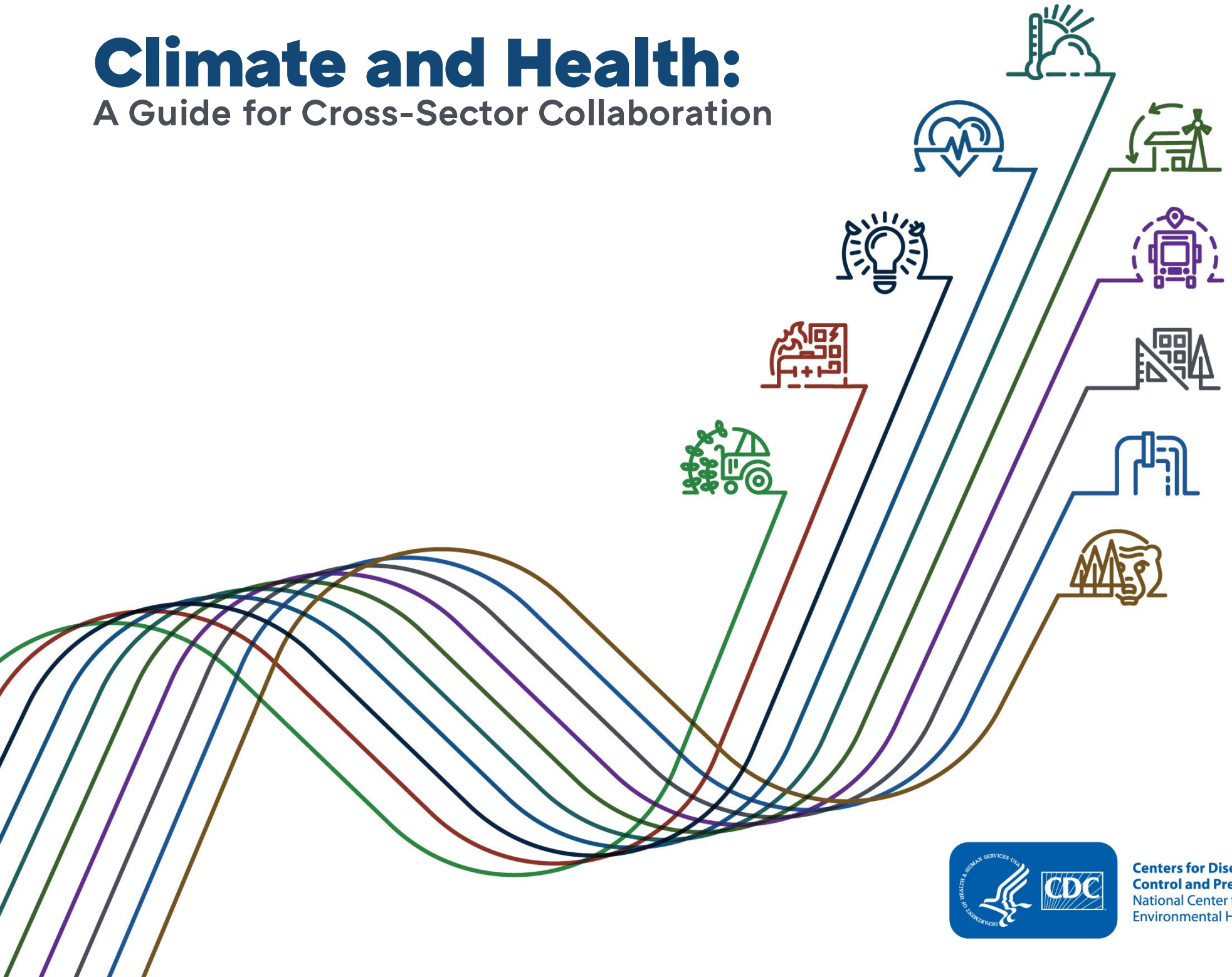


# Climate and Health:

A Guide for Cross-Sector Collaboration



**Centers for Disease Control and Prevention**  
National Center for Environmental Health

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*The following guide was developed by the Centers for Disease Control and Prevention (CDC) to support health department staff in conducting cross-sector outreach for climate adaptation planning. Health departments have a key role to play in helping states, cities, and tribes prepare for and prevent the public health impacts of climate change.*

*The ten sectors included in this guide can be important partners for effective climate adaptation planning.*

*This guidance was informed by a needs assessment that engaged Climate-Ready States & Cities Initiative grantees as well as content reviews by leaders from each sector that were engaged in some level of climate planning. It was also informed by the behavior change communications experts at Marketing for Change.*

*Learn about CDC's Climate-Ready States & Cities Initiative and find more climate and health communication resources at [CDC.gov/climateandhealth](https://www.cdc.gov/climateandhealth).*

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# Tackling public health challenges with cross-cutting solutions

Our changing climate is leading to new and expanded public health threats in communities across the country. Extreme weather events, flooding, droughts, wildfires, and extreme temperatures are becoming more frequent and more severe, creating a cascade of health impacts that are affecting more people in more places. Cross-cutting solutions are needed to protect public health.

State, local, and tribal health officials have a central role to play in helping communities prepare for and respond to the health impacts of climate change. Health departments are widely perceived as trusted and authoritative sources of information. In addition, health departments have deep experience in identifying vulnerable populations and projecting disease burden. This expertise means public health officials are well-positioned to collaborate with other sectors to develop a coordinated community response to climate-related health challenges.

Many sectors outside of public health are already engaging in community climate adaptation, and there is growing recognition of the need to address health impacts as part of this work. As a result, many sectors are ready and willing to collaborate with health departments if asked. This guide provides health officials with insights and pointers for collaboration opportunities in 10 sectors. The guide can serve as a practical starting point for initiating and furthering adaptation planning to reduce climate-related health risks in our communities.



# A Foundation for Success

Health departments are well-positioned to lead cross-sector collaboration.  
The foundation for success includes:

## Opportunities for added credibility

As a trusted authority on community health, health departments can provide other sectors with the credibility and concrete data needed to reinforce initiatives that have the potential to protect communities against climate-related health impacts.

## Interest in equity advancement

The impacts of climate change have significant implications for health equity. The public health approach, which is centered on vulnerability assessments and prioritizing high-risk populations, provides an engagement opportunity for many sectors where equity is a shared concern.

## Existing cross-sector relationships

Many public health interventions already require health departments to engage with entities in other sectors, such as sustainability offices, transportation authorities, and urban planners. Health officials can build off these existing relationships to further collaboration to address climate-related health risks.

## Existing adaptation efforts

Many entities outside public health are already engaging in climate adaptation work with some understanding of the increased risks for human health. As a result, there is an overall willingness and eagerness to involve health officials in planning processes for ongoing and emerging efforts.

# Preparing for Action

## Discover practical pointers for collaborating with specific sectors

This guide was created by the Centers for Disease Control and Prevention to equip health officials to collaborate across sectors to reduce the health impacts of climate change. It provides insights and knowledge across 10 key sectors.

### Here's a look at the content included for each sector:



#### Sector overview and climate-health intersections

Each sector begins with a high-level overview of the sector's role, and relevant climate-health intersections.



#### Collaboration opportunities and testimonials

On the second page, you will find common examples of collaboration that can provide a starting point for engaging potential partners.



#### Key messages and whom to contact

The final section provides customizable key messages and tips about the types of organizations and personnel that are likely to engage in partnerships with public health.



#### Digital Users:

All sector sections included in this report feature a navigation bar at the bottom of the page. Click on any of the sector icons to navigate from one sector to another.

## Tips for Engagement



### Getting the most out of cross-sector partnerships for climate-health adaptation

- **Translating data for various audiences.** Present health impact and vulnerability data to other sectors using relative comparisons, plain language, storytelling, and data visualization. Clearly communicate the implication for that sector. You can always provide further detail upon request.
- **Sustaining project commitments.** Plan resources efficiently and clearly communicate expectations for collaboration at the outset. This includes the length of project commitment and discussing plans for how work can be sustained when short-term funding lapses.
- **Making clear who is available to help and how.** Make it easy for sectors already engaged in related projects to work with you by including direct program contact information in all cross-sector outreach. Example: "For data on health impacts of extreme heat, call or email \_\_\_\_\_."
- **Speaking the same language.** Familiarize yourself with touchstone terminology and sector-specific norms. Each sector, including public health, has its own technical jargon and professional culture.

# Sector Guide



Click on your sector of interest to quickly navigate to that section.



**Agriculture..... 7**



**Sustainability & Green Design..... 29**



**Emergency Response & Disaster Preparedness ..... 11**



**Transportation Planning ..... 33**



**Energy & Utilities .....15**



**Urban Planning / Zoning & Land Use ..... 37**



**Healthcare .....19**



**Water Utilities, Sewer, & Watershed Management.....41**



**Meteorology & Climatology..... 25**



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# Agriculture



# What This Sector Does: Practices the science, art, and business of cultivating crops and raising livestock.

## ✦ Climate and Health Intersections



**Occupational hazards.** More frequent extreme weather, including more high-heat days, can harm outdoor workers and lead to losses in productivity.



