

# Activity 1: Climate Impacts at the Local Level

## Climate Health Adaptation Planning in Michigan

### Instructions

Work with your table to answer the following questions. In the sidebar, jot down the key themes of your group discussion.

1. What climate impacts have you seen in your community? Has there been an impact to public health?

Incremental loss of beach because of raising levels.

2. Has your community had meaningful conversations about climate change? Are these issues difficult to bring up in your community? Why or why not?

I'm not sure, I'm not working in my community.



Your Key Themes:



Flooding in the Grand River (below), 2013.



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Frost Damage  
to fruit & crops  
Ice storm damage  
lake levels fluctuation

Invasive Species  
impact to water  
bodies

- Colder spring
- Longer winter
- Shorter crop production

Higher wind

Plant damage

Species loss  
of diversification

2. Has your community had meaningful conversations about climate change? Are these issues difficult to bring up in your community? Why or why not?

St. Joseph recent  
Master Plan -  
HAA & Lof M  
presentation  
Resiliency  
Climate change

↓  
People are  
skeptical  
Don't want to  
believe it.

or don't know  
how to fix it -  
or when lots of  
snow & cold -  
don't believe  
Global warming



Your Key Themes:



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Not Really A Topic  
WE HAVE DISCUSSED  
IN NILES

BUFFER AREAS FOR RUN OFF  
BEACH EROSION  
FLOOD PLAIN  
CROP DAMAGE - FLOODS

STANDING WATER HARBOURS  
MOSQUITOS

COOLING CENTERS ↗



Your Key Themes:



Flooding in the Grand River (below), 2013.





# Activity 2: Using Scenarios to Develop Solutions

## Climate Health Adaptation Planning in Michigan

### A: EXTREME HEAT SCENARIO

The year is 2050. Average air temperatures in your Michigan community have risen approximately 5 degrees F. It's early August and 30 days have already exceeded 90 degrees this year – 11 of those occurred consecutively, culminating in a county-wide heat emergency. The past two days have climbed above 100 degrees. Nighttime cooling has diminished, with evening lows in the mid-80s, making it very difficult for residents to cool down. A number of residents have been hospitalized due to heatstroke and heat exhaustion.

Warmer temperatures have increased electricity demand for cooling and are causing a significant financial burden on families and businesses. Coupled with the heat, a partial power outage has knocked out air conditioning systems, putting the county's most vulnerable residents, from the elderly to the young, at risk. Unfortunately, many of the most vulnerable populations do not live or work in air-conditioned environments.



### B: HEAVY RAIN AND FLOODING SCENARIO

It is the year 2050 and average annual precipitation in your Michigan community has increased by 3 inches, with the majority of the increase concentrated in the spring and fall. Twenty-five year storms now occur on average every other year, exceeding the capacity of storm sewer infrastructure and allowing polluted runoff into nearby rivers and lakes.

This February, an early thaw due to unusually warm weather was compounded by a heavy precipitation event, leading to urban flooding. Ten inches of rain fell, 5 of which came in the first six hours. Runoff resulting from this intense rainfall, compounded by heavy snow-pack melt and frozen soils, has flooded areas of the community that have not been flooded for decades.

So far, your county has incurred \$60 million in road and bridge damage alone and another \$6 million in property damages. Nearly 500 homes and over 20 businesses were damaged by floodwaters. There have also been reports of cars stuck in flooded underpasses and businesses having to pump water out of their stores. Much of your community is without power due to the wind and lightning impacts connected with the severe storm system that passed through the area. The majority of the 80,000 electricity customers lost power.



### C: SEVERE DROUGHT AND WILDFIRE SCENARIO

The year is 2050 and recent droughts have been longer and more severe than in the past. This summer's drought has resulted in a decline of water quality in lakes and streams and increases in insect infestations and plant disease, stressing forests and native species. Droughts as well as invasive species have increased the risk and prevalence of wildfires in the region. Over 90 percent of your rural county is forested. With longer wildfire seasons, the existing firefighting capacity is being stressed.

It is April and a large wildfire is ripping through the community. Three weeks in, the wildfire has already burned 25,000 acres, destroying 70 homes and multiple power lines, with total damages estimated at almost \$50 million. All county fire departments have responded, as well as fire departments from neighboring counties and MDNR.

Required evacuation is in effect for portions of several townships. Unfortunately there is only one active siren in the county, but broadcasts have also been made over television and radio. County wide, the particulate matter due to smoke is of particular concern for residents with pre-existing health conditions.



### D: WINTER STORM SCENARIO

It's March 2050 and the average number of days below freezing has declined steadily. However, the severity and damage resulting from winter storms has increased. Reduced lake ice coverage and lake warming has resulted in more lake-effect snow, ice and sleet for your Michigan community.

Eight of the past 10 winters have seen severe winter storms, resulting in economic disruptions, power outages, high costs of cleanup, and business disruption. Primary roads, including major arterials, are in poor condition due to an increase in freeze-thaw events. Some local roads are even impassable.

In the past week, an ice storm hit your community, downing tree limbs and power lines, blocking roads, and causing widespread power outages. Approximately 1,000 homes and 40 businesses sustained damage or are without power, with losses estimated at nearly \$1 million. A nearby nursing home has been using backup power now for 18 hours and is without running water.



