

# Air Quality and Public Health Law: A Priority to Address Inequitable Health Impacts of Climate Change

October 26, 2023

Jill Krueger
National Public Health Law Conference
Minneapolis, Minnesota



## Why Air Quality?

**Burning Fossil Fuels** 

- + Industrial Pollution
- + History of Redlining
  - + Climate Change
    - + Wildfires
- = Inequitable Adverse Health Impacts

About 32,000 deaths in the United States each year related to PM 2.5



#### Five Essential Public Health Law Services

Access to Evidence and Expertise - What is the problem? What evidence do we have? Who is working on this? What needs to be done?

Designing Legal Solutions - What is the best way to use the law to do this?

Engaging Communities/Building Political Will – Educate and mobilize to get the good idea into law

Enforcing and Defending Legal Solutions – Ensure capacity and accountability for implementation and defense

Policy Surveillance and Evaluation - Assess impact of solution, what works

Burris S, Ashe M, Blanke D, Ibrahim J, Levin DE, Matthews G, Penn M, and Katz M. Better Health Faster: The 5 Essential Public Health Law Services. Public Health Rep. 2016 Nov;131(6):747-753. doi: 10.1177/0033354916667496. Epub 2016 Oct 13.



# U.S. CALL TO ACTION ON CLIMATE, HEALTH, AND EQUITY: A POLICY ACTION AGENDA

2019

Transition rapidly away from the use of coal, oil and natural gas to clean, safe, and renewable energy and energy efficiency. With the technology available today, we can dramatically change U.S. energy use and systems to meet growing energy needs affordably, while reducing climate and air pollution. Key policies include:

» Establish ambitious goals and timelines for renewable energy, energy efficiency and energy conservation.

#### STRATEGIES TO BUILD HEALTHY, EQUITABLE, CLIMATE-RESILIENT COMMUNITIES 3 2 Clean and Resilient Regenerative **Energy System** Green Infrastructure and Agriculture **Emergency** 5 **Smart Surfaces** Preparedness and Response **Healthy and Active** Transportation Strong Communities $\blacksquare$ 2 Regenerative Clean And Resilient Green Infrastructure **Emergency Preparedness** Healthy and Active Strong and Response **Energy System** and Smart Surfaces Agriculture Transportation Communities Clean and renewable Parks, green spaces, green roofs, Planting climate-tolerant Climate-resilient public Robust public transit; space Community cohesion can electricity, distributed energy reflective surfaces and porous crops, protecting infrastructure, forecasting for safe walking, cycling, and protect people from clinate biodiversity, regenerating generation, and a smart grid pavements improve mental and capacity, early warning wheeling; and low-carbon risks, support disaster soil, and reducing pesticide deliver clean air, improve physical health. They provide systems, evacuation plans, transport (e.g. electric response, and improve health and chemical use deliver a health, and create a places for recreation, cool and centers of refuge from vehicles) promote physical Inclusive, community-engaged disaster-resilient energy more resilient, healthy food neighborhoods, manage extreme weather, heat and activity, reduce pollution, and planning promotes more supply and reduce carbon stormwater, and reduce disaster smoke build community support community equitable and just resilience resilience and preparedness. connectedness. solutions.

Lancet Countdown, 2022: 2022 Lancet Countdown on Health and Climate Change Policy Brief for the United States of America. Beyeler NS\*, DeJarnett NK\*, Lester PK, Hess JJ, Salas RN. Lancet Countdown U.S. Policy Brief, London, United Kingdom, 20 pp.



## **Federal Context: Judicial**



West Virginia v EPA — Major Questions Doctrine

Sackett v EPA — Waters of the United States



# Federal Context: Executive and Legislative

- » Executive Orders
- » Office of Climate Change and Health Equity
- » Justice 40
- » Resilience Framework
- » CRRSAA (Coronavirus Response and Relief Supplemental Appropriations Act)
- » American Rescue Plan Act
- » Infrastructure Act
- » Inflation Reduction Act



#### **Tools of Public Health Law**

- » Power to tax and spend
- » Power to alter the informational environment
- » Power to alter the built environment (We'd add "and natural")
- » Power to alter the socioeconomic environment
- » Direct regulation
- » Indirect regulation through the tort system
- » Deregulation: laws as a barrier to public health

Source: Lawrence Gostin, Public Health Law: Power, Duty, Restraint 28–38 (2008).

The Natural Environment as an Object of Public Health Law: Addressing Health Outcomes of Climate Change through Intersections with Environmental and Agricultural Law, The Journal OF Law, Medicine & Ethics 48: 664-680 (Winter 2020) (co-author with Betsy Lawton).



## **Key Messages**

Generating electricity from fossil fuels is bad for our health, disproportionately impacts communities of color and lowincome communities, and bad for our climate.

Renewable energy standards slow climate change and bring immediate health benefits to communities.

Renewable energy standards can differ substantially, with varying benefits for climate and health.

