



# Energy and the Built Environment



## VISION:

*Bloomington will foster and support sustainable building practices that reduce environmental, social, and economic costs*

**B**uilding energy use is a major contributor to GHG emissions, and building design plays a large role in determining the future efficiency and comfort of facilities. Increasing energy efficiency can help reduce GHG emissions and result in significant cost savings for both homes and businesses. The Bloomington community can also achieve environmental, social, and economic benefits through enhancements to the built environment. Sustainable building practices involve the use of construction methods that are

more resource efficient and enhance the health and productivity of occupants.

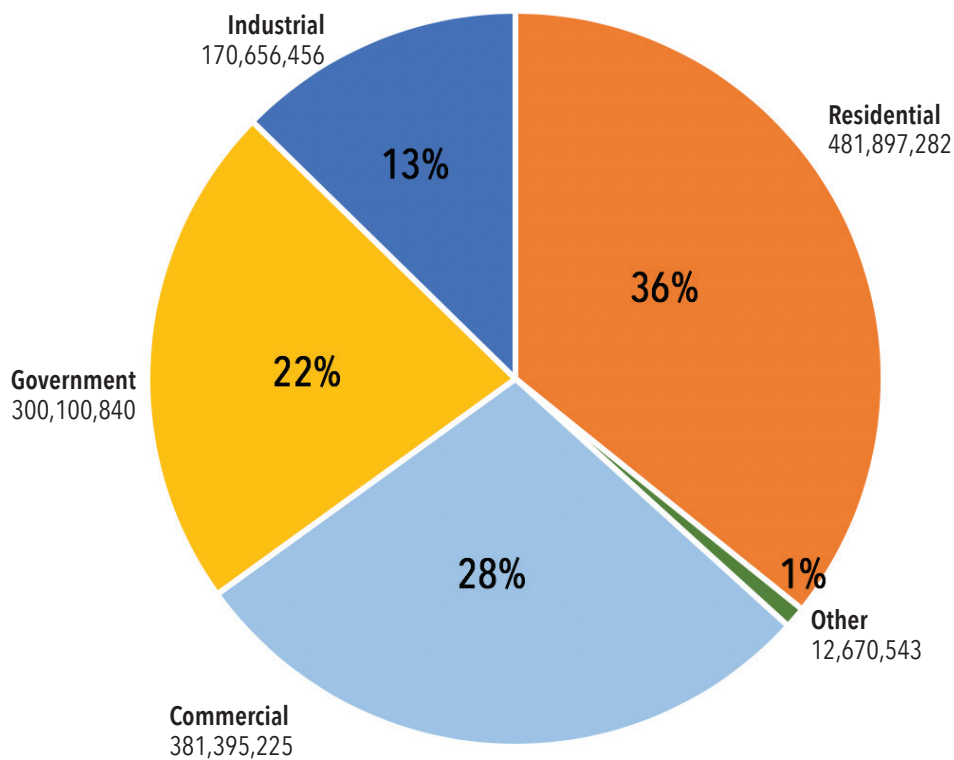
## ENERGY USE

In 2016, the Bloomington community used 1.35 million kilowatt hours (kWh) of electricity, primarily in the residential, commercial, and government sectors (Figure 1).<sup>1</sup> That same year, the Bloomington community used 46.6 million therms of natural gas, primarily associated with bulk



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Figure 1: 2016 Community Electricity Use by Sector (kWh)



purchases by large facilities and institutional sources, and the residential and commercial sectors.<sup>2</sup>

According to the U.S. Energy Information Administration, approximately 70 percent of Indiana's electricity came from coal-fired power plants in 2017, approximately 20 percent from natural gas, and approximately 6 percent from renewable energy sources (5 percent from wind and 1 percent from solar).<sup>3</sup> The proportions for electricity sources vary slightly for Bloomington, as local conditions are more favorable for solar and geothermal installations versus wind.

Bloomington has engaged in previous efforts to reduce energy use via the "Change a

Light, Change the World" partnership with Bloomingfoods to distribute 40,000 compact fluorescent bulbs to replace standard incandescent bulbs, and the Monroe County Energy Challenge (MCEC), which promotes energy efficiency and conservation across sectors.

### SUSTAINABLE BUILDINGS

The City created the Sustainable Development Incentives program in 2007 to encourage sustainable building practices, but the program has not been well-utilized. The City is currently reviewing these incentives as part of its Unified Development Ordinance revisions.



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### ABOVE CODE BUILDING

*Broadly speaking, buildings can be grouped into two categories: code buildings that are designed to meet exactly the current laws in the jurisdiction of the project, and above-code buildings that exceed these requirements. Above-code buildings fall along a continuum.*

- **GREEN** The term “green,” applied to buildings, means that a building is better than code in some respect, but it is unclear in what way. Often it refers to a single action, such as the addition of solar panels added to a building
- **HIGH-PERFORMANCE** “High-performance” is used to describe a building’s measurable performance. Typically, the use of this term indicates exceptional energy, water, or indoor air quality performance.
- **SUSTAINABLE** “Sustainable” buildings offset every one of their impacts and have a zero balance on all measures: resource use, environmental impacts, social impacts, and beyond. Building in this manner could conceivably be done by everyone, ad infinitum, without impairing the ability of future generations to create their buildings.
- **REGENERATIVE** “Regenerative” buildings have a net positive impact on all measures. Regenerative buildings give back more than they take, and help to heal damage to our ecology, our built environment, and our society. While uncommon, the practices for creating regenerative buildings are rapidly disseminating and becoming more affordable.