*Note: Scenarios used in this exercise were developed based on GLISA regional climate summaries and historic severe weather events in Michigan.*

# Activity 2: Using Scenarios to Develop Solutions

## Climate Health Adaptation Planning in Michigan

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The **GOAL** of this exercise is to develop solutions to a series of potential climate future scenarios, which include (a) an Extreme Heat Scenario, (b) a Heavy Rain and Flooding Scenario, (c) a Drought and Wildfire Scenario, and (d) a Winter Storm Scenario. As a group, please discuss short-term and long-term resilience solutions as they relate to your scenario.

### Discussion Questions

**1.) Identify short-term concerns and solutions. Please consider the following:**

**1a) What are the most immediate needs to address?**

- What are the primary public health concerns?
- Who are the most vulnerable populations?
- Is there critical infrastructure at risk?

hypothermia / freezing  
access to food  
medical / emergency services

young children  
elderly

travel issues  
-accidents

**1b) Are there overlapping areas of responsibility? How can resources, personnel, and communications be maximized to avoid duplication of services and maximize their effectiveness?**

neighborhood associations  
meals on wheel  
community nurses

**2. Identify strategies for increasing resilience and long-term recovery. Please consider the following:**

**2a) What key infrastructure investments are necessary to reduce vulnerabilities?**

investing in technology  
- tires reused in  
road infrastructure

**2b) What community initiatives are already addressing these types of issues?**

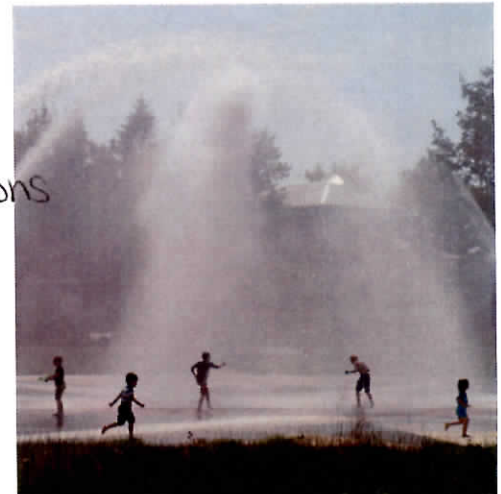
- How can these efforts be expanded?
- Who else should be included?

love Inc.  
ministries  
community groups

**2c) Are there opportunities for new efforts? Consider a range of options, such as natural resources, economic impacts, health, energy, and infrastructure opportunities.**

**2d) How can our hazard mitigation planning and land use planning be better integrated?**

density - working on  
a regional level



### 3. Report Out!

Select one team member to:

- Read your group's scenario.
- Quickly summarize key strategies for increasing resilience and long-term recovery.
- List the top 3-5 projects based on your group's prioritization.



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So far, your county has incurred \$60 million in road and bridge damage alone and another \$6 million in property damages. Nearly 500 homes and over 20 businesses were damaged by floodwaters. There have also been reports of cars stuck in flooded underpasses and businesses having to pump water out of their stores. Much of your community is without power due to the wind and lightning impacts connected with the severe storm system that passed through the area. The majority of the 80,000 electricity customers lost power.



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The year is 2050 and recent droughts have been longer and more severe than in the past. This summer's drought has resulted in a decline of water quality in lakes and streams and increases in insect infestations and plant disease, stressing forests and native species. Droughts as well as invasive species have increased the risk and prevalence of wildfires in the region. Over 90 percent of your rural county is forested. With longer wildfire seasons, the existing firefighting capacity is being stressed.

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### Discussion Questions

*WINTER STORM*

1.) Identify short-term concerns and solutions. Please consider the following:

1a) What are the most immediate needs to address?

- What are the primary public health concerns?
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- Is there critical infrastructure at risk?

*FROSTBITE, FREEZING  
ASTHMA, ACCESS TO FOOD  
ELDERLY, POOR, DISABLED  
HANDICAP*

*UTILITIES POWER, EMERGENCY PERSONNEL*

1b) Are there overlapping areas of responsibility? How can resources, personnel, and communications be maximized to avoid duplication of services and maximize their effectiveness?

*LOCAL EMERGENCY PREPAREDNESS  
PLANS  
POWER CO'S  
RED CROSS*

2. Identify strategies for increasing resilience and long-term recovery. Please consider the following:

2a) What key infrastructure investments are necessary to reduce vulnerabilities?

*INCREASE UNDERGROUND  
UTILITIES  
BACKUP POWER SOURCES*

2b) What community initiatives are already addressing these types of issues?

- How can these efforts be expanded?
- Who else should be included?

*EMERGENCY PREPAREDNESS PLAN  
ADJACENT COMM. PLANS FOR HELP  
RED CROSS*

2c) Are there opportunities for new efforts? Consider a range of options, such as natural resources, economic impacts, health, energy, and infrastructure opportunities.

*BURY UTILITIES*

2d) How can our hazard mitigation planning and land use planning be better integrated?