#### Renewable Energy Standards: a strategy to transition rapidly away from the use of coal, oil, and natural gas to clean, safe, and affordable renewable energy

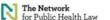
This policy brief is one in an upcoming series on Policy Priorities for Climate, Health, and Equity. Each brief provides information on a policy identified in the <u>U.S. Call to Action on Climate, Health and Equity: A Policy Action Agenda</u>. The briefs can help health professionals and others (1) determine whether policymakers or candidates are taking positions that advance action on climate, health and equity, (2) ask questions to hold leaders accountable, and (3) increase collaboration with community-based organizations and advocacy groups. This brief should be useful for anyone interested in learning more about equitable energy and climate policy.

#### **Key Messages**

- Generating electricity from fossil fuels produces 1/4 of U.S. carbon dioxide emissions, causes air pollution
  associated with asthma, heart disease, adverse pregnancy outcomes, thousands of premature deaths
  annually, and disproportionately impacts communities of color and low-income communities.
- Renewable energy standards often called Renewable Portfolio Standards are important in hastening the
  transition from fossil fuels to renewable and low-carbon energy sources, slowing climate change and
  bringing immediate health benefits to communities.
- Renewable energy standards can differ substantially in their composition, and thus can have varying benefits for climate and health. Key components of a strong RES include: clear definitions of renewable energy that exclude fossil fuels; mandatory and enforceable targets; ambitious targets and timeline; and prioritization of benefits to frontline and low-income communities and workers.

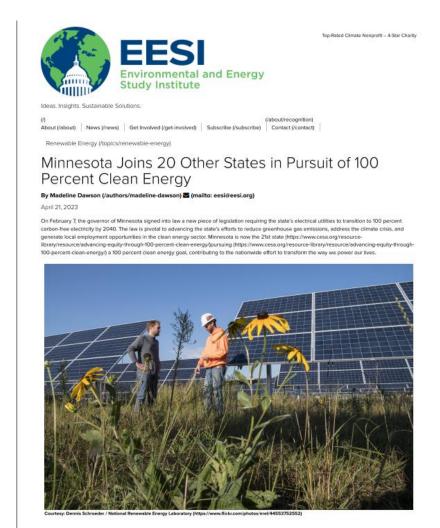








# States Moving Forward on Renewable Energy Standards







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# Florida is now adding more solar power than any other state



Sorry, California and Texas! Florida zoomed to the No. 1 spot for solar installations in the first half of 2023, despite a decidedly mixed policy landscape.

15 September 2023



A large PV array in Babcock Ranch, Florida (Jeffrey Greenberg/Education Images/Universal Images Group/Getty

#### **GET CAUGHT UP**



California looks to add solar and transmission along highways Jeff St. John

Chart: China's solar export dominance grows with surging European orders Eric Wesoff, Maria Virginia Olano



# Renewable Energy Standard Elements (aka Renewable Portfolio Standards)

- » Definition of renewable energy
- » Timeline (speed, interim milestones)
- » Percentage goal
- » Mandatory or voluntary
- » Regulated entities
- » Health equity provisionsProceduralSubstantive
- » Leverage Inflation Reduction Act/ federal funds



# **Local Renewable Energy Commitments**





Burlington, Vermont

Des Moines, Iowa



# Pathways to Public Health Sector Engagement with Climate Work

Address health impacts of climate change within existing work

Address climate change in community health/ public health plans

Participate in cross-sector climate projects and planning

J. Krueger and C. Healy Boufides, *The Public Health Sector's Challenges and Responses* in CLIMATE CHANGE, PUBLIC HEALTH, AND THE LAW (Cambridge University Press, 2018) (Michael Burger and Justin Gundlach, eds.)



### What Can Public Health Do?

- » Renewable Energy
- » Reverse redlining and segregation; guard against gentrification
- » Advocate for tenants (not just homeowners) to benefit
- » Replace indoor natural gas appliances
- » Expand access to air conditioning/ heat pumps
- » Green space/ green infrastructure/ tree canopy/ natural solutions/ tribal adaptation menu
- » Medicaid state plan amendments/ section 1115 waiver asthma remediation
- » Anti-idling laws; hybrid bus adoption
- » Active transportation
- » Include climate change in Community Health Improvement Plans and Community Health Needs Assessments



### **Model Indoor Air Act**

#### VIEWPOINT

#### Lawrence O. Gostin, JD

O'Neill Institute for National and Global Health Law, Georgetown University Law Center, Washington, DC.

#### James G. Hodge Jr, JD, LLM

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#### Gigi K. Gronvall. PhD

Johns Hopkins Center for Health Security, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland.

Supplemental content

#### The Model State Indoor Air Quality Act

Breathing should not make people sick. The air inside buildings (where people spend 90% of their lives) is often unfiltered, improperly ventilated, and unhealthy. Poor indoor air quality (IAQ) poses heightened risks of airborne infections and preventable exposures to harmful pollutants. US residents have little control over unhealthy built environments such as in workplaces, schools, shops, theaters, and restaurants. Absent their use of a personal air quality monitoring device, most people do not even realize the health risks. The Model State Indoor Air Quality Act (MSIAQA)1 developed in collaboration with national advisors adopts science-based regulatory standards, such as testing, enhanced air filtration, system maintenance, and ventilation, to advance the public's health and increase occupant productivity-ensuring that public indoor environments provide healthy air to breathe.

