systems Approach



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Payne-Sturges, D.C., et al., *Defining and Intervening on Cumulative Environmental Neurodevelopmental Risks: Introducing a Complex Systems Approach*. *Environ Health Perspect*, 2021. 129(3): p. 35001 PMC7945198.

Sprinkle, R.H. and D.C. Payne-Sturges, Mixture toxicity, cumulative risk, and environmental justice in United States federal policy, 1980–2016. *Environmental Health*, 2021. 20(1)

Watered Down Justice. NRDC. Accessed February 3, 2021. <https://www.nrdc.org/resources/watered-down-justice>



Thank you



"Inside"-er tips for adapting to and mitigating climate change



Carina Gronlund, PhD, MPH

University of Michigan Institute for Social Research
University of Michigan School of Public Health
M-LEEd Legislative Forum, September 19, 2023

Who Is Vulnerable to Extreme Heat?

- Older adults
- People with heart, lung, blood, kidney, or mental health problems or dementia
- Babies and children
- Pregnant women
- People taking medications for heart or kidney problems
- Outdoor workers
- People living in highly paved urban areas
- People without air conditioning
- People without good transportation to a cooler location



Pollen, asthma and allergies

- Climate change in Michigan = longer pollen seasons.
- Increased CO₂ can lead to increased allergens.
- These can increase allergies and asthma episodes and missed work and school days.



Pollen, asthma and allergies

- Climate change in Michigan = longer pollen seasons.
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Wildfires and High Air Pollution Days



Wildfires and High Air Pollution Days

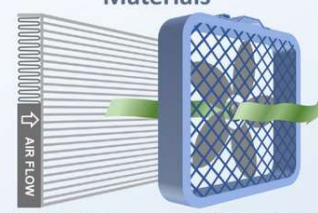


Wildfires and High Air Pollution Days



DIY Air Cleaner to Reduce Wildfire Smoke Indoors

Materials



20" X 20" air filter
Suggested rating: MERV 13

20" X 20" box fan
Only use certified fans with UL or ETL marking (2012 model or newer)

Clamps or **Duct Tape** or **Bungee Cords**

Assembly

1. Attach the air filter to the back of the box fan using either clamps, duct tape or bungee cords.
2. Check the filter for the direction of the air flow (marked on the side of the filter).
3. Replace filters when dirty.

Learn about box fan safety tips:
<https://www.epa.gov/air-research/research-diy-air-cleaners-reduce-wildfire-smoke-indoors#FAQ>