*WORK WITH ADJOINING  
COMMUNITIES*



### 3. Report Out!

Select one team member to:

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Power outages -  
 Standby H2O, rehydr.  
 lack of food storage  
 heat capacity  
 low sewer  
 road flood - emerg. service  
 problems (alone)  
 elderly isolated or  
 lower income  
 definitely - emerg  
 services / repair equipment  
 road closure etc.  
 access to water (potable)

**1b) Are there overlapping areas of responsibility? How can resources, personnel, and communications be maximized to avoid duplication of services and maximize their effectiveness?**

Yes - hazard mitigation plan protocol. Working together, prioritized effective communication plans are well known

**2. Identify strategies for increasing resilience and long-term recovery. Please consider the following:**

**2a) What key infrastructure investments are necessary to reduce vulnerabilities?**

relocation of utilities to below grade  
 Buffer zones - water absorption deep water wells

**2b) What community initiatives are already addressing these types of issues?**

- How can these efforts be expanded?
- Who else should be included?

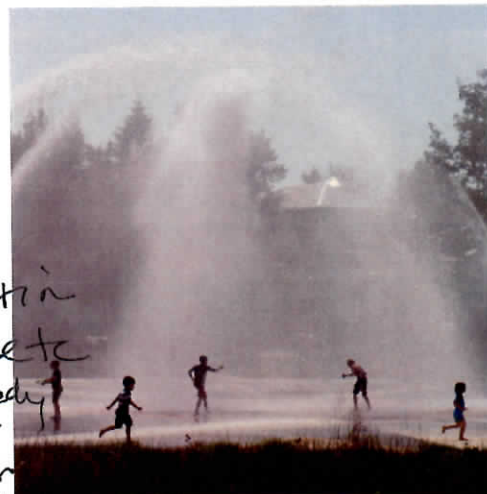
All counties req. to have haz. mitigation plan. then supported by local communities. Make sure infrastructure can support the add. flow.

**2c) Are there opportunities for new efforts? Consider a range of options, such as natural resources, economic impacts, health, energy, and infrastructure opportunities.**

Amount of storage req. ↓ non perm. open. Better site management Possible alt. energy or backup

**2d) How can our hazard mitigation planning and land use planning be better integrated?**

Making sure that community aware of plan - land use planning wetland preservation etc.



**3. Report Out!**  
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- What are the primary public health concerns?
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- Is there critical infrastructure at risk?

Access to food, hospital, schools, ect. no diploma over 18, children are vulnerable populations. roads road cleaning equipment can be at risk.

**1b) Are there overlapping areas of responsibility? How can resources, personnel, and communications be maximized to avoid duplication of services and maximize their effectiveness?**

the city, neighborhood sources. means on wheels.

**2. Identify strategies for increasing resilience and long-term recovery. Please consider the following:**

**2a) What key infrastructure investments are necessary to reduce vulnerabilities?**

reliable equipment, sustainable practices, recycle old tires into the roads for durability.

**2b) What community initiatives are already addressing these types of issues?**

- How can these efforts be expanded?
- Who else should be included?

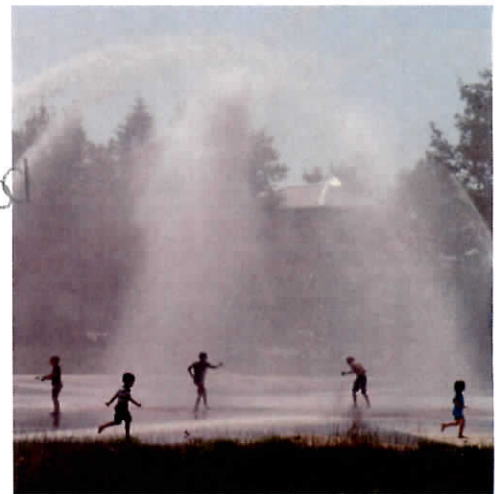
not quite sure. parking services could include new efforts.

**2c) Are there opportunities for new efforts? Consider a range of options, such as natural resources, economic impacts, health, energy, and infrastructure opportunities.**

yes! sustainable energy and other technologies will help in extreme scenarios.

**2d) How can our hazard mitigation planning and land use planning be better integrated?**

to better anticipate climate change (as best as possible)



### 3. Report Out!

Select one team member to:

- Read your group's scenario.
- Quickly summarize key strategies for increasing resilience and long-term recovery.
- List the top 3-5 projects based on your group's prioritization.



# Activity 3: Guidance on the MI-CHAP Adaptation Plan

## Climate Health Adaptation Planning in Michigan

The MI-CHAP Strategic Plan was developed in 2010 to prepare the Michigan Public Health System to address the health consequences of climate change in a coordinated manner. The System includes the state and local health departments, and parts of government, academia, health care, professional organizations, non-profits and others whose work relates to public health and/or the environment. This planning effort built a statewide vision with a diverse, large group representing multiple perspectives and expertise. The original Plan's goals and priorities remain relevant. However, the 2016-2021 Plan Update will specify which health outcomes, adaptations, and vulnerable people and places will be the focus of Program activities over this time period.

### The Plan Goals are:

Goal #1: Climate change will be recognized as a public health issue and integrated into public health practice.

Goal #2: Public health agencies will have the resources, tools and activities for responding to climate change impacts integrated/included in their existing programs.

Goal #3: Vulnerable populations and their needs will be explicitly considered in programs and policies addressing health impacts associated with climate change.