**Food access.** More frequent extreme weather can impact crop yields and interrupt food distribution, making food more expensive and harder to get.



**Toxic contamination.** More frequent extreme weather can breach manure ponds and chemical storage facilities, leading to water and soil contamination that can directly affect human health.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry



# Opportunities for Collaborating with this Sector:

Work with safety agencies to provide data and education about increased occupational risks associated with climate change, and offer clear, simple actions to protect workers

Share information about the risks of disaster-related contamination with vulnerable residents and offer clear, simple ways they can protect themselves and others

Collaborate on initiatives that increase consumer access to local agricultural products, such as healthy corner store makeovers, mobile produce trucks, or use of Supplemental Nutrition Assistance Program (SNAP) benefits at farmers markets

Help farms and agricultural businesses identify at-risk infrastructure and plan to prevent and respond to manure pond breeches, chemical spills, and other public health threats

Collaborate with community partners to create resilience plans that prioritize local food systems



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management






Wildland Management & Forestry

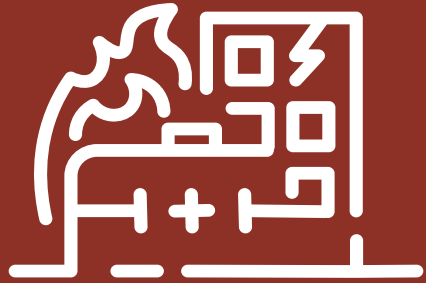
 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

<p><b>1</b></p> <p><b>Protecting outdoor workers</b></p> <p>Our community is experiencing more extreme weather, which puts outdoor workers at risk. Extreme heat, extreme cold, and dangerous storms and flooding are creating new and expanded occupational health hazards for people who work outside.</p> <p>Health departments can help farmers and agricultural businesses protect their workforce through planning and education.</p> <p><b>Here's how we can help:</b> We can provide vulnerability data to help build support for education and training, and provide information on how workers and supervisors can protect themselves and others.</p>	<p><b>2</b></p> <p><b>Preventing agricultural contamination</b></p> <p>Our community is experiencing more extreme weather, which puts agricultural infrastructure at risk. Storms and flooding can damage manure containment ponds and chemical storage facilities, leading to contamination that can threaten public health.</p> <p>Health departments can help farms and agricultural businesses prevent and respond to contamination events.</p> <p><b>Here's how we can help:</b> We can help farms and agricultural businesses identify at-risk infrastructure and plan to prevent and respond to manure pond breeches, chemical spills, and other public health threats. We also can provide educational information to help vulnerable residents protect themselves and others during contamination events.</p>	<p><b>3</b></p> <p><b>Supporting food access</b></p> <p>Our community is experiencing more extreme weather, which can affect crop yields, interrupt distribution, and increase food prices. This can make it harder for local residents to eat a healthy diet.</p> <p>Health officials can work with farmers and agricultural businesses to increase community access to affordable, locally grown food.</p> <p><b>Here's how we can help:</b> We can partner with communities to create resilience plans that prioritize local food systems. We can lend data and subject matter expertise to help our partners build support for healthy food access programs such as mobile produce trucks or integration of Supplemental Nutrition Assistance Program (SNAP) benefits in local farmers markets.</p>
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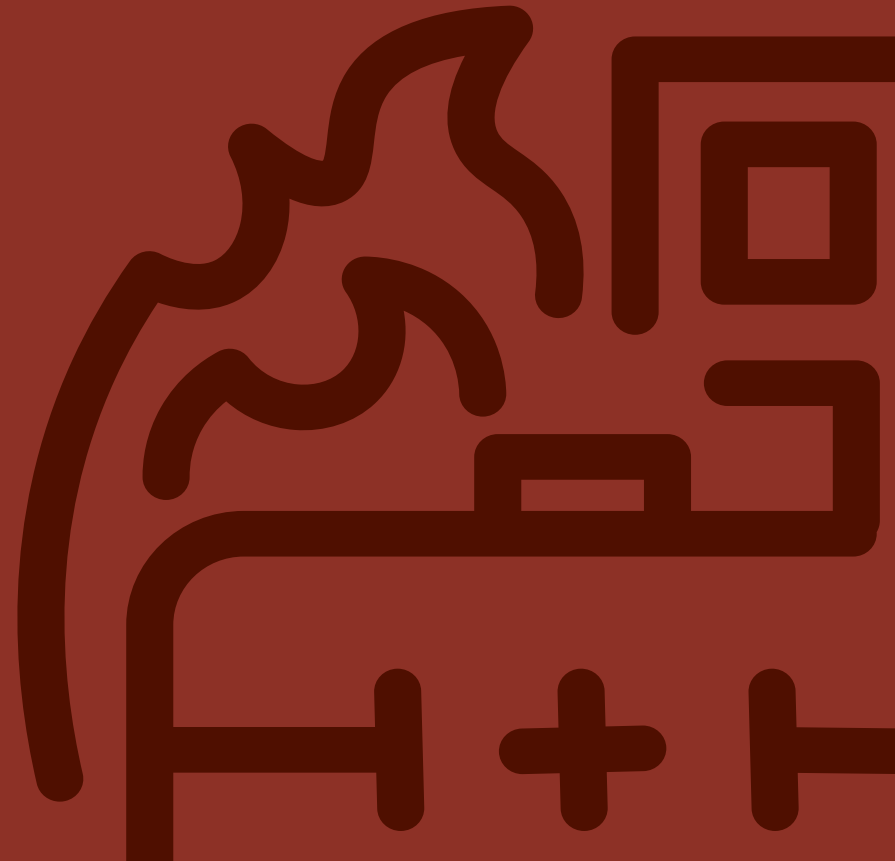
**Who to Collaborate With in This Sector:**

- Agricultural extension programs
- Occupational health and safety agencies
- Food access programs and organizations
- Sustainable agriculture organizations
- Local agricultural producers and neighborhood farmers markets

									
Agriculture	Emergency Response & Disaster Preparedness	Energy & Utilities	Healthcare	Meteorology & Climatology	Sustainability & Green Design	Transportation Planning	Urban Planning / Zoning & Land Use	Water Utilities, Sewer, & Watershed Management	Wildland Management & Forestry



# Emergency Response & Disaster Preparedness



**What This Sector Does:** Plans and mobilizes resources to predict and prevent disasters where possible, mitigate their impact on vulnerable populations, and help communities recover.

## ✦ Climate and Health Intersections



**Infrastructure vulnerabilities.** More frequent extreme weather and rising sea levels in coastal areas put infrastructure that is vital to public health and safety at risk.



**Impacts on physical and mental health.** The increased frequency of weather-related disasters puts more people at risk of injury, displacement, and death, which poses threats to the physical and mental health of survivors.



**Resource demands.** The increased frequency and severity of weather-related disasters means more resources are required to protect and repair infrastructure, maintain public sanitation, and care for injured or displaced residents.



Agriculture



Emergency  
Response & Disaster  
Preparedness



Energy &  
Utilities



Healthcare



Meteorology &  
Climatology



Sustainability  
& Green  
Design



Transportation  
Planning



Urban Planning  
/ Zoning &  
Land Use



Water Utilities,  
Sewer, & Watershed  
Management



Wildland  
Management &  
Forestry

# Opportunities for Collaborating with this Sector:

Construct disaster response scenarios for protecting vulnerable populations, such as older adults, people with chronic health conditions or disabilities, or those living near infrastructure containing toxic chemicals or waste

Provide data to inform preparedness and response planning that prioritizes the areas and people most vulnerable to health impacts

Collaborate on effective health protective messages to add to community safety alert systems and existing preparedness education (in schools, worksites, etc.)

Train emergency managers on how to access and use healthy vulnerability data in their hazard plans



Agriculture



Emergency  
Response & Disaster  
Preparedness



Energy &  
Utilities



Healthcare



Meteorology &  
Climatology



Sustainability  
& Green  
Design



Transportation  
Planning



Urban Planning  
/ Zoning &  
Land Use



Water Utilities,  
Sewer, & Watershed  
Management



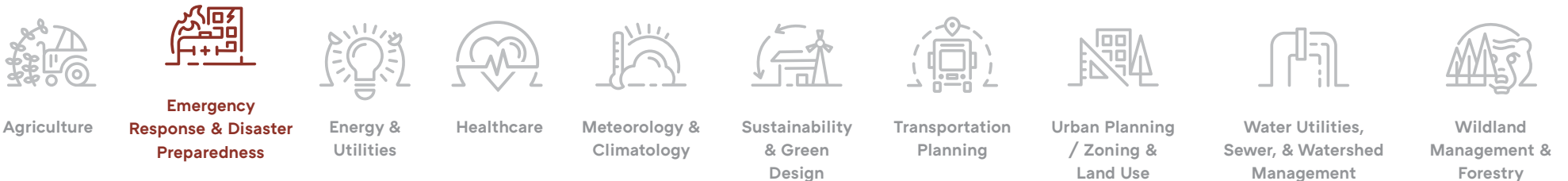
Wildland  
Management &  
Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