Challenges to Climate Resilience

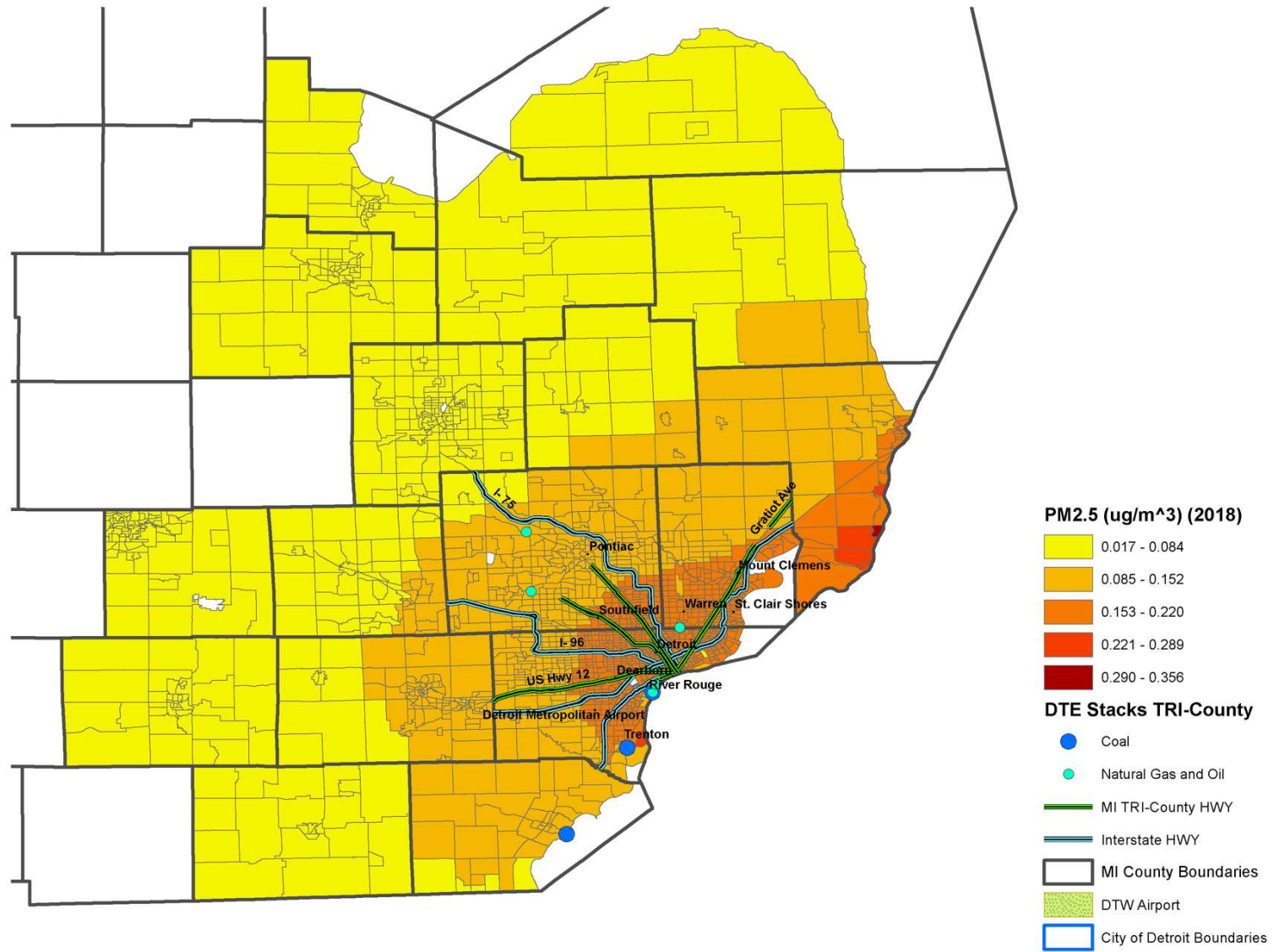
Heat-or-eat dilemma



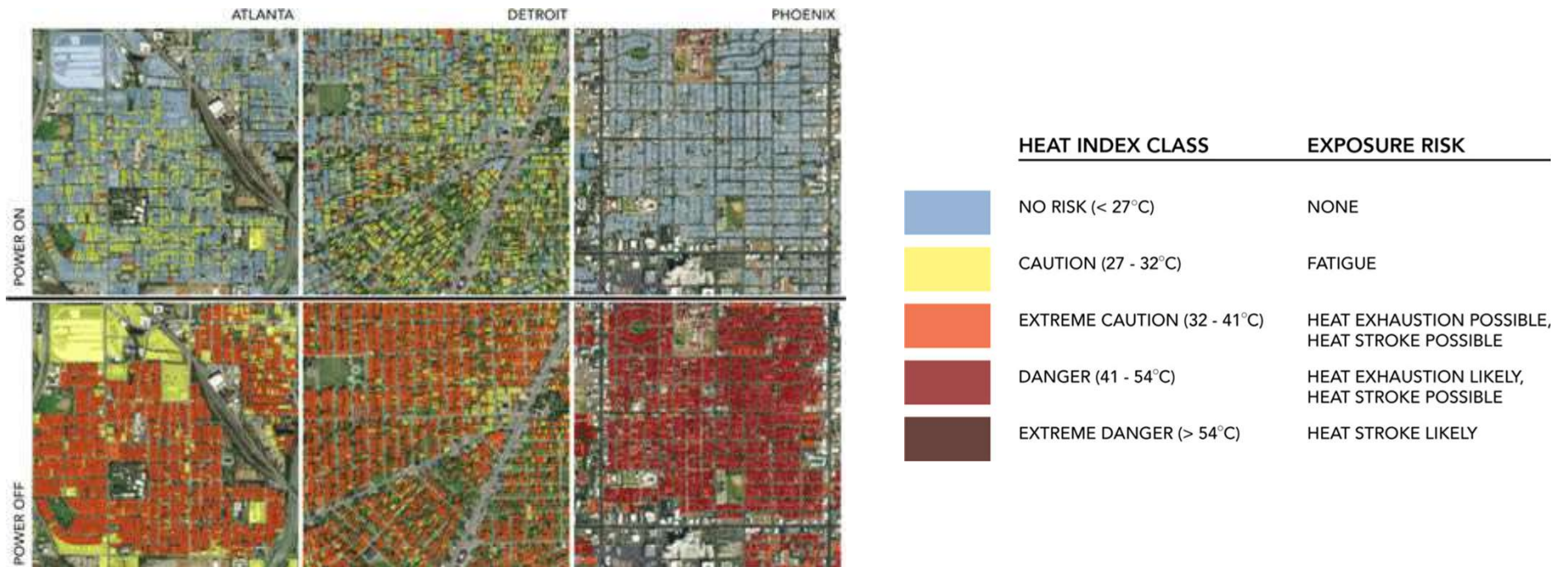
"Hot little boxes"