### The Priority Health Outcomes of concern are:

- 1) Heat-related illness (and mortality)
- 2) Respiratory disease exacerbation (esp. asthma) related to poor air quality and increased pollen
- 3) Water-borne diseases (esp. related to rain events and runoff)
- 4) Vector-borne diseases (Lyme and West Nile)
- 5) Carbon Monoxide poisoning and other injuries related to extreme weather events



The **MDHHS Climate and Health Program** has monitored the magnitude and distribution of these outcomes in Michigan, identified key vulnerabilities, and characterized the current and projected changes in climate across Michigan. See *Michigan Climate and Health Report* for details (Cameron et. Al, 2015). The Program constructed maps to guide its work with Michigan communities to understand the factors influencing their risk. These maps indicate where we may find the people and places that are most vulnerable, and can help identify risk factors that may be amenable to intervention. The Program has reviewed the literature to determine which interventions have been shown to be effective.

### Why we need your input:

Over the next year, the Program will identify and design activities meant to reduce the top three priority health outcomes in vulnerable Michigan communities. These intervention activities will be carried out over the next five years, and evaluated for their effectiveness.

These activities can only succeed if they make sense and are acceptable to the community. We need your local knowledge and expertise to advise us as we choose the activities we will commit to for the next five years. We also need your help in identifying partners who would be willing to work with us to implement the interventions in your communities.

During the activity you will: 1. Review handouts summarizing the health outcomes of most concern, potential vulnerabilities, and examples of interventions. 2. Complete an exercise to identify which interventions are most needed, why they are important, who should be involved, and how they might be implemented.



The MI-CHAP strategic plan and additional Michigan related climate and health information can be found at [www.michigan.gov/climateandhealth](http://www.michigan.gov/climateandhealth)

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### Proposed Adaptation Feedback Activity:

MICHAP needs your input to help determine their activities for the next five years. They must choose and implement interventions to reduce the harm to public health that can occur from the following climate-related environmental conditions: heat waves, poor air quality, and poor water quality.

Your working group will be assigned one of the health outcomes mentioned above to focus on for this exercise. **Choose one person to record your groups discussion in the spaces provided.**

For your group's Health Outcome, **consider the following and record the response from the different jurisdictions represented in your group (additional space on health outcome sheet):**

1. *Is there a need for intervention in your community related to your assigned health outcome? Explain (Consider what vulnerabilities might exist or if there are any currently ongoing activities related to those health outcomes)*

I am not working in my community, I am not able to answer the activity.

2. *If there is a need, which interventions would you support? (Indicate whether the intervention would be educational, emergency response, landscape changes, or policy **and** any specific intervention examples that you can think of related to that category)*

I would (as well as my community) would probably support emergency response, landscape changes. Education would be helpful, and all of this combined would help with new policies.

3. *Are there partners willing and able to support the intervention(s)? Please list.*

4. *Are the selected interventions feasible? (Consider political, resource, mandate, or technical capacity realities.)*

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 1) Outcome: Heat illness

##### Background:

Extreme heat causes more deaths in the US than any other extreme weather event. Warmer temperatures and heat waves can lead to heat stress illness, especially in persons whose bodies are already impaired by other health conditions.

Vulnerable People: elderly, low income, with chronic diseases; outdoor workers

Vulnerable Places: urban areas with impervious surfaces, lack of trees or green space, older housing stock, low air conditioner prevalence

Key Partners: Aging services; Emergency planners; Weather media; Community planners

##### Examples of Potential Interventions:

a) *Educational:* messaging on heat stress recognition and personal protective behaviors; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

b) *Emergency Response:* monitoring Emergency Departments for increasing cases, to trigger health alerts; opening and promoting the use of cooling centers; organizing neighborhood level warnings, neighbor check-ins, or transportation to cooling centers

c) *Landscape Actions:* reducing urban heat island by increasing tree canopy and green spaces

d) *Policy:* regulations or ordinances to guide infrastructure changes that reduce ambient and indoor heat, such as building codes requiring reflective roofs (zoning ordinance, building codes, health codes, etc.); include green infrastructure requirements to increase tree canopy, green space, other heat island-reducing strategies in master, recreation, or transportation plans

##### Additional Notes:

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 2) Outcome: Respiratory Conditions

##### Background:

Particulate and ozone emissions can contribute to poor air quality that makes breathing more difficult, especially for people with asthma or other conditions. Pollen from ragweed and other plants can also trigger breathing problems in allergic individuals. Increasing temperatures are predicted to make both emissions and pollen concentrations worse.

