



Climate Change and Adaptation



VISION:

Bloomington will minimize the generation of GHG emissions from all sources, toward an end goal of carbon neutrality, and will prepare for climate change

As a signatory to the Mayors National Climate Action Agenda since 2017, and the U.S. Mayors Climate Protection Agreement since 2006, City Administration – on behalf of the Bloomington community – has expressed its commitment to meeting greenhouse gas (GHG) reduction goals set by the 2015 Paris Climate Agreement. This signals a commitment to the United States' Intended Nationally Determined Contributions of a long-term reduction in GHG emissions by 26 to 28 percent below 2005 levels by 2025, and a short-term reduction in GHG emissions by 17 percent below 2014 levels by 2020.¹

According to research from Purdue University, the state of Indiana is expected to have an increased number of hot days, more heavy rain events, increased flooding, and wetter winters as a result of climate change. These impacts are expected to have detrimental effects on human health, including increased incidences of heat stroke due to higher temperatures, respiratory illnesses due to poorer air quality, and an increased number of ticks and mosquitoes carrying vector-borne illnesses due to warmer and wetter winters.



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There is broad scientific consensus that the world is experiencing climate change.

The increased release of GHG emissions into the atmosphere from human use of fossil fuels (such as oil, gas, and coal) is causing a gradual increase in Earth's average temperatures. These greenhouse gases trap heat in the atmosphere leading to a range of global impacts, including rising sea levels, more intense storms, heat waves, increased rainfall, and flooding.²

Climate change is also expected to affect the health of trees and green spaces, which assist with stormwater management, provide a sink for carbon dioxide, and reduce air pollution.³ Climate change may also impact agricultural yields, with reduced income for farmers, along with significant increases in costs for heating and cooling, healthcare, and infrastructure. These costs would likely be borne disproportionately by lower income individuals.

Some of these effects could be reduced or avoided through climate change mitigation, i.e., reducing GHG emissions released into the atmosphere. Unfortunately, some impacts of climate change are unavoidable and will require that the Bloomington community adapt its infrastructure and practices to ensure resiliency with a changing climate.

GREENHOUSE GAS EMISSIONS

The [2016 City of Bloomington Community Greenhouse Gas Emissions Inventory](#) indicates the Bloomington community produced 1.3 million metric tons of carbon dioxide equivalent⁴ emissions (approximately 15.7 metric tons per capita) in 2016.⁵ The major contributors to these emissions were building operations and transportation fuel use.⁶ The largest sector of community electricity usage in 2016 was the residential sector,⁷ while the largest sources of natural gas usage were freight transportation associated with large institutional purchases and residential usage.⁸

Bloomington has demonstrated its commitment to decreasing GHG emissions through renewable

WHAT YOU CAN DO

- ✓ [Go solar!](#) Homeowners who install solar panels before July 1, 2022 are eligible for net metering — which allows homeowners to sell unused energy back to the utility company at a favorable rate — until July 1, 2032.
- ✓ **Know your neighbors** and check on them during extreme weather events and emergencies.
- ✓ **Plant a tree in your yard.** Strategic placement and species selection can help reduce heating and cooling costs by providing shade in the summer and direct sunlight in the winter, when leaves fall off.



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energy efforts to install more than 230 solar photovoltaic arrays on homes, churches, businesses, and at City facilities since 2007.⁹

In the next five years, the City will complete community GHG inventories, engage citizens in climate action, and encourage the planting of trees and the restoration of habitat to assist with absorption of carbon dioxide from the atmosphere. Planned efforts to reduce GHG emissions in support of the Paris Climate Agreement are

outlined here and in the Energy and the Built Environment and Transportation chapters. The community will also need to take steps to adapt to the impacts of climate change. Efforts for the next five years will focus on educating the public about the effects of and strategies for climate change and developing a community climate adaptation plan.

GOAL 1.1: Reduce community GHG emissions 11 percent by 2023, relative to a baseline of 1.3 million metric tons of GHG emissions in 2016

	ACTION	LEAD PARTNERS	TIMEFRAME	COST
1.1.a	Establish a consistent methodology for measuring and reporting community GHG emissions ¹⁰	Economic & Sustainable Development (ESD)	2019	\$*
1.1.b	Evaluate the viability of creating a community renewable energy goal	ESD, BCOS, Utility Companies, MCEC	2019	\$
1.1.c	Implement Solarize Bloomington with the Solar Indiana Renewable Energy Network (SIREN) to aid residential low-cost solar installations ¹¹	ESD, SIREN, other nonprofit partner	2019	\$*
1.1.d	Achieve designation as a SolSmart community by taking steps to streamline development requirements and encourage local solar markets	Planning and Transportation, ESD	2019	\$
1.1.e	Educate the public about the Monroe County Solar for All campaign and geothermal installations	ESD, HAND, Monroe County Solar for All	2019	\$*
1.1.f	Investigate the feasibility of becoming a Green Power Community to encourage businesses, institutions, and individuals to collectively use more clean power	ESD	2020	\$
1.1.g	Facilitate habitat restoration and tree planting with proper siting on public and private properties to sequester carbon dioxide and reduce building energy needs ¹²	ESD, Parks & Recreation	2020	\$\$*
1.1.h	Engage local businesses to reduce GHG emissions through outreach, education, and advisory services ¹³	MCEC, ESD, Chamber of Commerce	2020	\$*

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GOAL 1.2: Create a community climate adaptation plan by 2022

	ACTION	LEAD PARTNERS	TIMEFRAME	COST
1.2.a	Conduct a climate vulnerability assessment ¹⁴	ESD, IU/Environmental Resilience Institute	2020	\$\$\$
1.2.b	Create a public campaign to educate citizens and businesses about the effects of climate change ¹⁵	ESD, IU/Environmental Resilience Institute	2021	\$*