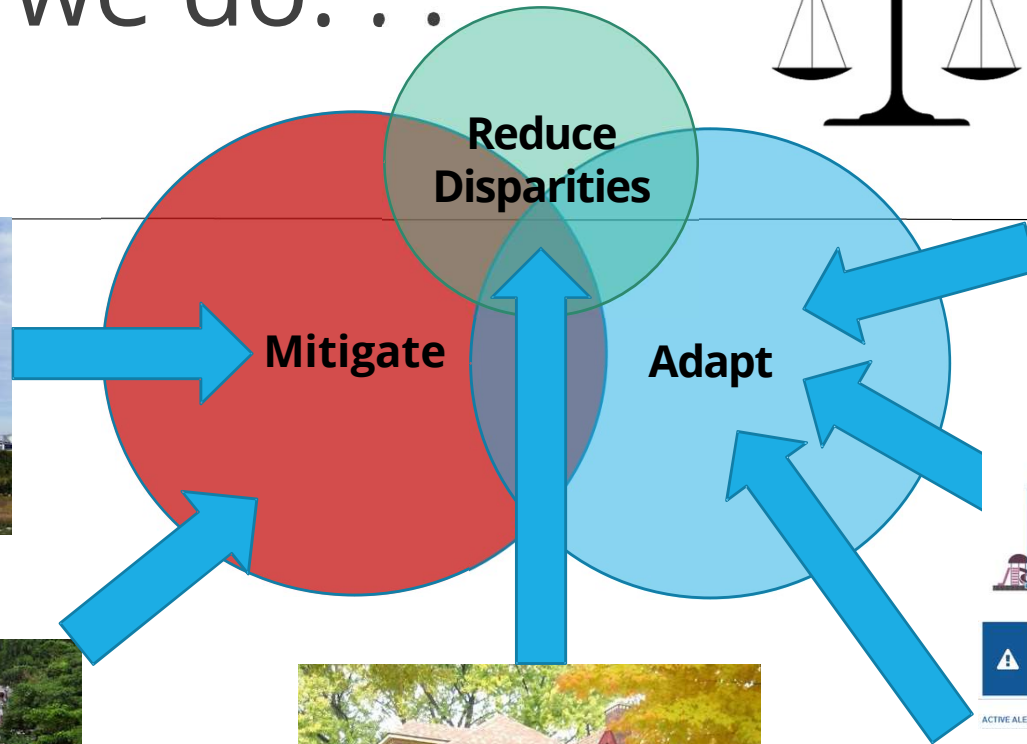
Average PM2.5 from DTE Energy Plants, 2018



What if a heat wave occurs at the same time as a power outage?

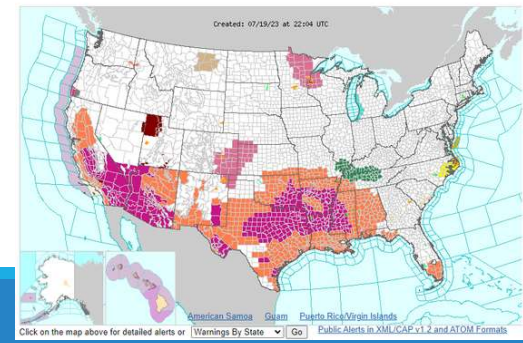


What can we do...