Vulnerable People: young children, elderly, low income, those with cardiorespiratory diseases especially asthma

Vulnerable Places: urban areas, high ozone and particulate areas; areas with high ragweed density or heavy pollen production; high traffic density areas

Key partners: Asthma Program and Coalitions; Weather media; Community Planners; Local Public Health Departments

##### Examples of Potential Interventions:

a) *Educational:* messaging on protective personal behaviors during poor air quality days; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

b) *Emergency Response:* Emergency Departments and Air Quality monitoring to trigger health alerts, organizing neighborhood level warnings, neighbor check-ins, or transportation to health care; school, athletic and daycare policies restricting outdoor activities during Air Quality Alert days (or should this be under Policy ?

c) *Landscape Actions:* Pollen/ragweed reduction by regular mowing of public areas; promotion of use of low-allergenic tree and ornamental plantings in public spaces (could these also be local policies)?

c) *Policy:* Clean energy initiatives, Complete Streets (reduction in vehicle traffic emissions by promoting non-motorized transportation); altering fleet management (reducing vehicle use, filling gas tanks during Alerts)

##### Additional Notes:



## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 3) Outcome: Water-borne diseases

##### Background:

Waterborne diseases (WBD) include illnesses caused by pathogens in untreated sewage such as giardiasis, cryptosporidiosis, salmonellosis, etc. Exposure can occur by drinking contaminated water or by exposure via swimming. Also included are Legionellosis, caused by inhalation of mists from contaminated water; and toxicosis from ingesting water containing cyanotoxins produced by Harmful Algal Blooms.

Vulnerable People: very young, elderly, low income, with chronic diseases

Vulnerable Places: high private well & septic use; flood plain; old urban areas w. combined and/or inadequate sewer systems; high livestock density nearby

Key partners: Local Health Department Environmental Health Officers and sanitarians; Watershed Councils; Environmental groups; Community Planners

##### Examples of Potential Interventions:

a) *Educational:* messaging to promote individual well testing, wellhead protection and septic system maintenance; avoidance of Harmful Algal Blooms; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

b) *Emergency Response:* Monitoring extreme rain events and flooding, Combined Sewer Overflows, and Harmful Algal Blooms to trigger health alerts; monitoring of cases of WBD reported to local health departments

c) *Landscape actions:* Building rain gardens and bioswales to reduce runoff; install vegetation buffers around agricultural, recreational (golf courses), or residences to reduce runoff

d) *Policy:* Requiring regular inspection/testing of private wells and septic systems; connecting residential areas to community drinking water systems and storm sewer systems; codify green infrastructure (zoning ordinance, building codes, health codes, etc.); include green infrastructure requirements run-off reducing strategies in master, recreation, or transportation plans.

##### Additional Notes:

# Activity 3: Guidance on the MI-CHAP Adaptation Plan

## Climate Health Adaptation Planning in Michigan

The MI-CHAP Strategic Plan was developed in 2010 to prepare the Michigan Public Health System to address the health consequences of climate change in a coordinated manner. The System includes the state and local health departments, and parts of government, academia, health care, professional organizations, non-profits and others whose work relates to public health and/or the environment. This planning effort built a statewide vision with a diverse, large group representing multiple perspectives and expertise. The original Plan's goals and priorities remain relevant. However, the 2016-2021 Plan Update will specify which health outcomes, adaptations, and vulnerable people and places will be the focus of Program activities over this time period.

### The Plan Goals are:

Goal #1: Climate change will be recognized as a public health issue and integrated into public health practice.

Goal #2: Public health agencies will have the resources, tools and activities for responding to climate change impacts integrated/included in their existing programs.

Goal #3: Vulnerable populations and their needs will be explicitly considered in programs and policies addressing health impacts associated with climate change.

### The Priority Health Outcomes of concern are:

- 1) Heat-related illness (and mortality)
- 2) Respiratory disease exacerbation (esp. asthma) related to poor air quality and increased pollen
- 3) Water-borne diseases (esp. related to rain events and runoff)
- 4) Vector-borne diseases (Lyme and West Nile)
- 5) Carbon Monoxide poisoning and other injuries related to extreme weather events



The **MDHHS Climate and Health Program** has monitored the magnitude and distribution of these outcomes in Michigan, identified key vulnerabilities, and characterized the current and projected changes in climate across Michigan. See *Michigan Climate and Health Report* for details (Cameron et. Al, 2015). The Program constructed maps to guide its work with Michigan communities to understand the factors influencing their risk. These maps indicate where we may find the people and places that are most vulnerable, and can help identify risk factors that may be amenable to intervention. The Program has reviewed the literature to determine which interventions have been shown to be effective.

### Why we need your input:

Over the next year, the Program will identify and design activities meant to reduce the top three priority health outcomes in vulnerable Michigan communities. These intervention activities will be carried out over the next five years, and evaluated for their effectiveness.

These activities can only succeed if they make sense and are acceptable to the community. We need your local knowledge and expertise to advise us as we choose the activities we will commit to for the next five years. We also need your help in identifying partners who would be willing to work with us to implement the interventions in your communities.

During the activity you will: 1. Review handouts summarizing the health outcomes of most concern, potential vulnerabilities, and examples of interventions. 2. Complete an exercise to identify which interventions are most needed, why they are important, who should be involved, and how they might be implemented.



The MI-CHAP strategic plan and additional Michigan related climate and health information can be found at [www.michigan.gov/climateandhealth](http://www.michigan.gov/climateandhealth)

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### Proposed Adaptation Feedback Activity:

MICHAP needs your input to help determine their activities for the next five years. They must choose and implement interventions to reduce the harm to public health that can occur from the following climate-related environmental conditions: heat waves, poor air quality, and poor water quality.

