Section 07

Health and Safety

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Health and Safety

Why Health and Safety Are Important

There is a strong relationship between human health and environmental health. From the air we breathe to the water we drink, life here on Earth depends on the environment around us. This link between the environment and human health is a critical consideration of the impacts of climate change. As outlined in the City's Climate Risk and Vulnerability Assessment, changes in climate, such as higher average temperatures and increased storm frequency and intensity, can intensify public health stressors. These climate change impacts endanger public health and safety by affecting the air we breathe, the weather we experience, our food and water sources, and our interactions with the built and natural environments. As the climate continues to change, the risks to human health continue to grow.

The health of our environment affects our public health, and agencies should promote it as such. There is a direct relationship between climate action and community health because the health of our environment affects public health.

Vulnerable Populations

Climate change impacts the health of all community members, however, people within our communities are differently exposed to hazards and some are disproportionately affected by the risks of climate change. According to the National Climate Assessment, greater health risks related to climate impacts can be experienced by some in our communities including: children, older adults, low-income individuals, and some people of color. Some in these groups are disproportionately affected by extreme heat and weather events, and many have increased health and social vulnerability which decreases their access to resources that can help them avoid the risks of climate change.

According to the National Climate Assessment (https://nca2018.globalchange.gov/chapter/14/):

> Additional populations with increased health and social vulnerability typically have less access to information, resources, institutions, and other factors to prepare for and avoid the health risks of climate change. Some of these communities include poor people in high-income regions, minority groups, women, pregnant women, those experiencing discrimination, children under five, persons with physical and mental illness, persons with physical and cognitive disabilities, the homeless, those living alone, Indigenous people, people displaced because of weather and climate, the socially isolated, poorly planned communities, the disenfranchised, those with less access to healthcare, the uninsured and underinsured, those living in inadequate housing, and those with limited financial resources to rebound from disasters.

Climate Change Considerations

Climate Hazards

Climate stressors include increases in the frequency and intensity of poor air quality days, extreme high temperature events, heavy rainfalls, extended pollen seasons, changed distribution of disease carrying pests.

Opportunities

Strategies which improve community connectedness, mobility, community resilience through healthy lifestyles frequently coincide with climate mitigation measures such as improved pedestrian safety and low income home weatherization.

Health and Safety

Equity Considerations

- Some populations, including aging adults, children, persons with disabilities, economically stressed, non-English speakers, homeless persons, and workers employed in climate exposed jobs are particularly vulnerable to extreme weather, natural disasters, and the health, supply chain, and economic impacts of climate change. Many of these individuals also have limited access to the information, services, and resources needed to ensure resilience in the face of these impacts.
- Areas within the city with increased flood risk, air quality impacts, compromised tree canopy coverage, and older housing stock with insufficient air conditioning are vulnerable environments within our cities with heightened exposure to climate change risks and compromised capacity to adapt.
- Vulnerable populations are disproportionately represented within the vulnerable environments of our cities and frequently lack resources to improve the adaptive capacity of their surroundings.

Sector Goals

Sector goals are established to both support the City's Climate Action Plan in creating a climate resilient community and to reduce city-wide GHG emissions 25% below 2018 levels by 2030.

Sector goals related to GHG emissions reductions are designed to balance reduction across all sectors and achieve the overall emissions goals set forth for the community. The goals seek to strike a balance between achievability while also reaching -for improvement beyond business-as-usual.

As indicated in the introduction, the Climate Action Plan is intended to be a 10 year plan to be updated at the completion of that time. Consequently, the goals and strategies outlined in this section are intended to be achieved by 2030 unless otherwise noted.

Implementation of actions are anticipated to be initiated over 3 phases: phase 1 within 1-3 years, phase 2 within 2-5 years, and phase 3 within 4-8 years of CAP approval.

Goal HS 1
Educate, engage, and empower the public for climate health and safety.

Goal HS 2
Prepare Bloomington for climate risks and impacts.

Goal HS 3
Respond to climate risks and impacts.

Climate Risk Sensitivity

A "Climate Risk" is when the effects of climate change have the potential for negative consequences and outcomes for human health, systems, or communities. The most common way of evaluating the level of risk associated with climate impacts is to consider how sensitive a community is to an impact and how likely that impact is to occur. An approach for anticipating the sensitivity of a community to potential climate change impacts is to quantify and map the potentially vulnerable populations within the community.