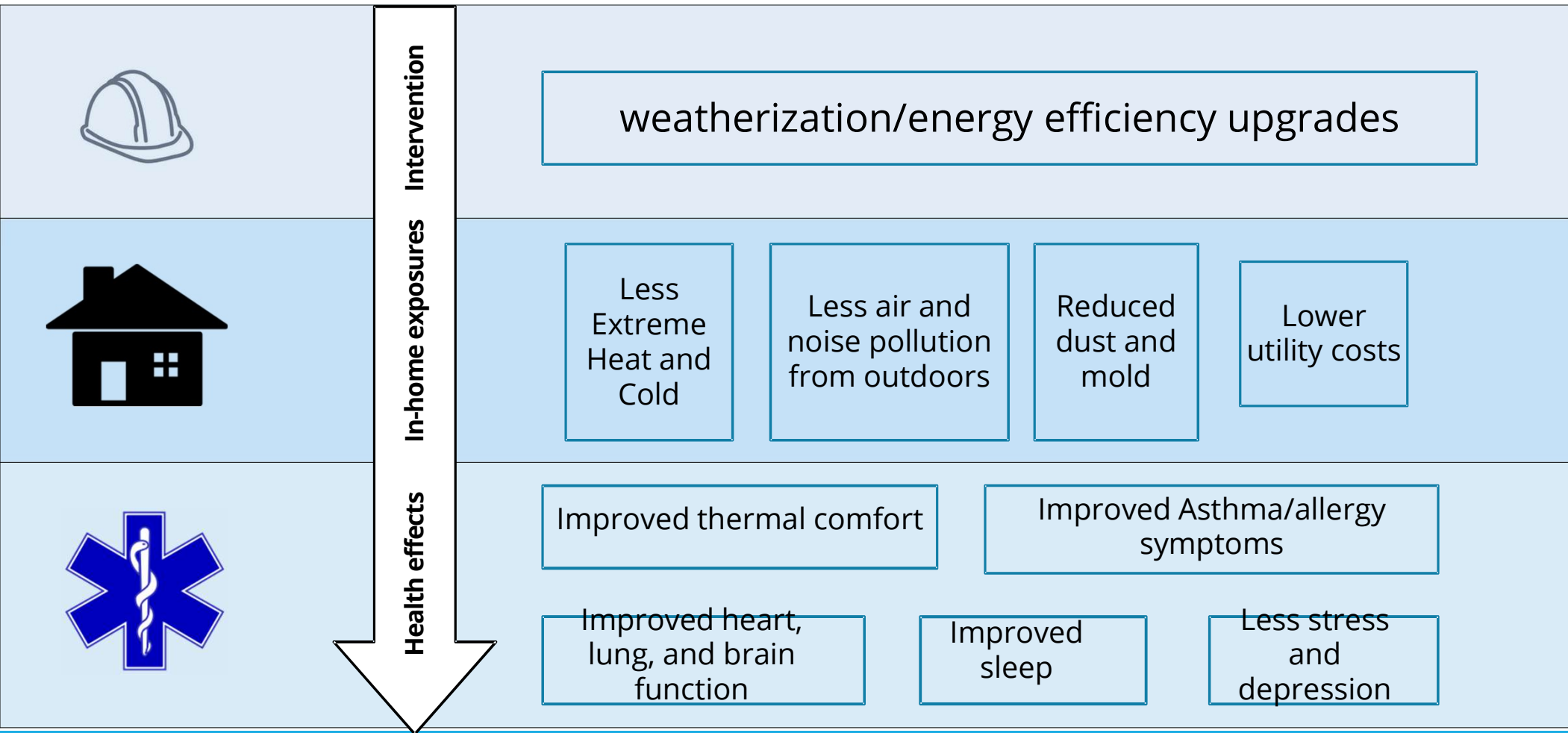


Tropical Storm Calvin Impacting Hawaii; Mid-South Flash Flooding; Intense Heat Continues
Tropical Storm Calvin will bring heavy to excessive rain, life-threatening surf in exposed areas, and strong winds. Abundant heat, moisture, and instability is producing life-threatening flash flooding in western Kentucky and southern Illinois. Severe storms are possible in the Midwest and Upper Midwest. Dangerous heat stretches across the Southwest and South. [Read More >](#)

ACTIVE ALERTS FORECAST MAPS RADAR RIVERS, LAKES, RAINFALL AIR QUALITY SATELLITE PAST WEATHER



Health Impacts of Weatherization and Energy Efficiency Upgrades



Lancet 2015 Commission on Climate Change

“Tackling climate change could be the greatest global health opportunity of the 21st century.”