Your working group will be assigned one of the health outcomes mentioned above to focus on for this exercise. **Choose one person to record your groups discussion in the spaces provided.** *Water-borne diseases*

For your group's Health Outcome, **consider the following and record the response from the different jurisdictions represented in your group (additional space on health outcome sheet):**

1. *Is there a need for intervention in your community related to your assigned health outcome? Explain (Consider what vulnerabilities might exist or if there are any currently ongoing activities related to those health outcomes)*

*Yes - for exposure to swimming & other water related uses that come in contact w/ e. coli.  
Education of property occupants to how to maintain a water and septic system. Proper testing of systems 3-5 year max.*
2. *If there is a need, which interventions would you support? (Indicate whether the intervention would be educational, emergency response, landscape changes, or policy and any specific intervention examples that you can think of related to that category)*

*Sup. sewer systems for urban areas and monitoring of well & sanitary private residential systems.  
"Point of sale" inspection - County wide  
sewer separation systems Fed/ State w/ additional local restrictions*
3. *Are there partners willing and able to support the intervention(s)? Please list.*

*Local municipalities  
County Health ? Possible Realtor/Inspection  
Mandatory measures*
4. *Are the selected interventions feasible? (Consider political, resource, mandate, or technical capacity realities.)*

*Yes definitely  
Address it as a way to promote "Pure Michigan"  
Possible funding measures to help assist low income residents in obtaining improved water systems especially in rural areas/ communities  
Work together with realtors, health officials, elected officials, and community groups to work*

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 1) Outcome: Heat illness

##### Background:

Extreme heat causes more deaths in the US than any other extreme weather event. Warmer temperatures and heat waves can lead to heat stress illness, especially in persons whose bodies are already impaired by other health conditions.

Vulnerable People: elderly, low income, with chronic diseases; outdoor workers

Vulnerable Places: urban areas with impervious surfaces, lack of trees or green space, older housing stock, low air conditioner prevalence

Key Partners: Aging services; Emergency planners; Weather media; Community planners

##### Examples of Potential Interventions:

- a) *Educational:* messaging on heat stress recognition and personal protective behaviors; factsheets and handouts; trainings for public, neighborhood leaders, or local officials
- b) *Emergency Response:* monitoring Emergency Departments for increasing cases, to trigger health alerts; opening and promoting the use of cooling centers; organizing neighborhood level warnings, neighbor check-ins, or transportation to cooling centers
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#### Additional Notes:

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 2) Outcome: Respiratory Conditions

##### Background:

Particulate and ozone emissions can contribute to poor air quality that makes breathing more difficult, especially for people with asthma or other conditions. Pollen from ragweed and other plants can also trigger breathing problems in allergic individuals. Increasing temperatures are predicted to make both emissions and pollen concentrations worse.

Vulnerable People: young children, elderly, low income, those with cardiorespiratory diseases especially asthma

Vulnerable Places: urban areas, high ozone and particulate areas; areas with high ragweed density or heavy pollen production; high traffic density areas

Key partners: Asthma Program and Coalitions; Weather media; Community Planners; Local Public Health Departments

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##### Additional Notes:

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 3) Outcome: Water-borne diseases

##### Background:

Waterborne diseases (WBD) include illnesses caused by pathogens in untreated sewage such as giardiasis, cryptosporidiosis, salmonellosis, etc. Exposure can occur by drinking contaminated water or by exposure via swimming. Also included are Legionellosis, caused by inhalation of mists from contaminated water; and toxicosis from ingesting water containing cyanotoxins produced by Harmful Algal Blooms.

Vulnerable People: very young, elderly, low income, with chronic diseases

Vulnerable Places: high private well & septic use; flood plain; old urban areas w. combined and/or inadequate sewer systems; high livestock density nearby

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## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

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#### The Priority Health Outcomes of concern are:

- 1) Heat-related illness (and mortality)
- 2) Respiratory disease exacerbation (esp. asthma) related to poor air quality and increased pollen
- 3) Water-borne diseases (esp. related to rain events and runoff)
- 4) Vector-borne diseases (Lyme and West Nile)
- 5) Carbon Monoxide poisoning and other injuries related to extreme weather events



The **MDHHS Climate and Health Program** has monitored the magnitude and distribution of these outcomes in Michigan, identified key vulnerabilities, and characterized the current and projected changes in climate across Michigan. See *Michigan Climate and Health Report* for details (Cameron et. Al, 2015). The Program constructed maps to guide its work with Michigan communities to understand the factors influencing their risk. These maps indicate where we may find the people and places that are most vulnerable, and can help identify risk factors that may be amenable to intervention. The Program has reviewed the literature to determine which interventions have been shown to be effective.

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## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### Proposed Adaptation Feedback Activity:

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Your working group will be assigned one of the health outcomes mentioned above to focus on for this exercise. **Choose one person to record your groups discussion in the spaces provided.**

For your group's Health Outcome, **consider the following and record the response from the different jurisdictions represented in your group (additional space on health outcome sheet):**

1. *Is there a need for intervention in your community related to your assigned health outcome? Explain (Consider what vulnerabilities might exist or if there are any currently ongoing activities related to those health outcomes)*
2. *If there is a need, which interventions would you support? (Indicate whether the intervention would be educational, emergency response, landscape changes, or policy **and** any specific intervention examples that you can think of related to that category)*
3. *Are there partners willing and able to support the intervention(s)? Please list.*
4. *Are the selected interventions feasible? (Consider political, resource, mandate, or technical capacity realities.)*



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## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 1) Outcome: Heat illness

##### Background:

Extreme heat causes more deaths in the US than any other extreme weather event. Warmer temperatures and heat waves can lead to heat stress illness, especially in persons whose bodies are already impaired by other health conditions.