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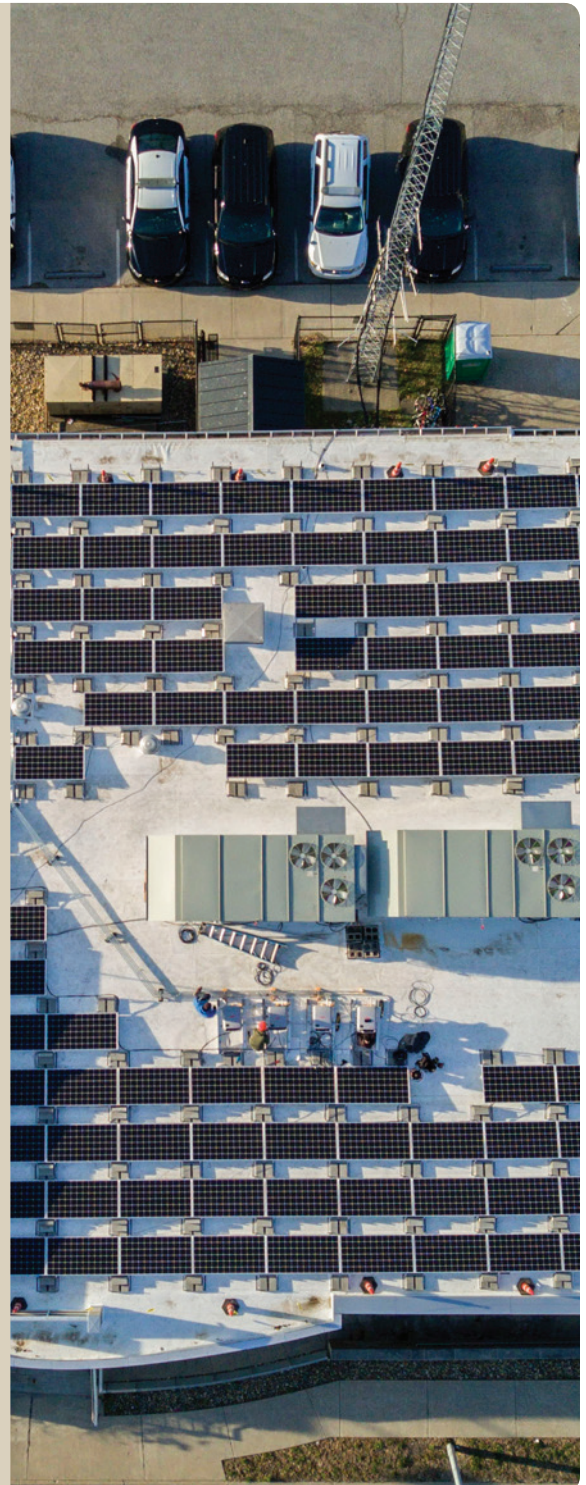
SUCCESS Stories



SOLARIZE BLOOMINGTON

The City partners with SIREN to offer the [Solarize](#) program, which provides discounts on solar PV panel purchase and installation through a group buying program available to businesses, nonprofits, and residents. Solarize also provides seed money for Solar For All grants to install solar PV in lower-income households. In 2017, 138 solar PV systems were installed in the program area, contributing more than 1 megawatt of photovoltaic capacity to the local grid. Bloomington and Monroe County are leaders in the installation of solar PV systems: while Monroe County accounts for only 3% of Indiana's population, it currently houses 10% of the state's solar installations.

Above: Homeowners benefit from SIREN's Solarize program. Right: Solar panels on the Bloomington Police Department roof.





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Notes

1. U.S. Department of Energy, United States' Intended Nationally Determined Contributions, 29 September 2015, 2; See <https://www.iea.org/media/workshops/2015/15thghgtradingworkshop/1.2Greenwald.pdf>
2. U.S. Environmental Protection Agency, Climate Change, https://19january2017snapshot.epa.gov/climatechange_.html
3. Purdue University, Indiana Climate Change Impacts Assessment, <https://ag.purdue.edu/indianaclimate/>
4. There are six primary greenhouse gases that prevent heat from escaping from the Earth: water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrofluorocarbons. Since the life span and warming potential of each greenhouse gas is different and carbon dioxide emissions account for more than 75 percent of global greenhouse gas emissions, greenhouse gas emissions are often converted to carbon dioxide equivalent for ease of communication.
5. Note that GHG emissions have been reduced to exclude 46,627 metric tons of natural gas leakage.
6. 2016 City of Bloomington Community Greenhouse Gas Emissions Inventory, 2.
7. 2016 City of Bloomington Community Greenhouse Gas Emissions Inventory, 13.
8. 2016 City of Bloomington Community Greenhouse Gas Emissions Inventory, 7.
9. As reported in the 2018 Solar Indiana Renewable Energy Network Solar Map.
10. Action recommended in the City of Bloomington Comprehensive Plan, 48 and in STAR Community Rating System Version 2.0 (October 2016), 16.
11. Action recommended in the Bloomington Environmental Action Plan, 15.
12. Action recommended in the City of Bloomington Comprehensive Plan, 46.
13. Recommended in STAR Community Rating System Technical Guide Version 1.2 (March 2015), 89 and as implemented by Fort Collins, CO (<https://www.fcgov.com/climatewise/>)
14. Similar action recommended in the STAR Community Rating System Technical Guide Version 1.2 (March 2015), 80 and implemented by Iowa City, Iowa. Action discussed in the SAP Climate, Energy, and Built Environment Working Group.
15. Similar action recommended in the STAR Community Rating System Technical Guide Version 1.2 (March 2015), 83 and implemented by Ann Arbor, Michigan. Action discussed in the SAP Climate, Energy, and Built Environment Working Group.