Acknowledgements

• **Funders**

- NIH Climate and Health Scholars Program
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- NSF 1520803 (PI Stone)
- NSF 1952038 (PI Mathieu)
- Graham Sustainability Institute Carbon Neutrality Acceleration Program (PI Gronlund)

Collaborators

At UM: Marie O'Neill, Philippa Clarke, Parth Vaishnav, Johanna Mathieu, Ketlyne Sol, Maggie Hicken

Bruce Tonn (**3Cubed** in Tennessee) and Shannon Stendel (**Slipstream** in Wisconsin)

Not-for-profits in Detroit:

Friends of Parkside, Jefferson East, Inc., EcoWorks, Southwest Detroit Environmental Vision who are part of the "Climate Hazards, Housing, and Health" Community-Academic Partnership

Michigan Department of Health and Human Services

Michigan Public Service Commission Energy Waste Reduction Group, Health and Safety Subcommittee



Wildfire Fire Preparedness and Response and Public Health

Stuart Batterman, Ph.D.

Organization

Situation analysis

- Wildfires pose significant threat to public health
- Threats of bad air quality, high exposure and adverse health effects from wildfires are increasing and Michigan is vulnerable
- Enhanced preparedness and response can protect people and save lives

Policy recommendations

- Continue and expand preparedness capacity, forest stewardship and land management practices
- Prepare and follow-up the workforce, especially first responders
- Promote safe indoor environments and smoke resilient buildings
- Promote safe spaces (clean cooling centers) and their use
- Disseminate enhanced wildfire smoke forecasts and health alerts
- Anticipate damage, deaths, and needs of survivors
- Assess impacts of wildfire smoke exposure and program effectiveness

Situation analysis ... in brief

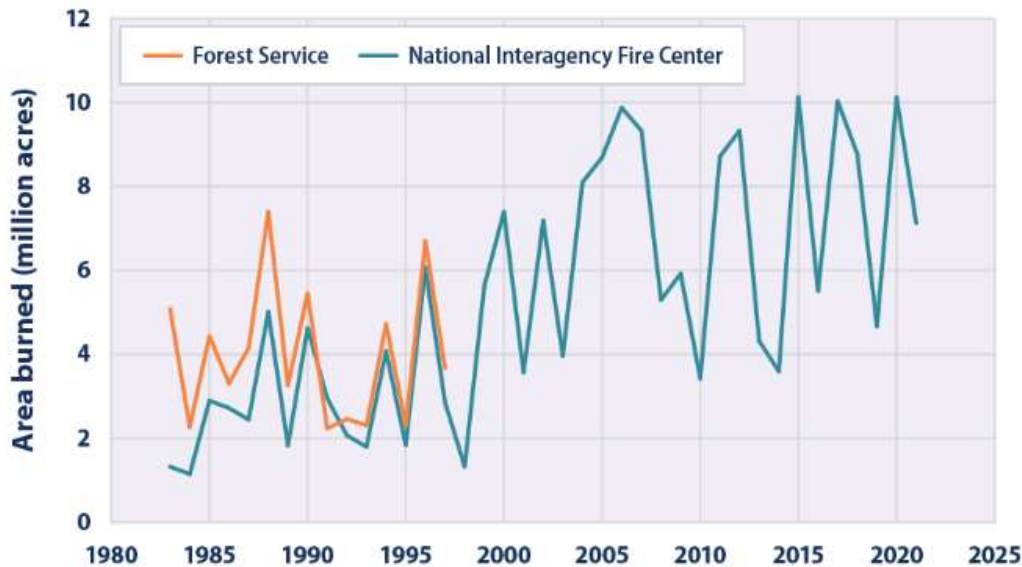
Wildfires pose significant threat to public health

- Evident by summer 2023 experience – some of the worst air quality ever recorded in Michigan
- Fire smoke can travel far, boost PM2.5 and ozone levels, and affect millions of people.
- Breathing smoke can cause increased mortality, asthma, diabetic outcomes, birth outcomes, chronic obstructive pulmonary disease (COPD), and likely many others.
- Vulnerable populations most affected include children, elderly, individuals with preexisting conditions, unhoused populations, low-income communities, outdoor workers and first responders. Vacationers!

Threats of bad air quality, high exposure and adverse health effects from wildfires are increasing and Michigan is vulnerable

- Climate change and extreme weather
- “Wildland-urban interface” is expanding
- Forest management practices has increased fuel loads in many areas.