Vulnerable People: elderly, low income, with chronic diseases; outdoor workers

Vulnerable Places: urban areas with impervious surfaces, lack of trees or green space, older housing stock, low air conditioner prevalence

Key Partners: Aging services; Emergency planners; Weather media; Community planners

##### Examples of Potential Interventions:

a) *Educational:* messaging on heat stress recognition and personal protective behaviors; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

b) *Emergency Response:* monitoring Emergency Departments for increasing cases, to trigger health alerts; opening and promoting the use of cooling centers; organizing neighborhood level warnings, neighbor check-ins, or transportation to cooling centers

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d) *Policy:* regulations or ordinances to guide infrastructure changes that reduce ambient and indoor heat, such as building codes requiring reflective roofs (zoning ordinance, building codes, health codes, etc.); include green infrastructure requirements to increase tree canopy, green space, other heat island-reducing strategies in master, recreation, or transportation plans

##### Additional Notes:

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 2) Outcome: Respiratory Conditions

##### Background:

Particulate and ozone emissions can contribute to poor air quality that makes breathing more difficult, especially for people with asthma or other conditions. Pollen from ragweed and other plants can also trigger breathing problems in allergic individuals. Increasing temperatures are predicted to make both emissions and pollen concentrations worse.

Vulnerable People: young children, elderly, low income, those with cardiorespiratory diseases especially asthma

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Key partners: Asthma Program and Coalitions; Weather media; Community Planners; Local Public Health Departments

##### Examples of Potential Interventions:

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##### Additional Notes:

I would love to see active transportation ~~initiatives~~  
or grants available for pilot projects. initiatives x

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 3) Outcome: Water-borne diseases

##### Background:

Waterborne diseases (WBD) include illnesses caused by pathogens in untreated sewage such as giardiasis, cryptosporidiosis, salmonellosis, etc. Exposure can occur by drinking contaminated water or by exposure via swimming. Also included are Legionellosis, caused by inhalation of mists from contaminated water; and toxicosis from ingesting water containing cyanotoxins produced by Harmful Algal Blooms.

Vulnerable People: very young, elderly, low income, with chronic diseases

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# Activity 3: Guidance on the MI-CHAP Adaptation Plan

## Climate Health Adaptation Planning in Michigan

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## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

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For your group's Health Outcome, **consider the following and record the response from the different jurisdictions represented in your group (additional space on health outcome sheet):**

1. *Is there a need for intervention in your community related to your assigned health outcome? Explain (Consider what vulnerabilities might exist or if there are any currently ongoing activities related to those health outcomes)*

1. Flooding of combined sewers - General H<sub>2</sub>O Contamination
2. Septic Disposal Systems - prevent ~~invasive~~ invasive species
3. PWDS Contamination

2. *If there is a need, which interventions would you support? (Indicate whether the intervention would be educational, emergency response, landscape changes, or policy **and** any specific intervention examples that you can think of related to that category)*

1. Education - septic system life / Proper disposal of haz. substances

3. *Are there partners willing and able to support the intervention(s)? Please list.*

- Conservation District
- Churches
- Dept. Comm. Health
- Realtors / Developers

4. *Are the selected interventions feasible? (Consider political, resource, mandate, or technical capacity realities.)*

Yes

↳ Education is feasible

↳ to put into action costs \$

# Activity 3: Guidance on the MI-CHAP Adaptation Plan

## Climate Health Adaptation Planning in Michigan

### 1) Outcome: Heat illness

#### Background:

Extreme heat causes more deaths in the US than any other extreme weather event. Warmer temperatures and heat waves can lead to heat stress illness, especially in persons whose bodies are already impaired by other health conditions.

Vulnerable People: elderly, low income, with chronic diseases; outdoor workers

Vulnerable Places: urban areas with impervious surfaces, lack of trees or green space, older housing stock, low air conditioner prevalence

Key Partners: Aging services; Emergency planners; Weather media; Community planners

#### Examples of Potential Interventions:

a) *Educational:* messaging on heat stress recognition and personal protective behaviors; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

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#### Additional Notes:

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 2) Outcome: Respiratory Conditions

##### Background:

Particulate and ozone emissions can contribute to poor air quality that makes breathing more difficult, especially for people with asthma or other conditions. Pollen from ragweed and other plants can also trigger breathing problems in allergic individuals. Increasing temperatures are predicted to make both emissions and pollen concentrations worse.

Vulnerable People: young children, elderly, low income, those with cardiorespiratory diseases especially asthma

Vulnerable Places: urban areas, high ozone and particulate areas; areas with high ragweed density or heavy pollen production; high traffic density areas

Key partners: Asthma Program and Coalitions; Weather media; Community Planners; Local Public Health Departments

##### Examples of Potential Interventions:

a) *Educational:* messaging on protective personal behaviors during poor air quality days; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

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##### Additional Notes:

## Activity 3: Guidance on the MI-CHAP Adaptation Plan

### Climate Health Adaptation Planning in Michigan

#### 3) Outcome: Water-borne diseases

##### Background:

Waterborne diseases (WBD) include illnesses caused by pathogens in untreated sewage such as giardiasis, cryptosporidiosis, salmonellosis, etc. Exposure can occur by drinking contaminated water or by exposure via swimming. Also included are Legionellosis, caused by inhalation of mists from contaminated water; and toxicosis from ingesting water containing cyanotoxins produced by Harmful Algal Blooms.