<p><b>1</b></p> <p><b>Preventing infrastructure damage</b></p> <p>Our community is experiencing an increase in extreme weather, which puts infrastructure at risk. Storms and flooding can damage energy and water facilities, sanitary sewer, hospitals, coal ash and nuclear waste depositories, agricultural manure ponds, and municipal landfills that can threaten public health.</p> <p>Health departments can help emergency managers prevent and respond to these events.</p> <p><b>Here's how we can help:</b> We can help you identify at-risk infrastructure that poses potential health and safety threats and develop prevention and response plans. We can also provide educational information to help vulnerable residents protect themselves and others.</p>	<p><b>2</b></p> <p><b>Community education and access</b></p> <p>Our community is experiencing more weather-related disasters, which puts more people at risk for injury, displacement, and death.</p> <p>Health departments can help emergency managers protect residents' physical and mental health before, during, and after weather events.</p> <p><b>Here's how we can help:</b> We can lend expertise, data, and training to support emergency and disaster plans that consider the most vulnerable people and areas in the community. We can also help develop health messaging to embed in existing emergency communications.</p>	<p><b>3</b></p> <p><b>Resource planning</b></p> <p>Our community is experiencing more weather-related disasters that require more community resources to protect and repair infrastructure that is vital to health, such as public sanitation and healthcare facilities.</p> <p>Health departments can help emergency managers prioritize needs to protect community health.</p> <p><b>Here's how we can help:</b> We can provide vulnerability data to inform hazard plans and link emergency managers to vital community health resources.</p>
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**Who to Collaborate With in This Sector:**

- Public offices of emergency management
- National Guard and uniformed services
- First responders including police, firefighters, and emergency medical service providers
- Facility and emergency managers for large community institutions, such as school districts and hospitals
- Emergency management professional associations





# Energy & Utilities



# What This Sector Does: Plans for and provides a stable energy supply through the production, delivery, and sale of fuels and electricity.

## ✦ Climate and Health Intersections



**Access to power.** Extreme weather can cause more frequent and lengthy power outages that may affect healthcare services, home medical devices, temperature-related illness, and safe food storage.



**Energy burden.** Temperature extremes can increase demand and costs for heating and cooling that can worsen existing economic, social, and health inequalities.



**Air quality.** Changing climate conditions can worsen air pollution. Poor air quality can trigger asthma attacks, heart attacks, and other illnesses.



**Contamination events.** Facilities for energy production and storage may be vulnerable to extreme weather, which can lead to spills and spread of toxic chemicals and byproducts such as coal ash.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



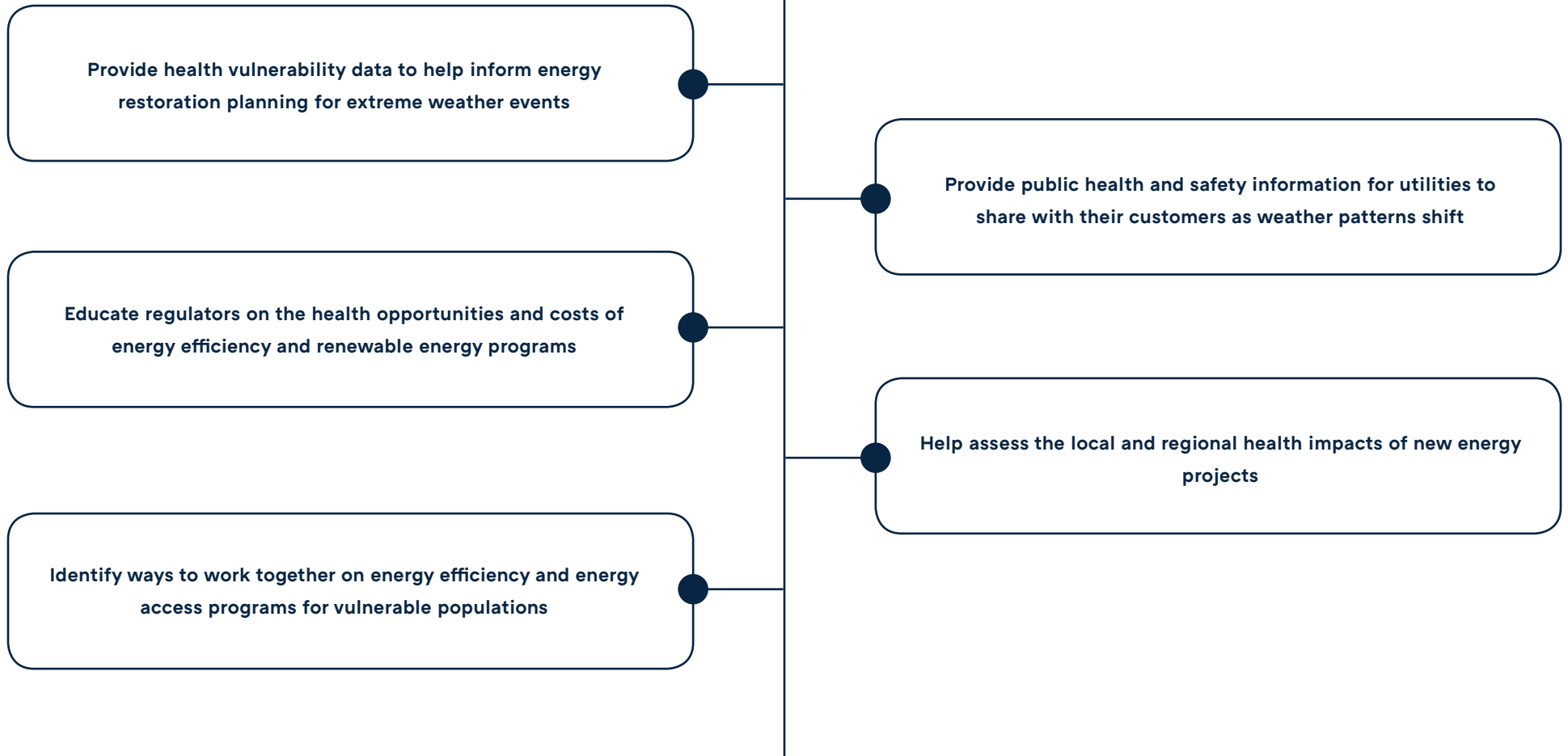
Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry



# Opportunities for Collaborating with this Sector:



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

<p><b>1</b></p> <h3>Energy restoration planning</h3> <p>Our community is experiencing more extreme weather, which can lead to more frequent and lengthy power outages.</p> <p>Health departments can help local energy distributors plan for energy restoration after extreme weather events to help protect vulnerable residents.</p> <p><b>Here's how we can help:</b> We can provide health vulnerability data to help plan ahead so at-risk residents and facilities receive priority power restoration services after outages.</p>	<p><b>2</b></p> <h3>Minimizing the impact of extreme temperatures</h3> <p>Extreme temperatures are becoming more severe and frequent in our community, which can cause heat- and cold-related health impacts for vulnerable members of our community.</p> <p>Health departments can help local energy distributors protect at-risk residents from temperature-related health impacts of extreme heat and cold.</p> <p><b>Here's how we can help:</b> We can provide health vulnerability data and a public health perspective to support home weatherization, energy efficiency, heating, cooling, and early warning programs to protect the most vulnerable residents.</p>	<p><b>3</b></p> <h3>Resource planning</h3> <p>Our community is experiencing increased air pollution and has a higher risk of contamination events due to more frequent and more severe weather.</p> <p>Health departments can help energy producers meet air and water quality standards that protect vulnerable members of our community.</p> <p><b>Here's how we can help:</b> We can provide health impact data and subject matter expertise to support long-term community resilience and adaptation plans.</p>
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## Who to Collaborate With in This Sector:

- Public utility commissioners
- Sustainability officials
- Energy efficiency program leads
- Health impact assessment contractors
- Regional energy industry groups
- Energy adaptation alliances





# Healthcare



# What This Sector Does: Provides health services to individuals, families, and communities through direct patient care, clinical training and research, and facility management.

## ✦ Climate and Health Intersections



**Direct education.** Healthcare providers are trusted sources that can communicate about the health effects of climate change to their patients and to the community at large.



**Increased demand for ER services.** Extreme weather, extreme temperatures, and climate-related impacts on air quality are increasing demand for high-cost emergency room (ER) services.



**Facility damage and service interruptions.** More frequent and more severe storms, floods, and wildfires put facilities at risk of physical damage and service interruptions.