Burnt areas in US and Canada



Trend in US

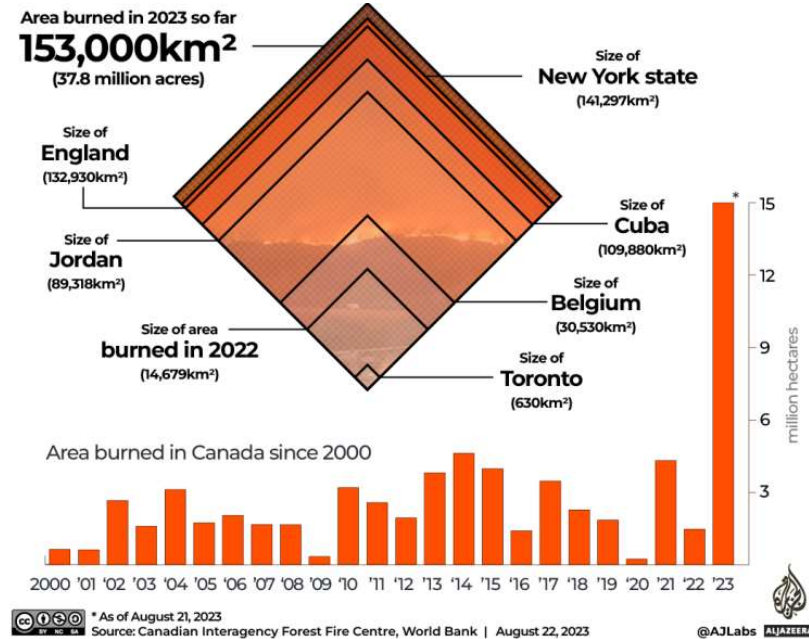
About 70,000 wildfires per year

Averaging about 8 million acres = 12,500 square miles

Michigan had 256 fires, 3600 acres burnt in 2023

<https://www.michigan.gov/dnr/managing-resources/forestry/fire>

<https://www.epa.gov/climate-indicators/climate-change-indicators-wildfires>



Trend in Canada

Long term average – 3 million ha = 11,600 square miles

2023, 15.3 million ha = 59,000 square miles

- bigger than Michigan (56,809 sq miles of land)

In August 2023, >1000 active fires with 652 categorized as “out of control”

<https://www.aljazeera.com/news/2023/8/23/mapping-the-scale-of-canadas-record-wildfires>

<https://www.statista.com/chart/30230/cumulative-area-burned-wildfires-canada-and-10-year-average/>

Situation analysis ... continued

Enhanced preparedness and response can protect people and save lives

- **Before fire**
 - Forest lands management
 - Building design, landscaping, smoke resiliency
 - Designate and provide safe spaces (clean cooling centers and fire shelters) especially for low-income communities
- **Just before and during fire - if smoke or fire is imminent or present:**
 - Forecasting – to inform response recommendations
 - Effective and just-in-time communication and messaging
 - Publicize, activate and provide transport to safe spaces
 - Reschedule events
 - Use appropriate protections: ventilation, filtering, masking
- **After the fire**
 - Address water, soil and building contamination, including firefighting flame retardants
 - Surveillance and assistance to affected populations

Policy recommendations

1. Continue and expand preparedness capacity, forest stewardship, land management, and building practices

- Forest management – hazardous fuels reduction - Promote and further incentivize appropriate land management

Michigan is 53% forested, 19.3 million acres (most timberland), 9 million acres are privately owned family forests with 400,000 individual landowners, of which only 20% of private forest land is actively managed. Support Private Forest Lands Programs initiated by Michigan Department of Agriculture and Rural Development programs

- Built environment policy – “fire fitness” – best practices, codes and incentives for building fire-resistance and landscaping
- Equipment and capacity for responders
- Assess and map fire vulnerability / risk, e.g., likelihood, property at risk, vulnerable populations, entrapment issues

2. Prepare and follow-up the workforce, especially first responders

- Training, preparation, and assessment using simulations and drills, tactical decision games (role playing), sand table exercises, staff rides/visits to high risk areas, case studies, professional readings, staff exchanges, etc.
- Experience in major fires shows that stress, trauma and tragedies occur among first responders, a hardy but ultimately vulnerable population
- Implement intentional and anticipatory efforts to acknowledge and address addiction, suicide, and mental health struggles and promote mental health and emotional wellbeing.