#### Public Health Risks

Aerosol transmission drives the spread of infectious diseases, including tuberculosis, influenza, measles, rhinoviruses, and respiratory syncytial virus. The importance of IAQ became clear during the COVID-19

#### Ameliorating IAQ

In the wake of the COVID-19 pandemic, public health officials, community planners, developers, building owners, and occupants are focused on measuring and improving IAQ. In May 2023, the Centers for Disease Control and Prevention updated its building ventilation guidance to 5 air changes per hour. The White House issued a Clean Air in Buildings Challenge in May 2022 to encourage owners to optimize indoor air via scientifically supported methods, such as high-efficiency particulate air filtration or upper-room UV germicidal irradiation. Emerging science may offer additional methods, such as far-UV.

Designing or altering built environments complements personal behavioral modifications (eg, handwashing, masking, and vaccinating), which can be hard to initiate and sustain in indoor public spaces over long periods.

#### Regulatory Frameworks

Despite recent efforts, extant legal and policy frameworks to improve IAQ are deficient, with most indoor spaces still unregulated and hazards unaddressed. In the 1990s, the US Congress failed to enact a bill to authoJAMA October 24/31, 2023 Volume 330, Number 16, page 1525 -1526.



## **Next Steps**

- » Watch for the 5<sup>th</sup> National Climate Assessment, connect with CAP/ RISA center in your region
- » Include priority law and policy goals in plans for climate/ emergency preparedness/ hazard mitigation/ community health improvement
- » Bring Policy, Systems, and Environmental (PSE) Change to environmental health
- » Policy surveillance and legal epidemiology (coordinated effort needed)
- » Bright spots in climate and health equity law and policy
- » Climate Change Community of practice
- » More climate sessions/ climate track at the next national public health law conference!



# Policy Surveillance/ Legal Epidemiology Ideas

- » Renewable energy
- » Health equity/ environmental justice
- » Outdoor worker protections
- » Preemption
- » Air conditioning and heat pumps by setting (e.g. affordable housing)
- » Wetlands
- » Private wells
- » Cooling tower registration
- » Healthy soils
- » Others?

Public health lawyers, public health practitioners, community advocates, environmentalists, and researchers can collaborate and coordinate on projects!



## **Stay Tuned: Community of Practice**

- » Build on pilot learning and practice collaborative on climate change and public health law, leading up to the climate change and health equity summit in 2022
- »Seeking steering committee members now
  - Collaboratively determine a group charter
  - Guide priorities for legal resources
  - Peer learning and community building
- » Plan to launch community of practice in second half of 2024



### **Contact Me**

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# APPLIANCE AIR POLLUTION: HEALTH IMPACTS AND POLICY OPTIONS

**JAMIE LONG** 

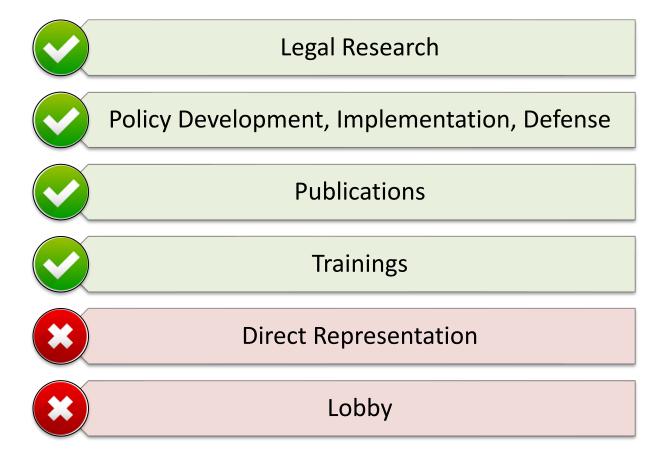


## THE PUBLIC HEALTH LAW CENTER





#### LEGAL TECHNICAL ASSISTANCE









## **GAS APPLIANCES AND HEALTH**





#### **INCREASED PUBLIC AWARENESS**





#### **INCREASED PUBLIC AWARENESS**

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#### The Health Risks of Gas Stoves Explained

PUBLIC HEALTH

Gas stoves produce emissions that can harm human health and the environment. Experts answer questions about the dangers and how to limit them

The New Hork Times

Gas Stoves Are Tied to Health Concerns. Here's How to Lower Your Risk.

Emissions from gas stoves have been connected to an increased

Los Angeles Times

ong other things. You can mitigate teps.