**New and expanded health threats.** Changing climate conditions are leading to new and expanded health threats that clinical staff may not be used to responding to, such as vector-borne diseases or climate-related mental health impacts.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use

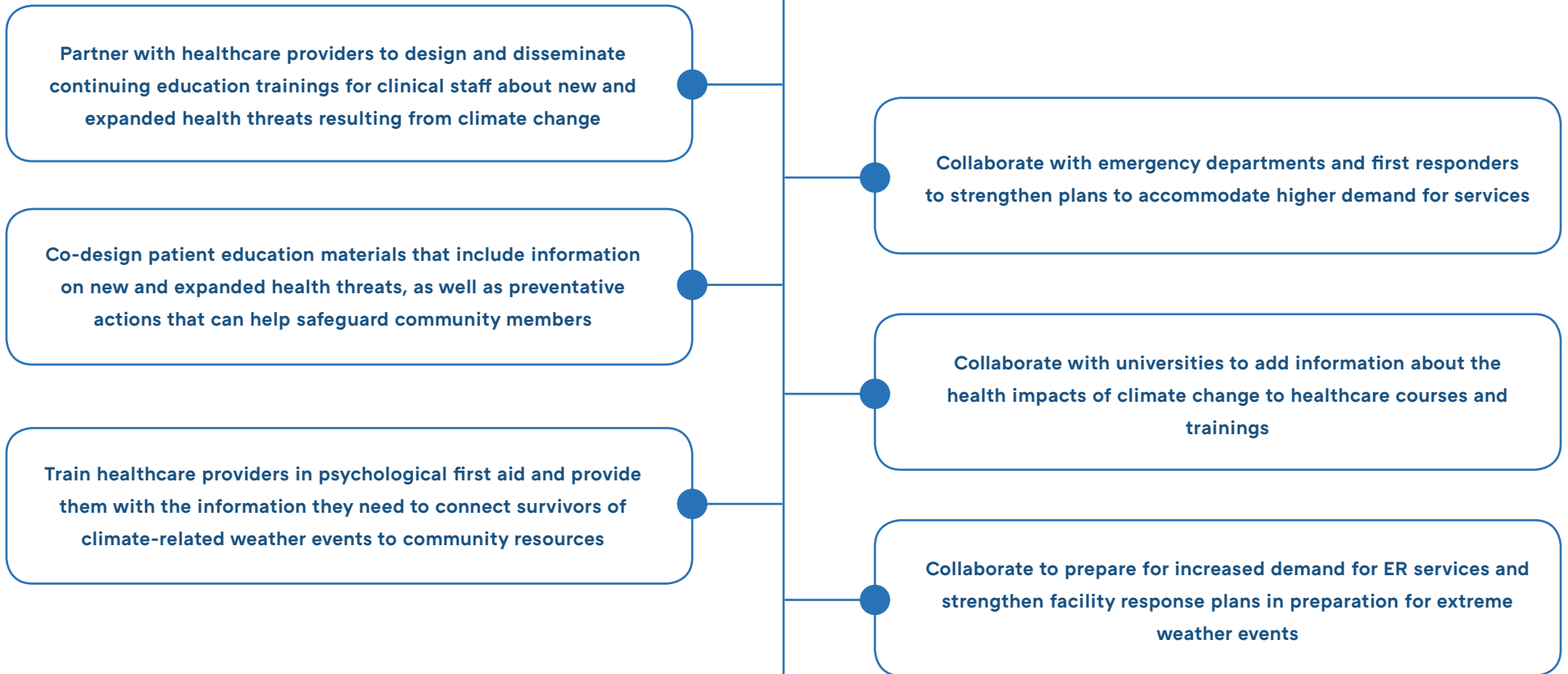


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

# Opportunities for Collaborating with this Sector:



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry



# Talking Points

Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

1

## Provider capacity building

Climate change is harming health in communities across the nation. More frequent and more severe weather, longer allergy and asthma seasons, and more unhealthy air quality days mean more people will need care more often.

Health departments and healthcare providers can work together to ensure our community is prepared.

**Here's how we can help:** We can collaborate with community partners to identify likely climate impacts and train healthcare providers to prepare and respond.

2

## Safeguarding facilities during extreme weather

Extreme weather is becoming more frequent and more severe, putting patients at risk when healthcare facilities are damaged.

Health departments can work with community partners to strengthen emergency response plans for key facilities.

**Here's how we can help:** We can provide vulnerability data to help our partners secure funding for resilience planning, early warning programs, and to identify evidence-based emergency response models that fit local needs.

3

## Increased demand for ER services

Changing weather patterns are bringing new and expanded health risks that increase demand for emergency services.

Health departments can collaborate with community partners to help secure resources to strengthen medical response systems.

**Here's how we can help:** We can provide vulnerability data as well as subject matter expertise on the health threats associated with climate change to help build support and resources.

4

## Patient and community education

Healthcare providers are trusted sources for communicating health information.

Health departments can equip providers to educate their patients and the wider community about the health impacts of climate change and what people can do to protect themselves and others.

**Here's how we can help:** We can alert you to health risks and identify who is most likely to be harmed, and work together to disseminate clear and accurate information to those most at risk.

## Who to Collaborate With in This Sector:

- Communication officials at healthcare facilities
- Teaching hospitals and academic medical centers
- Grantwriters and resource development coordinators at hospitals and clinics
- Nursing homes and homecare programs
- Emergency medical services (EMS)



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

## SECTOR VOICES



**“With longer allergy seasons, my patients with asthma are having more attacks and the poor and elderly cannot afford the additional medication and utility costs. Extreme weather events filled with uncertainties about safety affect our mental health. Health professionals are respected. Including our voices would be extremely valuable. Climate solutions are health solutions!”**

**CHERYL L. HOLDER, M.D.**, program director of Neighborhood HELPEducation and Pipeline Program; and Associate Professor at the Herbert Wertheim College of Medicine

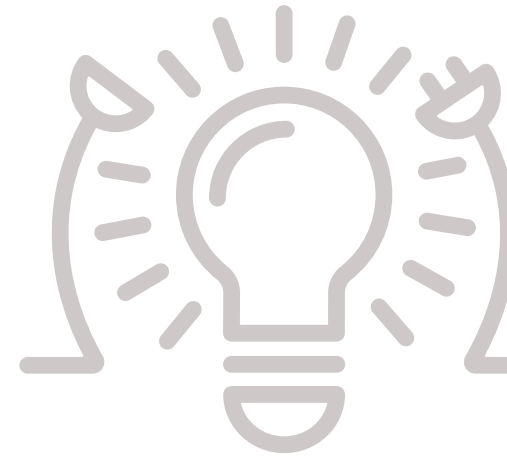
**“I like to keep my audience informed of the state of the science of climate change, and its links to weather extremes and other consequences (e.g. vector-borne diseases). It’s important to have health officials maintain communications with broadcast meteorologists so that we may continue to deliver timely and often critical information.”**

**JOHN MORALES**, ClimaData Corp Founder; American Meteorologist Society Fellow; and Chief Meteorologist at WTVJ NBC-6 Miami



**“This is exciting. As we are doing work in health and resilience, and have a strong focus on equity and vulnerable populations, SEEA would be very interested in continued engagement on this matter with public health officials.”**

**CYRUS BHEDWAR**, Policy Director at the Southeast Energy Efficiency Alliance



**“I am addressing planning and zoning issues and opportunities for mitigation supported resilience, and all relates to health and safety.”**

**BOB FREITAG**, Director of the Institute for Hazards Mitigation Planning and Research at the University of Washington  
Department of Urban Design and Planning



**“The nexus between public health and the climate crisis are intrinsically linked and are becoming increasingly more important for public officials and local government leaders to consider as we work to make our communities more resilient to an ever-changing future.”**

**CHRIS CASTRO**, Director of Sustainability and Resilience at the City of Orlando







# Meteorology & Climatology



# What This Sector Does: Forecasts weather, analyzes and interprets climate data, and communicates weather and climate information to the public.

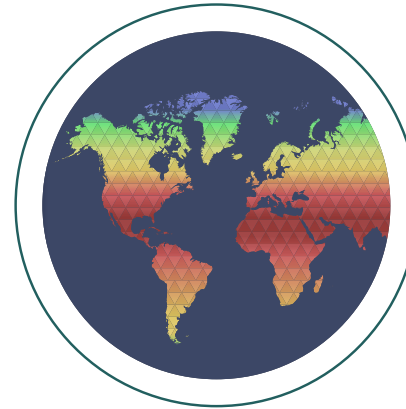
## ✦ Climate and Health Intersections



**Severe weather.** Broadcast meteorologists can serve as trusted voices in order to broadly and immediately convey health-related information before, during, and after weather events, such as extreme heat and severe storms.



**Air quality alerts.** Rising temperatures are worsening air pollution and leading to longer and more severe pollen seasons. This can trigger heart attacks, asthma attacks, and other illnesses. Broadcast meteorologists can help alert people to poor air quality days, and share health information on how they can protect themselves and others.