Vulnerable Population Climate Impact Sensitivity

The Bloomington Climate Risk and Vulnerability Assessment report quantified the potentially vulnerable populations within Bloomington and identified the risks each population may have heightened sensitivities to (i.e. outdoor workers having a higher sensitivity to extreme heat and weather events). This enables an estimation of the total instances of potential vulnerability to each climate risk. It should be noted that it is possible for individuals to be members of more than one vulnerable population. For example, an individual may be both an adult over age 65 as well as an individual living below 200% of poverty level. Consequently, the “total instances of vulnerability” for each climate risk does not necessarily represent the numbers of vulnerable individuals. The number, however, does provide a representation of the proportion of total climate vulnerabilities within the population and enables an indication of comparative population sensitivity to each climate risk.

	Extreme Heat	Flooding	Air Quality	Vectorborne Disease	Food Insecurity	Water Quality Impacts	Waterborne Disease	Power Failure
children	3,945		3,945	3,945			3,945	3,945
seniors	9,597	9,597	9,597	9,597	9,597			9,597
disabled	9,726	9,726	9,726		9,726			9,726
Low Income Individuals	13,032	13,032	13,032	13,032	13,032	13,032	13,032	13,032
Low Income Families	6,256	6,256	6,256	6,256	6,256	6,256	6,256	6,256
People of Color	17,738	17,738	17,738	17,738	17,738		17,738	17,738
Limited English	5,284	5,284	5,284	5,284	5,284		5,284	5,284
At Risk Workers	5,548	5,548	5,548	5,548			5,548	
No Car	3,577	3,577	3,577			3,577	3,577	
Total by category	**74,704**	**70,759**	**74,704**	**61,401**	**61,634**	**22,866**	**55,381**	**65,579**
Percentage of Vuln pop	105%	99%	105%	86%	87%	32%	78%	92%
Rank by Vuln	**2**	**3**	**1**	6	**5**	11	7	**4**
Percentage of Total Pop	76%	72%	76%	62%	63%	23%	56%	67%

As indicated above, the highest number of potential vulnerable population instances in the community are low income individuals and families, people of color, individuals with disabilities, and seniors. The climate risks which the community may be particularly sensitive to are extreme heat and weather, air quality, flooding, power/infrastructure failure, and food insecurity. See the Bloomington Climate Risk and Vulnerability Assessment for more information.

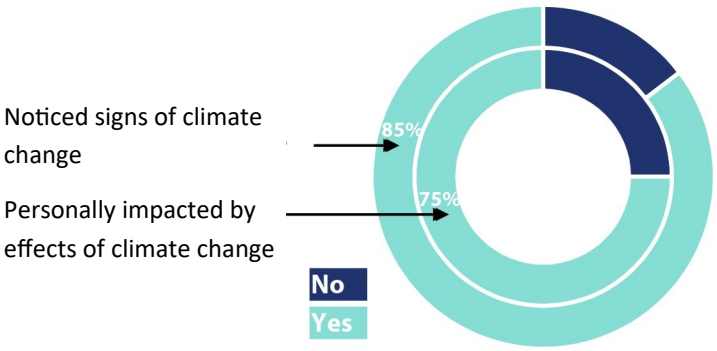
Since 1998, extreme weather has cost Monroe County an average of: **$727,000** **Annually**

Source: NOAA National Centers for Environmental Information

Climate Impacts Already Felt

Climate change impacts are already being felt within the community. Over 75% of the 472 individuals responding to the City of Bloomington's 2020 Climate Action Plan Community Input Survey reported being personally impacted by the effects of climate change. The most noted personal impacts observed were:

- Increased air conditioning use,
- Increased contact with ticks and mosquitos,
- Longer allergy season,
- Tree loss due to storm, flooding or drought
- Flooding/flood damage.



Bloomington Climate Risk

The chart below reviews the expected climate impacts, likelihood of occurrence, impact level (Vulnerable Population Climate Impact Sensitivity), potential timeframe of impact, and resulting overall potential risk level for climate risks to the population. Each of these impacts are already experienced. The timeframes represent estimations of when the likelihood of occurrence and/or the overall level of impact may be significantly increased. The timeframes should be understood to be approximate and include "short-term" (current to 20 years), "medium-term" (mid-century) and "long-term" (late century).