**CLIMATE & ENVIRONMENT** 

Cooking with a gas stove may be as bad as breathing secondhand cigarette smoke, study finds



#### **AIR POLLUTION COMPARISON**

#### **Tobacco Smoke**

- Nitrogen oxides ("NOx")
- Carbon monoxide
- Benzene
- Particulate matter
- Formaldehyde
- Lead
- Cadmium



#### **Gas Appliances**

- Nitrogen oxides ("NOx")
- Carbon monoxide
- Benzene
- Particulate matter
- Formaldehyde



## **GAS POLLUTION RESEARCH**



#### **Stanford Study (2023)**

- Found benzene in all stoves tested across California
- 45 minutes of a burner or oven at 350 degrees > standards
- Benzene exceeded secondhand smoke levels in some cases

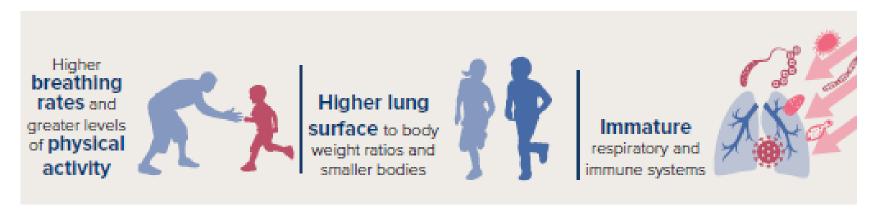


#### **NO2 AND KIDS**

- 42% increased risk of asthma symptoms for kids in homes with gas stoves
- Gas stoves responsible for 12.7% of U.S. childhood asthma cases
- Similar to asthma risk of kids living with a smoker

#### **EXHIBIT 4**

Three Main Factors Why Children Are More Susceptible to Illnesses Associated with Air Pollution than Adults<sup>b</sup>







# Lower-income Households May be at a Higher Risk of Exposure to Gas Stove Pollution

FACTORS CONTRIBUTING TO HIGHER LEVELS OF NO2 IN HOMES:



Smaller unit size

Using the stove / oven

for supplemental heat



More people per home



Older homes, inadequate ventilation



Higher exposure to outdoor pollution



Greater asthma burden

RMI – Energy. Transformed.

https://rmi.org/insight/gas-stoves-pollution-health/



#### **GAS APPLIANCES AND CLIMATE CHANGE**

#### The Problem

- Half of homes use gas for heating or cooking
- Gas appliances produce CO2
- Unburned gas produces methane; leaks from pipes and appliances

#### The Climate Impact

- 10% of all U.S. emissions
- 25 million tons of CO2 pollution each year





#### **SOLUTION? GO ELECTRIC!**

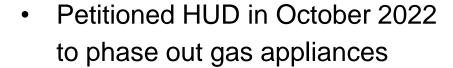
#### **Product Options**

- Induction stoves are awesome
  - 1/3 the energy use of gas
  - Less burn risk
  - Easier to clean
- Glass tops are good
- Old coil stoves are bad





#### **HUD PETITION**



- HUD obligations:
  - "free of hazardous materials[and] toxic chemicals and gasses."
  - "decent, safe, sanitary and in good repair"













































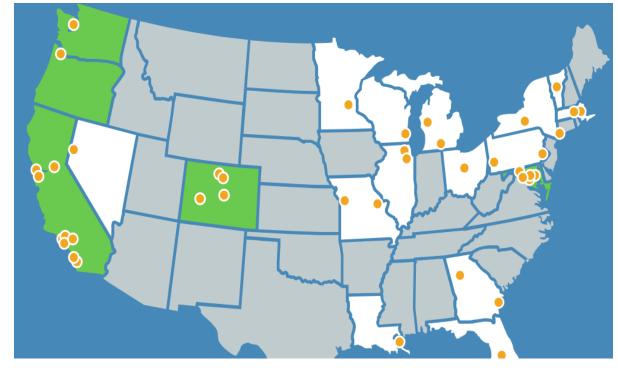




# BUILDING PERFORMANCE STANDARDS WHAT IS A BPS?

 Set targets for existing buildings to reduce energy use or GHG emissions by set deadlines

- Adopted by 4 states (CO, OR, MD, WA)
  - Commitments from 8 more:(CA, CT, HI, MA, ME, NY, PA, RI)
- 8 Cities/ Counties: Denver, St Louis, Boston, Washington D.C., NYC





# BUILDING PERFORMANCE STANDARDS ST. LOUIS AND DENVER

#### St. Louis

- Covers: over 50K sq ft
- Compliance every 4 years, except 6 years for affordable housing and places of worship
- Uses site energy use intensity by building type
- Four compliance pathways (early adopter, custom, performance, narrow the gap)

#### **Denver**

- Covers: over 25K sq ft.
- Compliance in 2024, 2027, 2030
- Maximum site energy use intensity by building type
- Some exemptions for manufacturing or low occupancy



### OTHER ELECTRIFICATION POLICY OPTIONS

- All electric new construction nearly 100 cities require
  - Chicago, Los Angeles, New York, Denver, San Francisco, Washington D.C.
- Updated building codes
  - Prescriptive or performance requirements
- Clean heat standards
- Target air emissions
  - e.g. NYC's approach limiting carbon dioxide emissions from new buildings
- Target gas infrastructure





See Our Event Page

Tags

Press Release | September 2023

U.S. Climate Alliance Announces New Commitments to Decarbonize Buildings Across America, Quadruple Heat Pump Installations by 2030

September 21, 2023

**NEW YORK, NY** – The U.S. Climate Alliance, a bipartisan coalition of 25 governors representing approximately 60 percent of the U.S. economy and 55 percent of the U.S. population, today announced a series of new commitments from its members to eliminate emissions from buildings, including collectively quadrupling heat pump installations by the end of the decade.