**Adaptation.** Climatologists can track emerging climate patterns to help communities plan adaptation activities.



**Science communication.** Meteorologists and climatologists can help provide science education that communicates how climate is impacting health and what communities can do to prepare and respond.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use

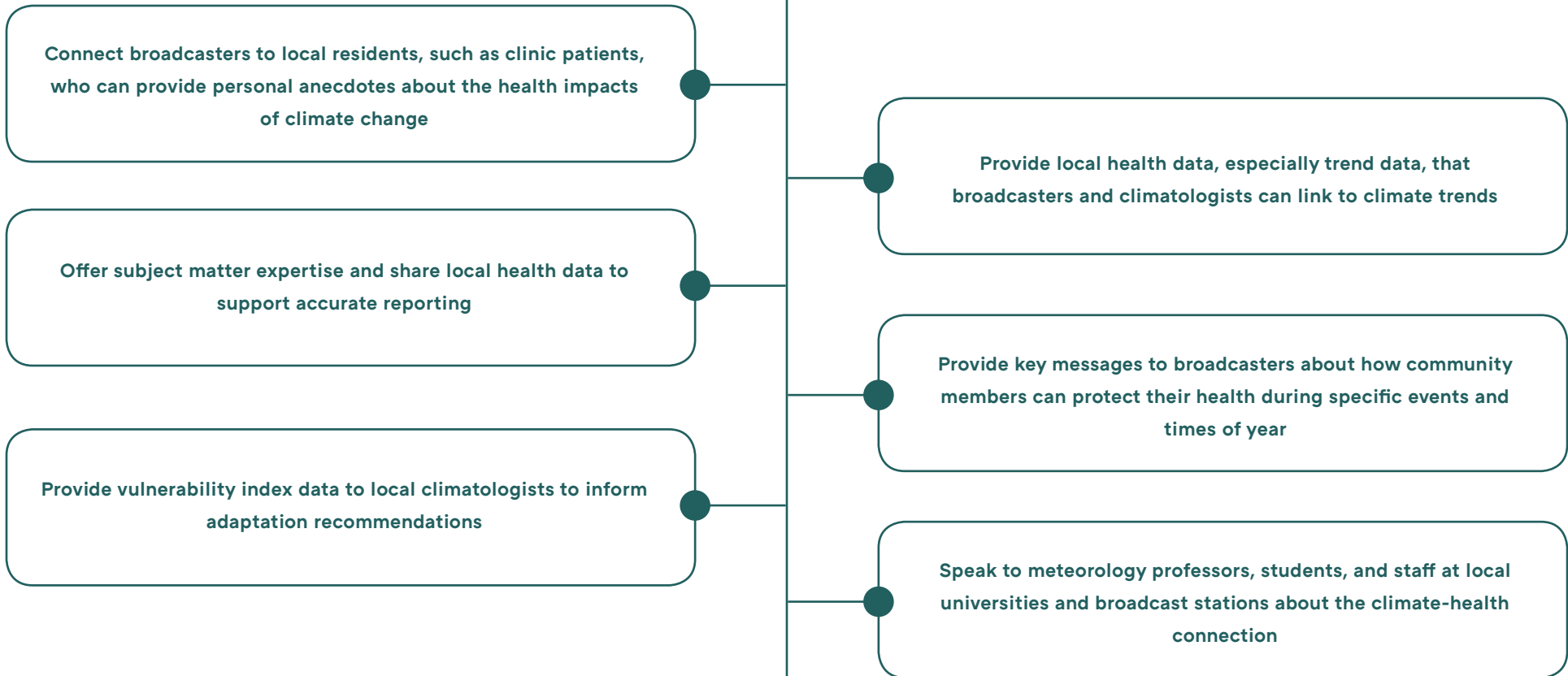


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

# Opportunities for Collaborating with this Sector:



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

**1**

### Protect community health during extreme weather

As extreme weather events become more frequent and more severe, broadcasters play an increasingly important role in helping residents stay safe.

Health departments can help broadcasters tell listeners and viewers what to do to stay safe before, during, and after an extreme weather event.

**Here's how we can help:** We can provide you with accurate health information ahead of time so you will be prepared when weather strikes. We can also connect you with local residents who have experienced weather-related health harms who can share their experiences.

**2**

### Air quality alerts

As air quality worsens and pollen seasons get longer and more severe, more local residents are at risk of heart attacks, asthma attacks, and other illnesses triggered by poor air quality.

Health departments can help broadcast meteorologists alert listeners and viewers to dangers and learn how to protect themselves and others.

**Here's how we can help:** We can provide meteorologists with accurate health information ahead of time so you will be prepared with clear messages on poor air quality days. We can also help connect you with local residents who have experienced air quality-related illness who can share their experiences.

**3**

### Planning for a healthy and resilient community

Climatology plays an increasingly important role of identifying emerging climate trends to help our community prepare for and respond to changing weather patterns.

Health departments can work with climatologists to ensure protecting public health is a core component of adaptation planning.

**Here's how we can help:** As climatologists identify emerging changes in weather patterns, we can help identify how these changes can impact health. We can identify the people who are most at risk, and provide information on steps that can be taken to protect their health.

## Who to Collaborate With in This Sector:

- Broadcast meteorologists at local TV and radio stations

- Local university meteorology and climatology professors, and program directors

- State or local climatologists with NOAA and the National Weather Service



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry



# Sustainability & Green Design



**What This Sector Does:** Implements measures, programs, and infrastructure to create a balance in the environment that will promote physical, social, and economic health for current and future generations.

## ✦ Climate and Health Intersections



**Extreme heat.** As average temperatures rise, sustainability strategies to cool urban spaces can help reduce the health impacts of extreme heat.



**Local food systems.** Changing climate conditions and extreme weather can impact agricultural production and distribution, disrupting food supplies and increasing prices. Sustainability programs that support local food systems can help vulnerable residents maintain access to affordable healthy food.



**Air quality.** Changing climate conditions can worsen air pollution and increase the length and intensity of pollen seasons. Sustainability initiatives that help safeguard indoor and outdoor air quality also help prevent heart attacks, asthma attacks, and other respiratory illnesses.



**Green building.** Green building initiatives designed to decrease environmental impacts can also improve public health.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use

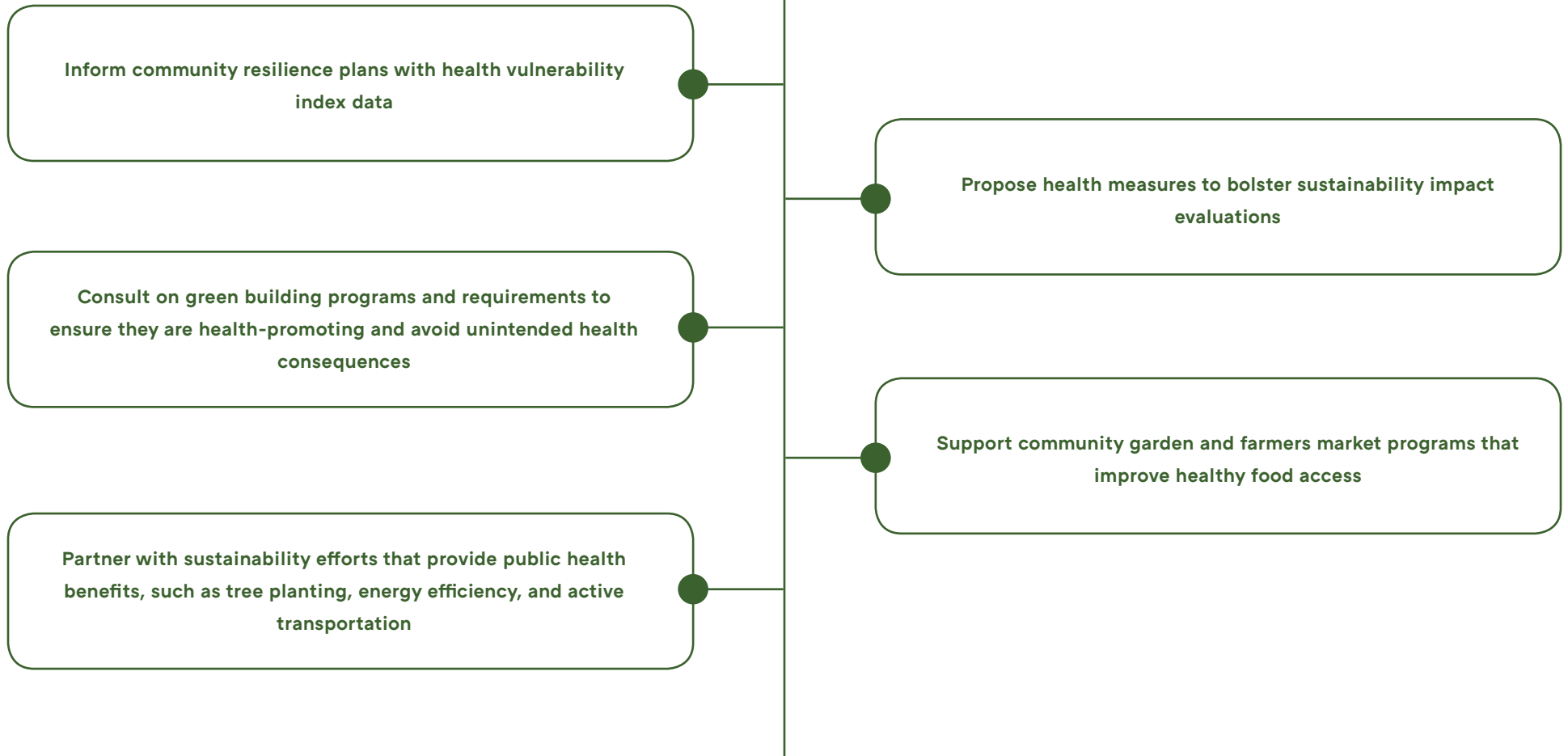


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

# Opportunities for Collaborating with this Sector:



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

**1**

### Adapting to extreme heat

As average temperatures rise, more local residents are vulnerable to the health impacts of extreme heat.