Health Impacts	Likelihood of Occurrence	Impact Level (Population Vulnerability)	Timeframe	Risk (Likelihood x Impact)
Extreme Heat	Likely	High	Medium-term	Very High
Flooding	Possible	High	Short-term	High
Drought	Likely	Moderate	Medium-term	Moderate
Air Quality	Likely	High	Medium-term	High
Vector-Borne Diseases	Likely	Moderate	Long-term	Moderate
Nutrition Insecurity	Possible	High	Medium-term	High
Water Quanity/Quality	Likely	Low	Long-term	Moderate
Water Borne Disease	Unlikely	Moderate	Medium-term	Low

Prioritizing Climate Health and Safety Risks

Based on the above review the City's adaptive efforts may be most effective by prioritizing strategies which address the climate risks of Air Quality, Extreme Heat, Flooding, Power/Infrastructure Failure, Energy Costs, Food Insecurity, and Property Crime. Particular attention should be paid to strategies which are most effective. for those in Economic Stress, People of Color, Individuals with Disabilities, and Seniors over 65. See the Bloomington Climate Risk and Vulnerability Assessment for more information

Goal HS 1 Educate, engage, and empower the public for climate health and safety.

Strategy HS 1-A:

Improve training to address risks exacerbated by climate change.

How We'll Measure Progress:
Status of integration of climate change impact projections into training

Hazard and risk identification supporting public safety, emergency management, and social services professional training has largely been based on historical occurrence. However, research indicates that climate change is affecting future patterns of natural hazards. These changes must be anticipated and integrated into how disaster mitigation, preparedness strategies, and training is developed.

Co-Benefits of Strategy:

Improved Public Health

Improved Community Resilience

	Actions	Implementation Phase
HS1-A-1	Ensure public safety staff are properly trained to recognize and respond to physical and behavioral signs of heat-related illness.	1
HS1-A-2	Strengthen emergency management capacity to prepare for and respond to the impacts of climate change. The City should prioritize capacity improvements such as training and equipment to address risks exacerbated by climate change - see the City of Bloomington Climate Risk and Vulnerability Assessment 2020. Emergency management should be equipped to address the possibility of multiple emergencies at the same time, such as the combination of extreme heat and power outage.	1
HS1-A-3	Provide guidance through resource material to social service providers so they are aware of best practices in treating client needs during an extreme heat event.	2
HS1-A-4	Give city and county elected officials and staff tools (e.g. webinar trainings on emergency preparedness, facilitation guides, and other materials in multiple languages) to have dialogues about emergency preparedness within neighborhoods and to create local resilience strategies such as an Adopt-A-Neighbor campaign or hosting an OEM CERT-like training session in their community.	3

Strategy HS 1-B:

Establish and expand public health communication campaigns.

How We'll Measure Progress:
Status of communication campaign development and implementation

Successfully addressing climate change as a public health threat requires prevention strategies which can help influence people's behavior to help prevent and reduce the burden of climate change on human and other populations.

Co-Benefits of Strategy:

Improved Community Equity

Improved Social Connectivity

	Actions	Implementation Phase
HS1-B-1	Develop a climate change public health communication campaign to reach those without access to internet or technology, limited English speakers, and individuals in hard to reach vulnerable populations.	1

	Actions	Implementation Phase
HS1-B-2	Increase public education and outreach about the basics of climate change and how it will affect the community. Consider inclusion of explanation of exponential rates of change if global tipping points are met.	1
HS1-B-3	Expand visibility of the City Air Quality Index including particulate matter and pollen counts so that the public is aware of bad air quality days. Include strategies for coping with poor air quality days	2
HS1-B-4	Collaborate with County Health, school district, Indiana University, and local hospitals to establish a public communications campaign to build awareness of vector borne disease risks, avoidance, and actions. Campaign should be focused particularly on those most vulnerable to exposure.	3

Goal HS 2 Prepare Bloomington for climate risks and impacts.

Strategy HS 2-A:

Strengthen community response capacity and support networks.

How We'll Measure Progress:

Status of community network coverage for vulnerable populations; Implementation of monitoring program

The Vulnerable Population Risk Sensitivity Chart (see Bloomington Climate Risk and Vulnerability Assessment) illustrates the instances of vulnerability to each of these projected climate impacts by census tract. Significant portions of the population have a likely elevated sensitivity to the anticipated extreme heat and weather, flooding, and air quality impacts projected. Vulnerability to climate impacts can be lessoned through the improved social connectivity and support that can be provided through strengthened community networks focused on vulnerable community members.