#### **LEGAL LANDSCAPE**

- EPCA preemption issue
- All electric requirements:
  - still ok outside of 9<sup>th</sup> Circuit
- Prescriptive approaches:
  - Must leave enough flexibility with other performancebased options to not trigger EPCA preemption
  - Should not be viewed as penalizing the use of EPCA compliant natural gas products
  - Can incentivize the use of electric products





### **CONTACT US**



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# Learning Objectives

- 1. Understand the causes of climate change and impact on the planet.
- 2. Discuss the impacts of climate change on health, especially on population and communities that have historically been targeted for marginalization.
- 3. Name key disparities and injustice in Climate change risk
- 4. Suggest actions as an individual and with communities to reduce carbon footprints and mitigate effects of climate change on health.
- 5. Be able to apply a 'Justice-informed framework' in the policy making process to reduce impact and improve health.



### **Equality**



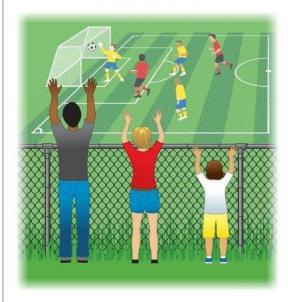
The assumption is that
everyone benefits from
the same supports. This
is equal treatment.

### **Equity**



Everyone gets the supports they need (this is the concept of "affirmative action"), thus producing equity.

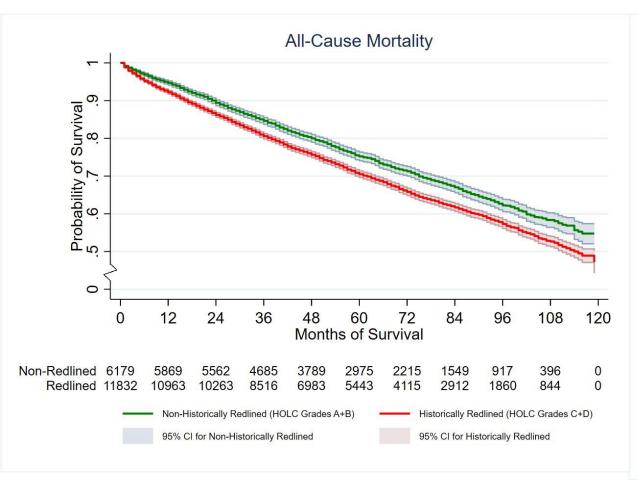
#### **Justice**

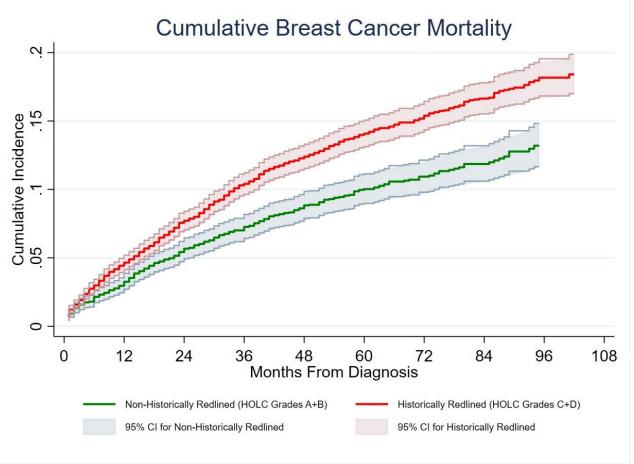


All 3 can see the game
without supports or
accommodations because
the cause(s) of the
inequity was addressed.
The systemic barrier has
been removed.



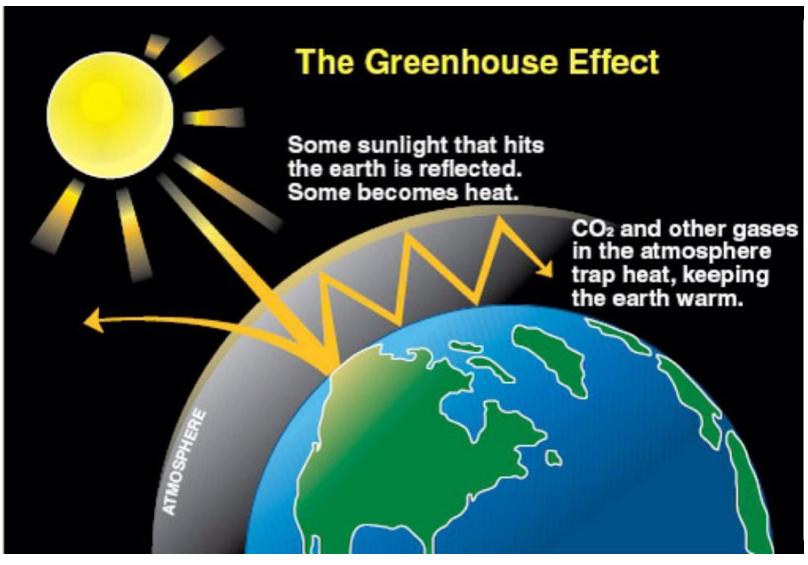
# Historical Redlining and Breast Cancer Survival