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Key partners: Local Health Department Environmental Health Officers and sanitarians; Watershed Councils; Environmental groups; Community Planners

##### Examples of Potential Interventions:

a) *Educational:* messaging to promote individual well testing, wellhead protection and septic system maintenance; avoidance of Harmful Algal Blooms; factsheets and handouts; trainings for public, neighborhood leaders, or local officials

b) *Emergency Response:* Monitoring extreme rain events and flooding, Combined Sewer Overflows, and Harmful Algal Blooms to trigger health alerts; monitoring of cases of WBD reported to local health departments

c) *Landscape actions:* Building rain gardens and bioswales to reduce runoff; install vegetation buffers around agricultural, recreational (golf courses), or residences to reduce runoff

d) *Policy:* Requiring regular inspection/testing of private wells and septic systems; connecting residential areas to community drinking water systems and storm sewer systems; codify green infrastructure (zoning ordinance, building codes, health codes, etc.); include green infrastructure requirements run-off reducing strategies in master, recreation, or transportation plans.

##### Additional Notes:



Benton Harbor

# Please give us your feedback!

1. Describe your interest in the training:

- Planning Commissioner
- Community planner
- Student
- Local Official
- Public Health official
- Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?  Yes  No

3. What information was most useful to you?

I found all of this very helpful, I don't have much exposure to ~~these~~ issues surrounding the climate and how that should be informing decisions we will make moving forward w/ our master plan process & zoning plan etc.

4. How could we have made this training more effective?

I actually think additional time and further discussion would ~~improve~~ make the training even better.

5. How did you hear about this training? Planning Commission

# Please give us your feedback!

1. Describe your interest in the training:

Planning Commissioner

Community planner

Student

Local Official

Public Health official

Other (Please Describe): Environmental group

2. Did you gain any new information or ideas during the session?

Yes

No

3. What information was most useful to you?

*I received a lot of ideas for consideration in planning. I appreciate the links for further information.*

4. How could we have made this training more effective?

*I was impressed with how this training was presented and how interaction was stimulated.*

5. How did you hear about this training?

*Marcy Hamilton with SWMPC*

# Please give us your feedback!

1. Describe your interest in the training:

Planning Commissioner

Community planner

Student

Local Official

Public Health official

Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?

Yes  No

3. What information was most useful to you?

the written resources and examples were ~~so~~ ~~help~~ helpful  
for potential models for the community

4. How could we have made this training more effective?

5. How did you hear about this training? GUSU staff

# Please give us your feedback!

1. Describe your interest in the training:

- Planning Commissioner       Community planner       Student       Local Official  
 Public Health official       Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?       Yes       No

3. What information was most useful to you?

Ammo for discussing climate change

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4. How could we have made this training more effective?

Maybe 4 hrs. instead of 3

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5. How did you hear about this training? website

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# Please give us your feedback!

1. Describe your interest in the training:

Planning Commissioner

Community planner

Student

Local Official

Public Health official

Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?

Yes  No

3. What information was most useful to you?

- Good discussion learned about climate data & ways to engage the community:

4. How could we have made this training more effective?

5. How did you hear about this training?

Email

# Please give us your feedback!

1. Describe your interest in the training:

- Planning Commissioner       Community planner       Student       Local Official  
 Public Health official       Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?       Yes       No

3. What information was most useful to you?

*Sources of data, maps  
Generating mitigation ideas, partners  
hearing stories / talking to others  
THIS meeting was inspiring to me —*

4. How could we have made this training more effective?

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5. How did you hear about this training? *email*

# Please give us your feedback!

1. Describe your interest in the training:

- Planning Commissioner       Community planner       Student       Local Official  
 Public Health official       Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?       Yes       No

3. What information was most useful to you?

Talking with other Planning Commissioners from other townships

4. How could we have made this training more effective?

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5. How did you hear about this training? Citizen Planner News

*Paul Tarabala*

1. Describe your interest in the training:

- Planning Commissioner       Community planner       Student       Local Official  
 Public Health official       Other (Please Describe): \_\_\_\_\_

2. Did you gain any new information or ideas during the session?       Yes       No

3. What information was most useful to you?

CLIMATE TRENDS — LOOKING AT HEALTH ASPECT IN PLANNING

4. How could we have made this training more effective?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. How did you hear about this training? City C.D.P.



# Please give us your feedback!

1. Describe your interest in the training:

- Planning Commissioner       Community planner       Student       Local Official  
 Public Health official       Other (Please Describe): Michigan Citizen Planner

2. Did you gain any new information or ideas during the session?       Yes       No

3. What information was most useful to you?

Realizing how important the meshing of Planning & public Health are to best plan for to minimize health problems & climate impacts that affect health in the environment.

4. How could we have made this training more effective?

Training was excellent - especially enjoyed participating as a team with other group activities - very engaging discussions

5. How did you hear about this training? email for upcoming events/seminars