Health departments can work together with sustainability officials to cool our urban spaces and protect our residents.

**Here's how we can help:** We can identify neighborhoods most at risk for extreme heat. We can also provide health data to build support for cooling initiatives such as cool roofs and pavement, tree planting, and energy efficiency programs.

**2**

### Local food systems

Changing climate conditions and extreme weather can impact agricultural production and distribution, disrupting food supplies and increasing prices.

Health departments can work with sustainability efforts to support local food systems that help vulnerable residents maintain access to affordable healthy food.

**Here's how we can help:** We can provide health data to increase support for local programs that maintain access to healthy food, such as community gardens and farmers markets.

**3**

### Air quality

Changing climate conditions are worsening air pollution and increasing the length and intensity of pollen seasons. This can lead to higher incidence of heart attacks, asthma attacks, and other illnesses that are triggered by poor air quality.

Health departments can work with sustainability initiatives that help safeguard indoor and outdoor air quality.

**Here's how we can help:** We can provide health vulnerability index data to build support for air quality improvement and help focus efforts on residents who are most at risk.

**4**

### Green building

Green building initiatives designed to decrease environmental impacts can also improve public health.

Health departments can work with green builders to build support for sustainable projects and ensure they are also health-promoting.

**Here's how we can help:** We can provide data to show how green buildings can protect our community's health. We can also review building plans and requirements to ensure they don't result in unintended health consequences.

## Who to Collaborate With in This Sector:

- Government sustainability offices
- Sustainable (or “green”) business networks or councils
- Sustainability programs at universities, hospitals, and other large employers
- Green building organizations and professional associations







# Transportation Planning



# What This Sector Does: Oversees planning for the development and maintenance of public roadways and transit systems.

## ✦ Climate and Health Intersections



**Air quality.** Transportation is a major source of air pollution and extreme heat makes that pollution worse. Poor air quality can trigger asthma attacks, heart attacks, and other illnesses.



**Active transit.** Transportation systems can be designed to encourage safe cycling and walking, increasing physical activity while also reducing emissions.



**Vulnerable communities.** Extreme storms, floods, and sea level rise can overwhelm transportation systems, preventing access to healthcare and emergency services in vulnerable communities.



**Evacuation safety.** Transportation systems impact the ability to evacuate community members who are at risk from extreme storms, wildfires and other weather-related events.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use

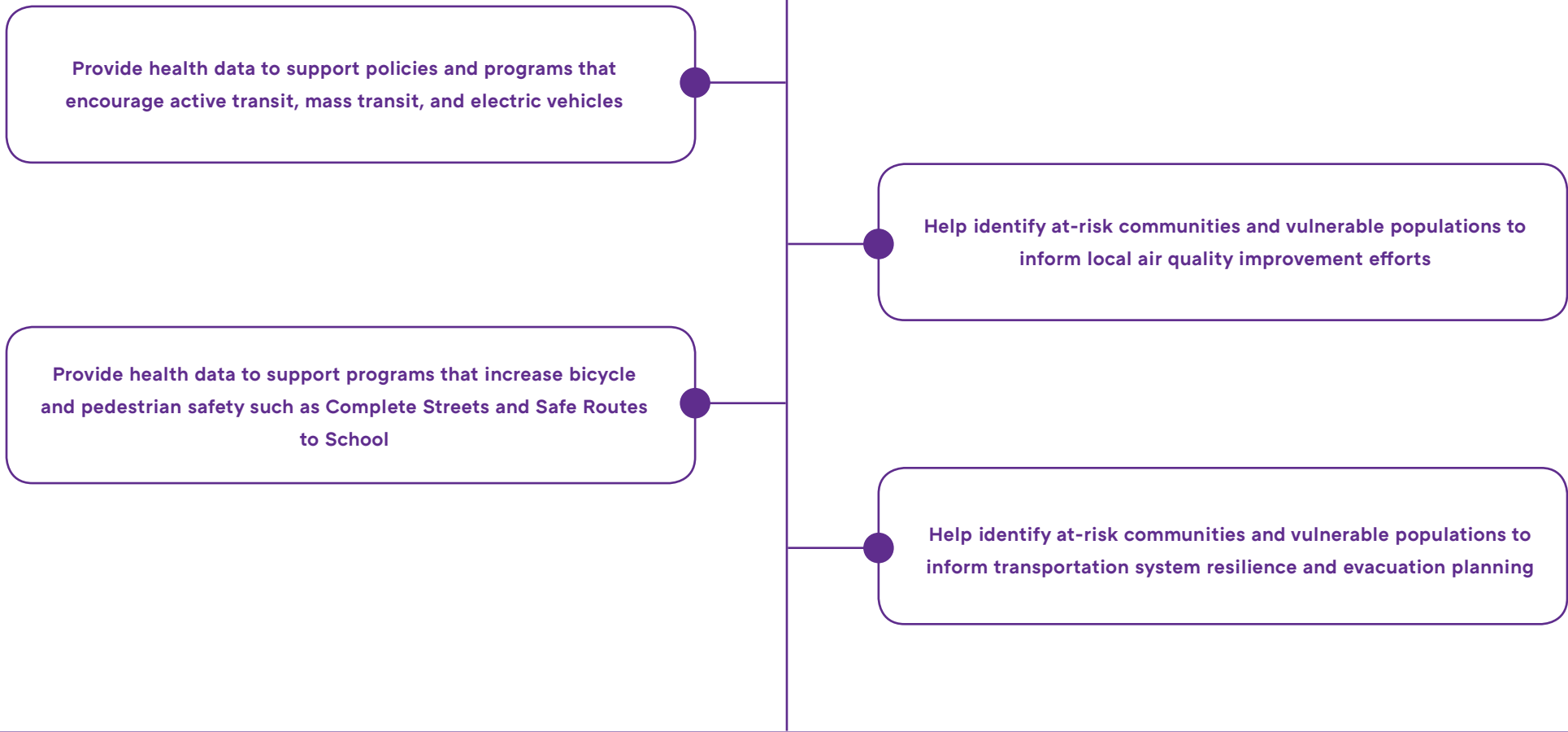


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

# Opportunities for Collaborating with this Sector:



Agriculture



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Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

**1**

**Cleaner air in our community**

Passenger vehicles are a major source of air pollution, and extreme heat makes that pollution worse. Poor air quality can trigger heart attacks, asthma attacks, and other illnesses.

Health departments can help transportation planners encourage programs and policies that improve air quality, such as active transit, mass transit, and increased use of electric vehicles.

**Here's how we can help:** We can provide health data to support your programs and policies that reduce emissions. We can also conduct vulnerability assessments to identify which populations and neighborhoods are most at risk for poor air quality days.

**2**

**Encouraging safe active transit**

Our transportation systems can be designed to make it safer and easier to cycle and walk.

Health departments can help transportation planners support active transit policies and programs that reduce bicycle and pedestrian injuries and fatalities.

**Here's how we can help:** We can provide health data to support programs that increase bicycle and pedestrian safety such as Complete Streets and Safe Routes to School. We can also provide public health data that identifies populations and neighborhoods that are most in need.

**3**

**Emergency planning**

Extreme weather is becoming more frequent and more severe, which means it is more important than ever for transportation systems to plan for emergencies.

Health departments can help transportation planners identify potential trouble spots and prepare more effective emergency and evacuation plans.

**Here's how we can help:** We can provide information about which communities and populations are most at risk. We can also work with transportation planners to create and disseminate educational information about how residents can protect themselves and others during emergencies and evacuations.

**Who to Collaborate With in This Sector:**

- Local transportation authorities
- Regional transportation commissions
- Metropolitan planning organizations
- Municipal bicycle and pedestrian coordinators
- Safe Routes to School and Complete Streets coordinators



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Water Utilities, Sewer, & Watershed Management



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# Urban Planning / Zoning & Land Use



# What This Sector Does: Designs and approves plans and programs for land use and development.

## ✦ Climate and Health Intersections



**Air quality.** Urban planning can play a role in protecting air quality as more frequent extreme heat exacerbates air pollution. Built environments can help reduce emissions by encouraging active transportation and creating connected communities that reduce transit trips.



**Extreme heat.** More frequent extreme heat will worsen urban heat islands, increasing the need for cooling and green space.



**Resiliency.** As extreme storms and heat become more frequent and sea levels rise, the built environment will affect residents' vulnerability to harm.