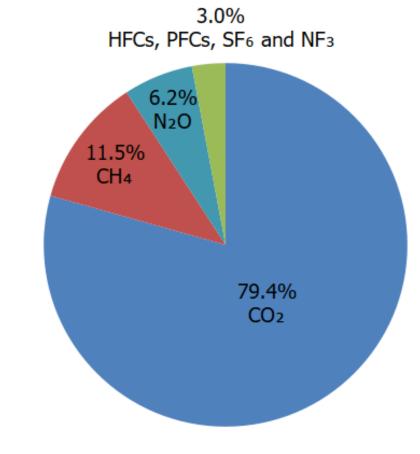




Bikomeye et al., Historical redlining and breast cancer treatment and survival among older women in the United States: J Natl
Cancer Inst. 2023







U.S. Environmental Protection Agency (2023). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021

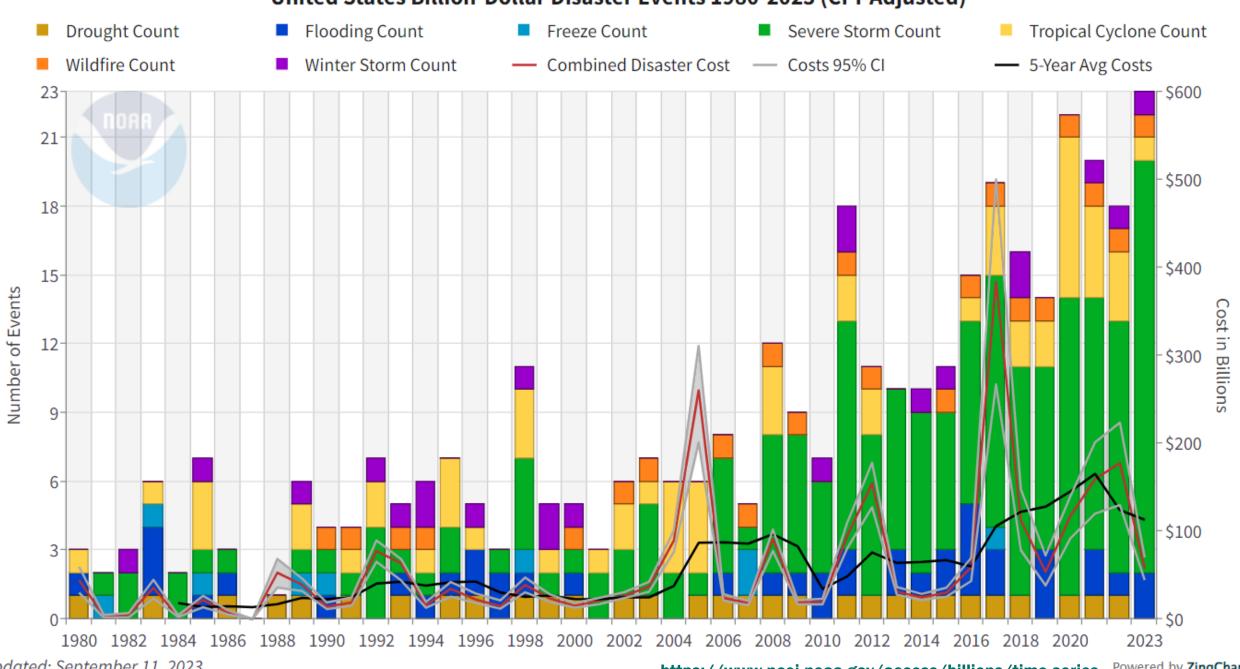


#### **Energy consumption in the United States (1776–2019)**

quadrillion British thermal units petroleum natural gas renewables coal nuclear Source: U.S. Energy Information Administration, Monthly Energy Review