Co-Benefits of Strategy:

Improved Community Equity

Improved Social Connectivity

	Actions	Implementation Phase
HS2-A-1	Enhance community networks and connections for those who require special attention, such as the elderly, homebound, disabled, isolated, or those likely to be in need of financial assistance during or after extreme weather events (heat, cold and heavy precipitation).	1
HS2-A-2	Strengthen emergency management capacity to prepare for and respond to the impacts of climate change. The City should prioritize capacity improvements such as training and equipment to address risks exacerbated by climate change. Emergency management should be equipped to address the possibility of multiple emergencies at the same time.	2
HS2-A-3	Explore potential of developing an indoor air quality monitoring program. Program could include deploying a series of air quality monitoring stations at appropriately located public facilities, schools, senior living homes, group homes, and public housing facilities.	3

Strategy HS 2-B:

Improve equity of climate adaptation measures.

How We'll Measure Progress:
Status of integration of climate change vulnerability into community plans, programs, and decisions

Integration of climate change impacts and a recognition of the populations and neighborhoods most vulnerable to them into community plans, project approval processes, and program development is a critical requirement to effectively reducing climate change impacts for the portions of the community most likely to be affected.

Co-Benefits of Strategy:

Improved Community Equity

Improved Community Resilience

	Actions	Implementation Phase
HS2-B-1	Utilize current science, best practices and updated maps of flooding and flash flooding potential, micro heat island vulnerability, and populations most vulnerable to flooding and heat impacts to help inform decisions and priorities about projects, project approvals, and programs that help to cool the urban environment.	1
HS2-B-2	Ensure equitable implementation of grid resilience actions by partnering with high-risk neighborhoods and non-governmental organizations to develop resilience hubs—community facilities that offer power and other services during times of need. Establish criteria to screen and select locations for community microgrids to support grid and community resilience.	2
HS2-B-3	Seek to reduce vulnerability to mold and other flood related impacts by providing mold awareness and mitigation assistance for residents within flood and flash flood prone sectors and for vulnerable populations and within multi-family housing. Assistance may include establishing mold inspections for rental properties and/or residences in flood or flash flood prone areas of the city.	2
HS2-B-4	Collaborate with County to establish/expand support of climate and extreme weather safe working conditions, extreme heat and heat stress education and general worker safety for individuals and jobs vulnerable to high heat.	3

Goal HS 3 Respond to climate risks and impacts.

Strategy HS 3-A:

Assist the city's heat, flooding, and storm vulnerable population in preparing for and mitigating climate change impacts.

How We'll Measure Progress:
Shade tree, flood assistance, and weatherization assistance data

By 2050, Monroe County can expect: 50 days of over 95 degrees (historical: 2 days) an average hottest day of the year of 107 degrees (historical: 97 degrees), an average coldest day of the year of 1 degree (historical: -5 degrees), an increase in spring rainfall of 16 percent above historical averages. The Vulnerable Population Risk Sensitivity Chart (see Bloomington Climate Risk and Vulnerability Assessment) illustrates the instances of vulnerability to each of these projected climate impacts by census tract. Significant portions of the population have a likely elevated sensitivity to the anticipated extreme heat and weather, flooding, and air quality impacts projected.

Co-Benefits of Strategy:

Improved Community Equity

Improved Community Resilience

	Actions	Implementation Phase
HS3-A-1	Seek to reduce exposure to extreme heat and improve stormwater damage by promoting, distributing, or providing installation assistance of shade trees focused on community areas identified as having high heat island impact based on City's Citywide Ground Cover and Heat Island Assessment (see Greenspace section, strategy G 3-A) and/or flash flood prone. Assistance should prioritize vulnerable populations.	1
HS3-A-2	Offer on-site and on-line flood assessments and readiness improvements to residents within flood and flash flood prone areas. (e.g. https://www.cnt.org/tools/my-rainready-home-assessment-tool)	1
HS3-A-3	Create a flood risk education campaign including development of an online education hub with information, tools and resources.	1
HS3-A-4	Integrate climate change impact awareness into outreach and systems supporting and interacting with homeless community members. Implement protocols for enhanced support and augmentation of shelters and food shelves during extreme weather events.	2
HS3-A-5	Seek to reduce exposure to extreme heat through distribution of energy-efficient, air conditioning in vulnerable populations with a prioritization in areas of high micro heat island impacts as identified in City's Citywide Ground Cover and Heat Island Assessment. (see Greenspace section, strategy G 3-A)	2
HS3-A-6	Improve the energy efficiency of homes, apartments and commercial buildings to keep interiors cool, improving the comfort and safety of occupants and reducing the need for summer air conditioning. Encourage the planting of trees and vegetation on the south and west sides of homes and buildings to reduce summer heat gain (mid-cost). Job creation opportunity.	2
HS3-A-7	Collaborate with community partners to provide flood insurance education to home owners, particularly new home buyers and at-risk home owners. Education should include when insurance is recommended, purposes for flood insurance, and what is typically covered and not covered by insurance.	2

Strategy HS 3-B:

Establish a climate impacts mutual aid program.