Agriculture



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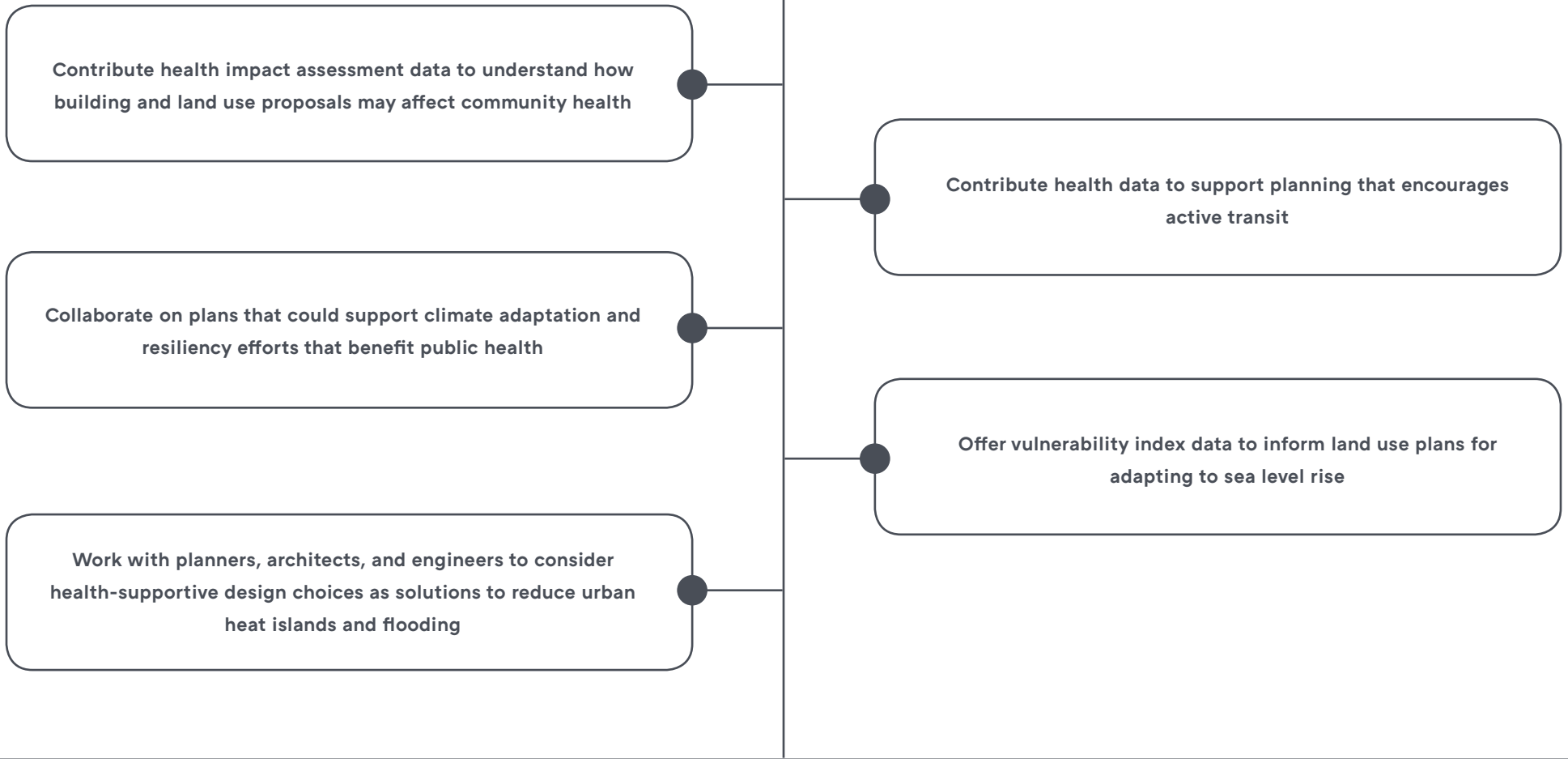


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

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Agriculture



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Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

**1**

**Planning for cleaner air**

Extreme heat is making air pollution worse around the world. Urban planning can play a key role in protecting air quality in our community.

Health departments can help urban planners encourage active transportation and create live-work-play communities that reduce vehicle emissions.

**Here's how we can help:** We can provide health data that highlights how building and land use proposals can help or hinder efforts to improve air quality, and show how active transit can improve community health.

**2**

**Cooling our community**

Longer and more frequent heat waves are putting more people at risk for heat stroke, dehydration, and death, especially in urban areas.

Health departments can work with urban and land use planners to protect residents from the health impacts of extreme heat.

**Here's how we can help:** We can help identify vulnerable populations and neighborhoods that most need access to cooling. We can provide health data that highlights how proven cooling methods can improve community health.

**3**

**Planning for resilience**

More extreme weather and sea level rise is increasing the need for land and buildings that protect residents from injury, displacement, and death.

Health departments can work with urban and land use planners to develop a more climate-resilient community.

**Here's how we can help:** We can help identify vulnerable populations and neighborhoods that are most at risk. We can provide health data that highlights how climate adaptation can benefit community health.

**Who to Collaborate With in This Sector:**

- Municipal planning and zoning officials
- Urban planning professional associations
- Green building organizations
- Local chapters of the Urban Land Institute
- Local offices of the Natural Resources Conservation Service



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Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry



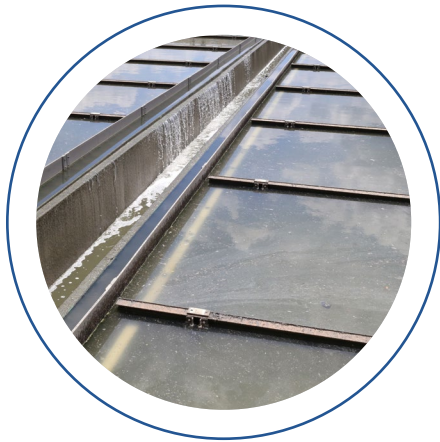


# **Water Utilities, Sewer, & Watershed Management**



# What This Sector Does: Protects water as a natural resource as well as treats, delivers, and recycles water for community use.

## ✦ Climate and Health Intersections



**Infrastructure threats.** Extreme storms, flooding, and sea level rise can damage water and sewer infrastructure, interrupting water supplies and causing sanitary sewer overflows and other water contamination.



**Waterborne illness.** Rising average temperatures and changes in weather patterns are creating conditions that increase the range and intensity of disease-causing microbes and pathogens, such as cryptosporidiosis and harmful algal blooms.



**Water security.** Drought conditions can dry up community water supplies and private wells, as well as increase the potential for wildfires, dust storms, and flash flooding that degrade water quality and availability.



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use

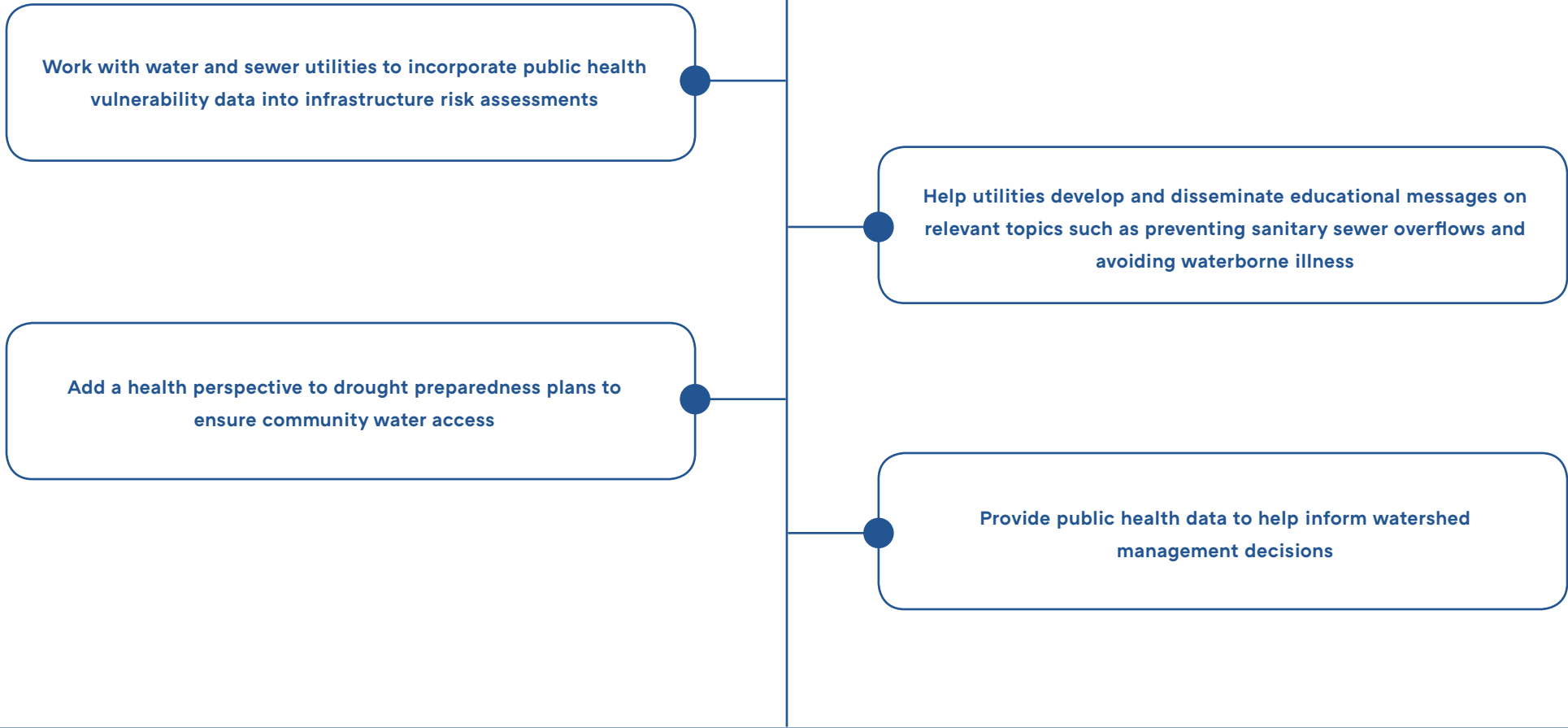


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

# Opportunities for Collaborating with this Sector:



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



Transportation Planning



Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

**1**

### Preparing for and preventing infrastructure threats

More frequent extreme storms and flooding, along with sea level rise in coastal areas, puts community water and sewer infrastructure at risk. Damage to water and sewer facilities and pipes, as well as private wells and septic systems, can increase the potential for contamination that can cause waterborne illness.