#### United States Billion-Dollar Disaster Events 1980-2023 (CPI-Adjusted)

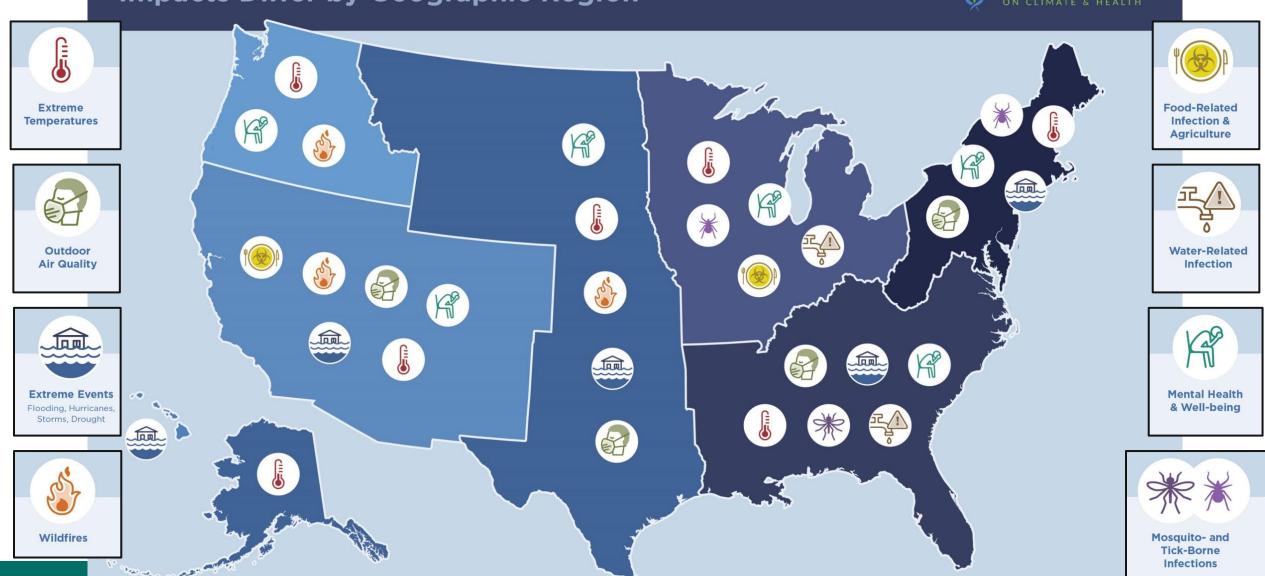


# Climate's Impact on Health

### **How Our Health is Harmed by Climate Change:**

**Impacts Differ by Geographic Region** 





### **Impact of Climate Change on Human Health**

Injuries, fatalities, mental health impacts

Asthma, cardiovascular disease

Heat-related illness and death, cardiovascular failure



Changes in Vector

**Ecology** 

Malaria, dengue, encephalitis, hantavirus, Rift Valley fever, Lyme disease, chikungunya, West Nile virus

Forced migration, civil conflict, mental health impacts

Environmental Degradation

**Extreme** 

Heat

THE STANSING

Increasing Allergens

Respiratory allergies, asthma

Water and Food Supply Impacts

RISING TURES

Water
Quality Impacts

Malnutrition, diarrheal disease

Cholera,
cryptosporidiosis,
campylobacter, leptospirosis,
harmful algal blooms

# Climate & Health Equity: Global & Local Injustice

Vulnerability is a function of exposure, sensitivity, and adaptive capacity

### Most vulnerable populations

- Children
- Student athletes
- Pregnant women
- Elderly individuals
- People with chronic illnesses and allergies
- People with limited resources
- Low income countries











## Climate & Health Equity: Global & Local Injustice

#### The **New Times**

Monday, October 16, 2023



#### Strong wind destroys 100 houses

TODAY'S CLIMATE

Plagued by Floods and Kept in the Dark, a Black Alabama Community Turns to a Hometown Hero for Help

The historic Black neighborhood in Elba, Alabama, began flooding after the state widened nearby Highway 84. Prominent environmental justice activist Robert Bullard is investigating the connection.





New UN report: Inequalities cause and exacerbate climate impacts on poor and vulnerable people

Evidence is increasing that climate change is taking the largest toll on poor and vulnerable people, and these impacts are largely caused by inequalities that increase the risks from climate hazards, according to a new report launched by the United Nations today.

Climate's Action: Hope for the Future

#### HOPE FOR THE FUTURE: MITIGATION AND ADAPTATION

### Mitigation (Global in scope):

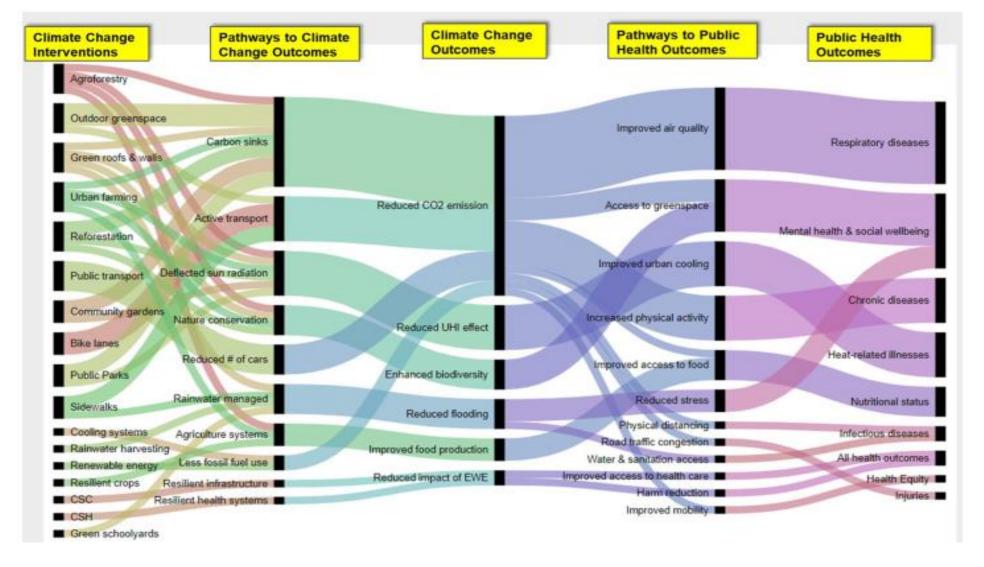
Intention: reduce global greenhouse gas (GHG) emissions, improve GHG capture and storage, and consequently lower GHG concentration in the atmosphere. This approach aims to prevent further negative impacts of climate change on the environment and public health.