<https://www.michigan.gov/dnr/managing-resources/forestry/fire>



Policy recommendations

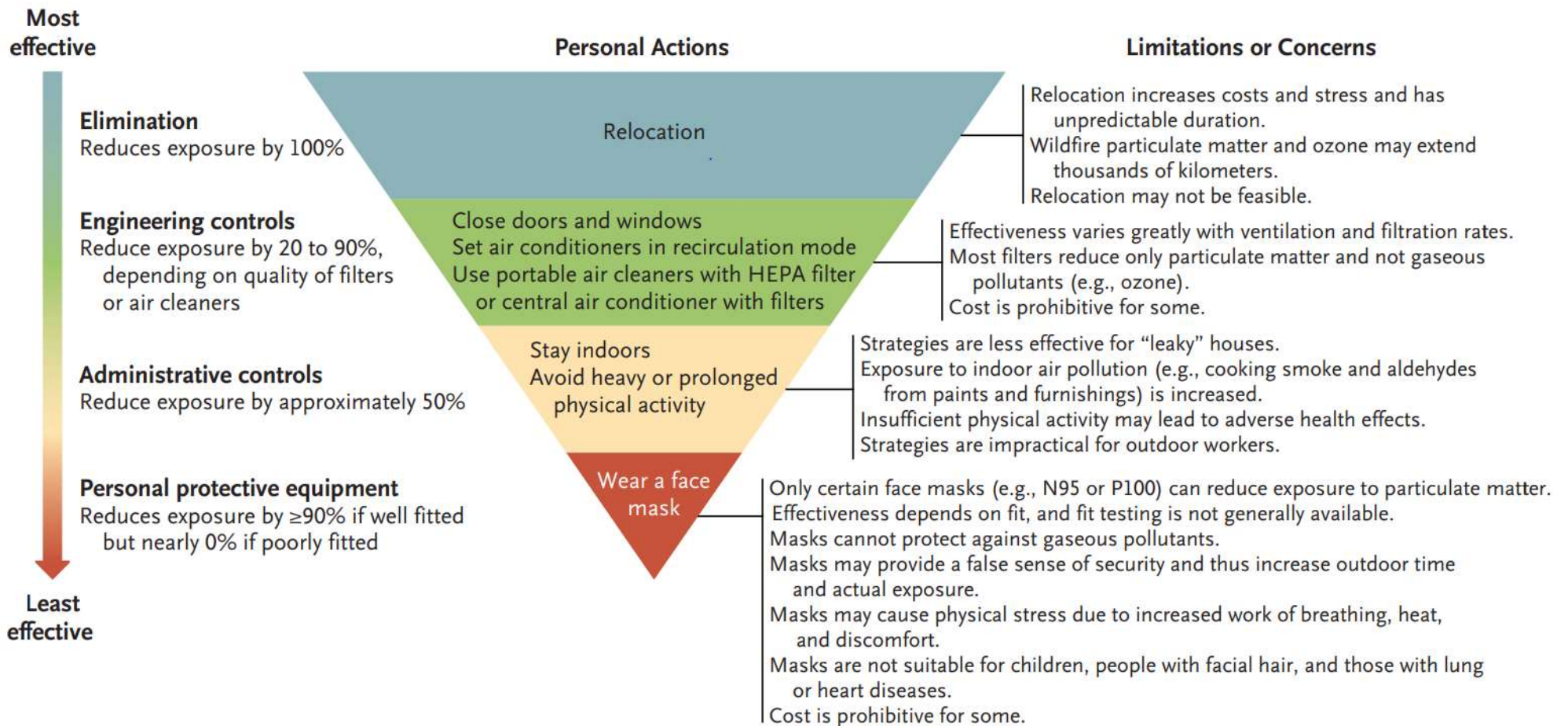
3. Promote safe indoor environments and smoke resilient buildings

- Especially needed in schools, senior homes, residences and other buildings
- Ensure appropriate air filters, ventilation, cooling, and weatherization (to seal gaps and improve efficiency)
- Assist low-income communities
- Develop and adopt certification system to verify safety and performance – like the EPA Indoor airPLUS program

4. Promote safe spaces (clean cooling centers) and their use

- Especially needed in low income communities where transport may be needed
- Ensure appropriate air filters, ventilation, cooling, and weatherization (to seal gaps and improve efficiency)
- Develop and adopt certification system for the safe- to verify safety and performance

Personal actions to reduce exposure and health risks.