Health departments can work with utilities and local government to identify infrastructure that is vulnerable to extreme weather and make plans for preparation and response.

**Here's how we can help:** We can work with water and sewer utilities to incorporate public health vulnerability data into infrastructure risk assessments. We can also help develop and disseminate educational messages on relevant topics such as preventing sanitary sewer overflows and avoiding waterborne illness.

**2**

### Preventing waterborne illness

Rising average temperatures and changes in weather patterns are creating conditions that increase the range and intensity of disease-causing microbes and pathogens that can cause waterborne illness.

Health departments can work with local government and utilities to help residents understand how they can protect themselves and others during outbreaks.

**Here's how we can help:** We can help develop a community alert system for outbreaks, educational messages on how residents can identify the symptoms of waterborne illness, and information on how they can protect themselves and others when contamination occurs.

**3**

### Preparing for the impacts of drought

Changing weather patterns are causing more severe and more frequent droughts.

Health departments can work with water management to identify people that are disproportionately impacted by droughts, and help ensure access to water.

**Here's how we can help:** Using health and vulnerability data, health departments can highlight areas and community members most at risk for water insecurity and create educational materials for at-risk homeowners about how to maintain safe water systems.

## Who to Collaborate With in This Sector:

- Public and private water and sewer utilities
- Environmental protection and water management agencies
- Managers of parks systems where residents fish and swim
- Organizations devoted to watershed protection



Agriculture



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Urban Planning / Zoning & Land Use



Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry



# **Wildland Management & Forestry**



# What This Sector Does: Conserves forests and public lands for the protection of ecological and social systems that depend on them.

## ✦ Climate and Health Intersections



**Disease-carrying vectors.** Expanded ranges and seasons for insects, ticks, and rodents put more people at risk of diseases like Lyme, West Nile, Zika, and Hantavirus.



**Drinking water sources.** Sea level rise, drought, and decreased land coverage can threaten sources of drinking water.



**Urban heat.** Healthy urban forests can reduce the health impacts of extreme heat.



**Wildfire and prescribed burns.** More frequent and more severe wildfires fueled by drought and extreme heat can lead to respiratory health impacts, population displacement, injury, and fatalities. Prescribed burns set to reduce wildfire risk produce smoke that can harm respiratory health.



**Flood damage.** Extreme rain and snow storms, along with swings in temperature that affect snow melt, increase the need for healthy forest systems that reduce flood damage to residential areas.



Agriculture



Emergency Response & Disaster Preparedness



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Transportation Planning



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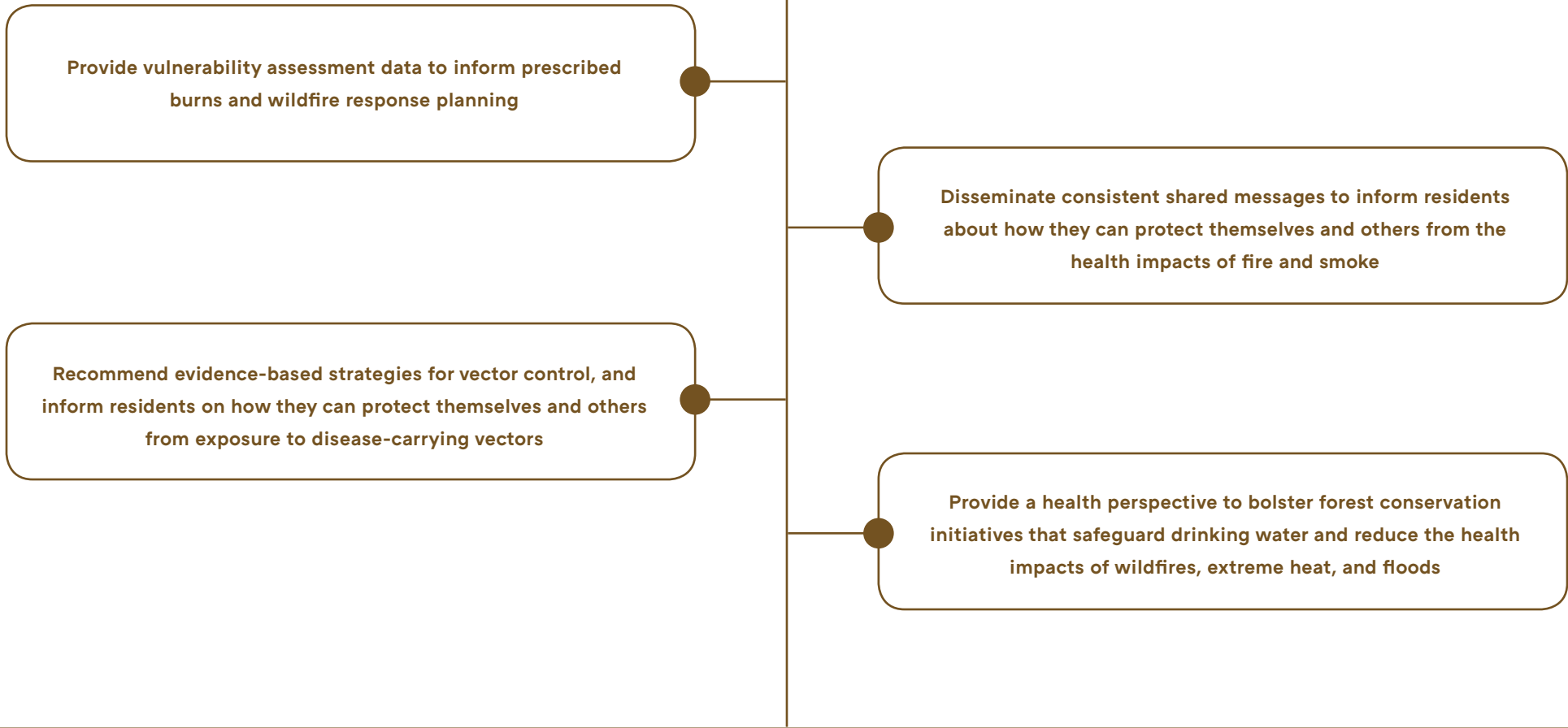


Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

# Opportunities for Collaborating with this Sector:



Agriculture



Emergency Response & Disaster Preparedness



Energy & Utilities



Healthcare



Meteorology & Climatology



Sustainability & Green Design



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Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry

 **Talking Points** Here's language you can use to initiate collaboration with this sector. Customize to your community as needed.

**1 Wildfires and prescribed burns**

Changing weather patterns are increasing the frequency and severity of wildfires, while rising global temperatures are creating more problems with air quality. Both fire and smoke can have significant health impacts on surrounding communities.

Health departments can work with wildland management to identify vulnerable populations and help them protect their health.

**Here's how we can help:** We can provide data on who is most vulnerable and where they live, help you develop warning systems to inform residents, and provide effective messages on how residents can protect themselves and others from the health risks of fire and smoke.

**2 Diseases from insects, ticks, and rodents**

Changing weather patterns are increasing the range and season for disease-carrying mosquitoes, ticks, rodents, and other carriers.

Health departments can work with wildland management to help reduce exposure for people who live near or visit wildland areas.

**Here's how we can help:** We can share evidence-based strategies for vector control, and help wildland management create educational materials that can be placed at popular outdoor recreation areas and other key locations.

**3 Wildland and forest conservation**

Changing weather patterns mean healthy wildlands and forests are more important than ever for the health of our community. As average temperatures rise and extreme weather becomes more common, our wildlands and forests protect drinking water sources, help cool cities, and provide a protective buffer for flooding.

Health departments can help wildland management and forestry garner support for conservation initiatives.

**Here's how we can help:** We can provide a public health perspective and health data that highlights the important role that wildland and forest conservation plays in safeguarding water sources, preventing heat-related illness, and protecting against urban flooding.

**Who to Collaborate With in This Sector:**

- State and regional forest service agencies
- Local chapters of national wildland management offices
- Wildland firefighting agencies
- State and local park services
- Nature conservancies



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Water Utilities, Sewer, & Watershed Management



Wildland Management & Forestry





**Centers for Disease  
Control and Prevention**  
National Center for  
Environmental Health