### Adaptation (Local in scope):

Intention: Enhance the resilience of human or natural systems to climate change and mitigate the impacts of future adverse events by sustaining or augmenting adaptive capacity.

Bikomeye et al., Positive Externalities of Climate Change Mitigation and Adaptation for Human Health: A Review and Conceptual Framework for Public Health Research; *Int. J. Environ. Res. Public Health 2021, 18(5), 2481* 





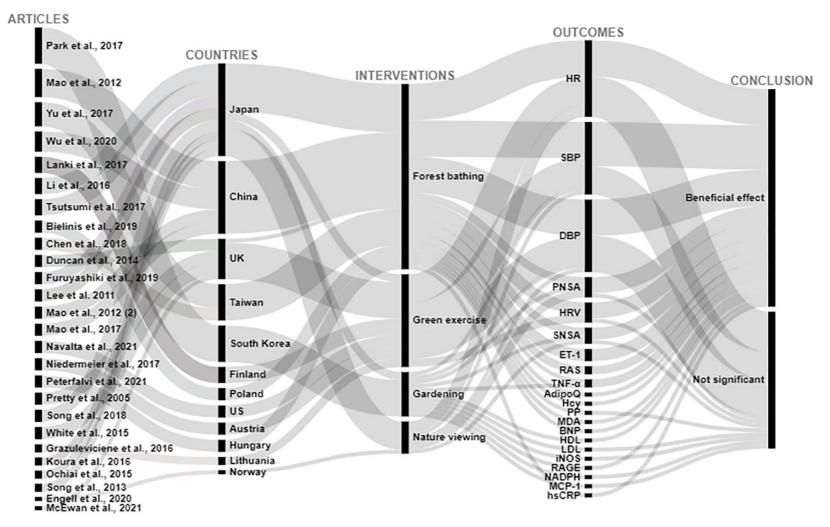
Bikomeye et al., Positive Externalities of Climate Change Mitigation and Adaptation for Human Health: A Review and Conceptual Framework for Public Health Research; Int. J. Environ. Res. Public Health 2021, 18(5), 2481

#### A Proposed Conceptual Framework for Greenspace Contribution to Resilience and Health Equity in the US and beyond Greenspaces Strategic Investments in Communities with Increased Vulnerabilities COVID-Enabled social/physical distancing 19 Enhanced socioemotional connectedness Greenspace Reduced risk of COVID-19 infection and transmission types, their Focus on strengths and Improved COVID-19 mental stress recovery process Equity & drawbacks prevent green gentrification Reduced environmental injustice Plantable Structural A Healthier spaces, Reduced socioeconomic health inequalities Racism ensure nation Reduced racial and ethnic disparities Greenspace for connectivity Improved health equity safety and for safe use maximal health benefit Chronic Reduced risks for cancer Environmental Eliminated education for Reduced risk for cardiovascular diseases (CVD) Diseases: stewardship Improved physical activity & reduced risk for obesity Maintenance Health Cancer and planning & Improved CV outcomes disparities funding Improved cancer survivorship & and quality of life Cardiovascular Reduced stress, anxiety & improved mental health Workforce disease development Plan for waste **Improved** Increased systems' resilience opportunities and harness Reduced surface temperatures in cities the promise of **Health Equity** Reduced urban heat island effects urban wood Climate Reduced indoor & outdoor air pollution Engage communities. Change Improved air quality local partners, and key Reduced CO<sub>2</sub> & mitigated floods stakeholders early and often Improved stormwater management & water quality Reduced energy consumption (green roofs) Intersecting public Improved physical, mental and **Important** Vision for health crises socio emotional wellbeing Considerations success

Bikomeye et al., 2021:Resilience and Equity in a Time of Crises: Investing in Public Urban Greenspace



## Greenspace and cardiovascular outcomes



Bikomeye et al., 2022:The impact of greenspace or nature-based interventions on cardiovascular health or cancer-related outcomes



# What can I do TODAY?

### Join the Medical Society Consortium on Climate and Health

















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# **Discussion Questions**

- 1. Can you name one root cause of climate change?
- 2. Can you name one group or community that has been historically been targeted for marginalization, and discuss how Climate Change compound adverse health outcomes for that group?
- 3. Can you name at least one injustice case in Climate change risk
- 4. Can you name ONE action that you will take as an individual to reduce carbon footprints and mitigate effects of climate change on health.
- 5. How will you Apply a 'Justice-informed framework' in the policy making process to reduce impact and improve health?





### Jean C. Bikomeye, MPH (He/Him)

PhD Candidate in Public & Community Health at the Medical College of Wisconsin & Deputy External Communications Committee Chair at SBM Climate and Health SIG & Board Member at Friends with Food

Talks about #healthequity, ##greenspace, #climateaction, #cardiooncology, and #preventivemedicine

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