Xu R, et al., Wildfires, Global Climate Change, and Human Health, *New England J. Med.*, 383;22 nejm.org Nov 26, 2020, <https://www.nejm.org/doi/pdf/10.1056/NEJMSr2028985?articleTools=true>

Policy recommendations

5. Disseminate enhanced wildfire smoke forecasts and health

- Provide community specific forecasts of smoke giving where, when, how long, and how bad. Extend prediction period to several days. Ensure appropriate monitoring coverage.
- Recommend and disseminate appropriate responses to reduce exposure. Coordinate HHS, EGLE, MIOSHA, DNR, USFS, USGS, DARD, county and city health departments, etc.
- Identify most effective messaging. Evaluate effectiveness of messaging campaign.

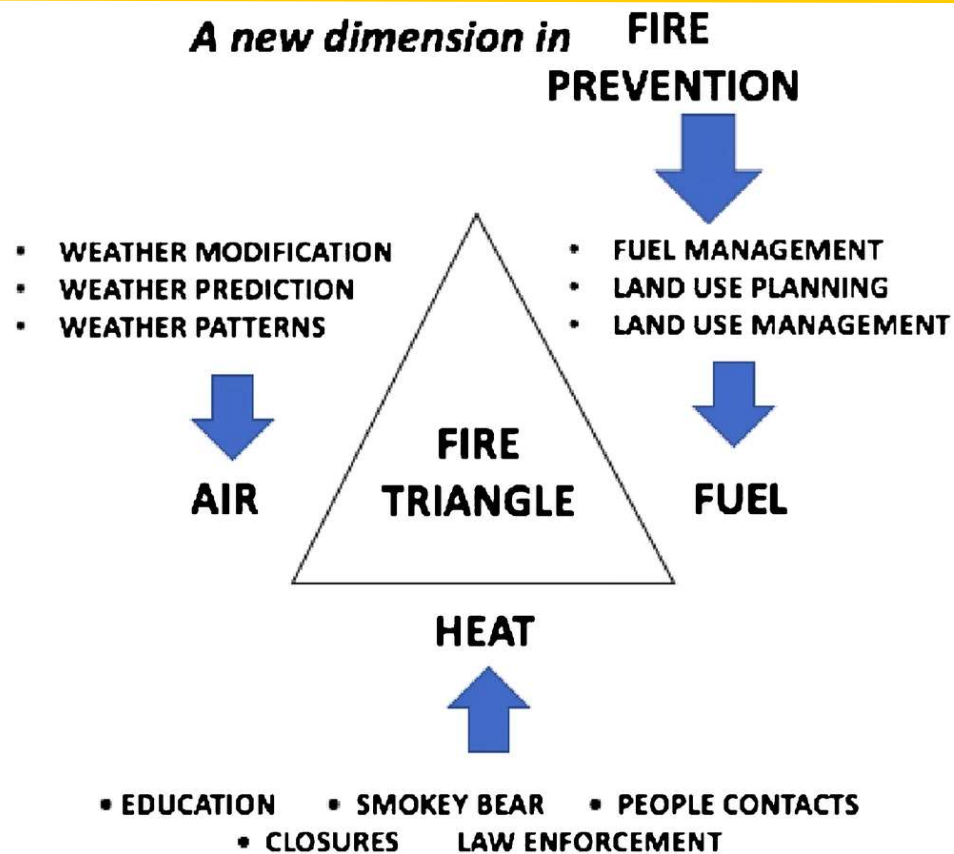
6. Anticipate damage, deaths, and needs of survivors

- Need to care for survivors and displaced individuals, and coordinate Interagency / cross-jurisdiction issues for basic needs (food, shelter) , trauma care, mental health and emotional wellbeing

7. Assess impacts of wildfire smoke exposure and program effectiveness

- Develop registry of first responders and displaced persons for assistance and epidemiological follow-up.
- Establish intergovernmental steering committee for program review and planning.

Advance from the 1970s



Prevention activities remain as important as ever in spite of advances in fuels management. (Source Fire Management Notes, 1973)



Smokey Bear roadside wildfire prevention sign. Source CC0-<https://pixabay.com/en/smokey-bear-fire-prevention-857181/>)

Thanks! stuartb@umich.edu





NEXT STEPS

- *Reach out to us to connect to research on climate issues and key solutions**
- *Resources**
- *Upcoming legislation (handout)**
- *Visit our website**

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MPH

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Giuliana Motta, BS

RESOURCES

Please use this QR code to access our forum website for all of the information presented today as well as fact sheets and policy briefs relevant to the work discussed today.

https://mleead.umich.edu/Event_LegislativeForum2023.php