How We'll Measure Progress:

Status of mutual aid agreements addressing potential climate impacts

Projected climate change impacts for Bloomington include the potential for increased frequency and intensity of extreme weather events and increased flood hazard. Establishing mutual aid programs to address the specific response requirements these climate hazards represent (such as downed tree removal, storm debris removal, and flood response) can ensure a higher level of preparedness for extreme weather events and their aftermath.

Co-Benefits of Strategy:

Improved Community Equity

Improved Community Resilience

	Actions	Implementation Phase
HS3-B-1	Coordinate with County, State, Indiana University, surrounding communities, non profit agencies, and utilities to establish a Mutual Aid and Response program. Program to focus on range of current and projected risks and hazards including flooding, extreme weather, storms, power outage, and emergency debris management.	1

	Actions	Implementation Phase
HS3-B-2	Organize a transportation-assistance program for individuals without access to vehicles. Explore partners such as Area 10 on Aging, Bloomington Transit, and local hospitals.	2
HS3-B-3	Educate the public about the health risks of higher temperatures, develop strategies to check on individuals at greatest risk, and make options for cooling widely accessible.	2

Strategy HS 3-C:

Establish and update plans to address climate risks and impacts.

Maintaining community plans and design standards based on projected climate risks and impacts will be key in minimizing hazard threats to community health and safety.

How We'll Measure Progress:

Status of integration of climate change impact projections into community plans

Co-Benefits of Strategy:

Improved Social Connectivity

Improved Community Resilience

	Actions	Implementation Phase
HS3-C-1	Coordinate with County, Indiana University, Red Cross, and utilities to develop a debris management plan to support response to severe storm events and flooding. Explore potential of integrating HAND neighborhood clean up grants into plan.	1
HS3-C-2	In alignment with the American Public Health Association Policy Number: 201711, City will engage County and State environmental offices and health departments and with the EPA regional office in assessing and remediating environmental justice concerns in Bloomington. Concerns to be assessed to include exposures to smog and toxic air pollutants and the disproportionate number of asthma cases among people of color. Assessment to prioritize review of exposures near public housing and schools in the vicinity of freeways, industrial facilities, and power plants. Impacts of land-use planning and infrastructure decisions on air pollution exposure to be reexamined.	2
HS3-C-3	Collaborate with County to ensure Emergency Management Plans include current and projected climate change risks and hazards and prioritize and prepare for responses in the event of climate hazards and extreme weather events. See City of Bloomington Climate Risk and Vulnerability Assessment 2020.	2
HS3-C-4	In collaboration with County, develop a comprehensive heat response plan that incorporates most current climate change impact projections and combines individual strategies into an integrated approach. Coordinate with County to Include Response Plan on County's Public Health Preparedness webpage (https://www.co.monroe.in.us/topic/index.php?topicid=154&structureid=12).	2

What You Can Do

- Put together an emergency preparedness kit for your household by visiting Ready.Gov.
- Get involved with the Monroe County Community Emergency Response Team (CERT). Join your neighbors and receive training to prepare for potential disasters.
- Stay informed. Sign up for Monroe County Citizen Alert Notification, a free program from Monroe County that sends community alerts to your phone and email when you register online. https://cutt.ly/xgg3cBR
- Prepare your home for the extremes. Understand the risk of extreme weather, extreme temperatures, flooding or wildfire to your home, and take action to safeguard your home.
- Keep yourself and your family current with physicals, vaccinations and prescribed medications and therapies.
- Plan and rehearse a fire evacuation plan with everyone who lives in your home or apartment.
- Have breathing-protection masks available for you and your family for when air quality alerts are declared.
- Take first-aid and CPR certification training.
- Notice a person who lives alone. Offer to check on them periodically, especially during extreme weather or a natural disaster.
- Notice a person who sometimes lacks transportation to their doctor, shopping or other services. Offer to drive them.
- Notice a person or family who lacks air conditioning in their home or apartment. Offer to have them visit or stay with you during extreme heat events.