According to the [Green Building Information Gateway](#), both the ENERGY STAR and LEED building certifications are in use in Bloomington: 18 residential and commercial buildings have been certified as LEED and 22 have been rated using the ENERGY STAR program. (A list of buildings certified to these standards can be found in Appendix A.) No buildings in Bloomington have made use of other prominent sustainable building standards, such as the Living Building Challenge or Green Globes.

In the next five years, the City will continue to focus on energy efficiency and conservation in residential and commercial buildings, support development of renewable energy projects and encourage awareness and use of sustainable building frameworks and incentive programs.

### WHAT YOU CAN DO

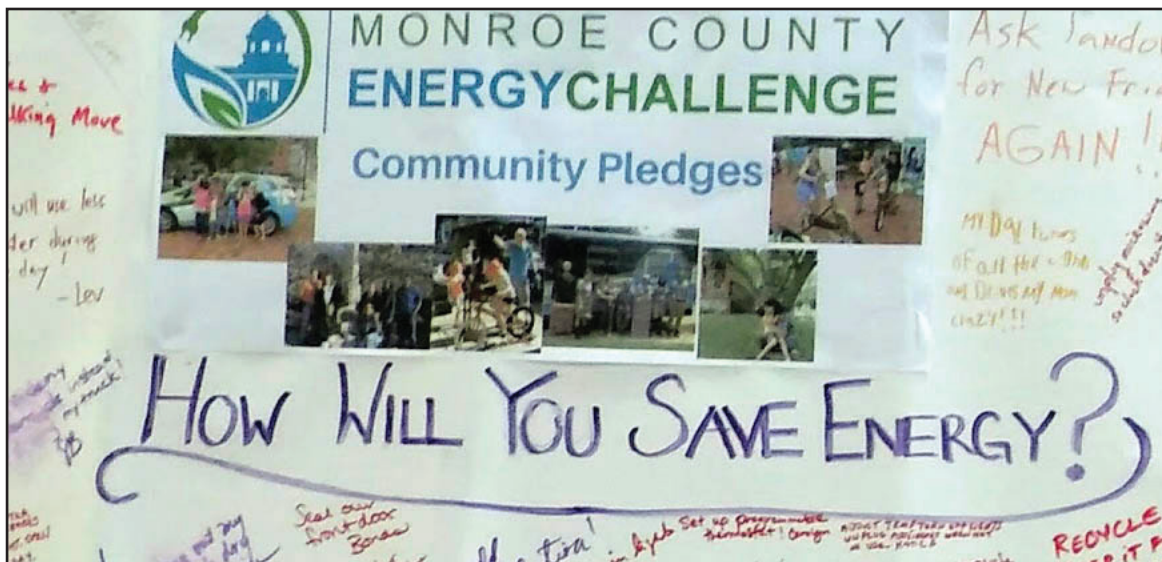
- ✓ **Make sure your house is well insulated,** install energy efficient lights, properly caulk and seal doors and windows, and use ENERGY STAR appliances.
- ✓ **Get an energy audit for your home.** Many energy providers offer this service for free.
- ✓ **Ask and encourage architects/designers/engineers/builders** working for you to pursue above-code, sustainable design frameworks.



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### GOAL 2.1: Reduce building energy use in the Bloomington community 20 percent by 2023, relative to a baseline usage of 9.4 million MMBTUs in 2016

ACTION		LEAD PARTNERS	TIMEFRAME	COST
2.1.a	Develop and implement an annual work plan for the Monroe County Energy Challenge (MCEC) to improve residential and commercial energy efficiency <sup>4</sup>	MCEC, Utility Companies	2019	\$*
2.1.b	Establish a consistent methodology to monitor and report community-wide energy use <sup>5</sup>	ESD, BCOS, Utility Companies	2020	\$
2.1.c	Collaborate with the business community on a voluntary program to disclose energy usage and costs, to help drive future energy savings	ESD, Chamber of Commerce, BEDC	2020	\$*
2.1.d	Collaborate with local utility companies to improve energy efficiency programs and sub-metering	Utility Companies, MCEC, ESD	2021	\$
2.1.e	Collaborate with local landlords to establish a voluntary program for green leases that clarify landlord and tenant responsibilities for energy efficiency projects and associated energy savings <sup>6</sup>	ESD, landlords	2022	\$\$
2.1.f	Work with private and non-profit lenders to establish low-interest loans for small-scale energy efficiency improvements and renewable energy projects <sup>7</sup>	ESD, local banks, HVAC and other building professionals	2023	\$\$\$\$*





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### GOAL 2.2: Increase the percentage of residential and commercial buildings using sustainable building certification programs and incentives by 2023, relative to a 2019 baseline

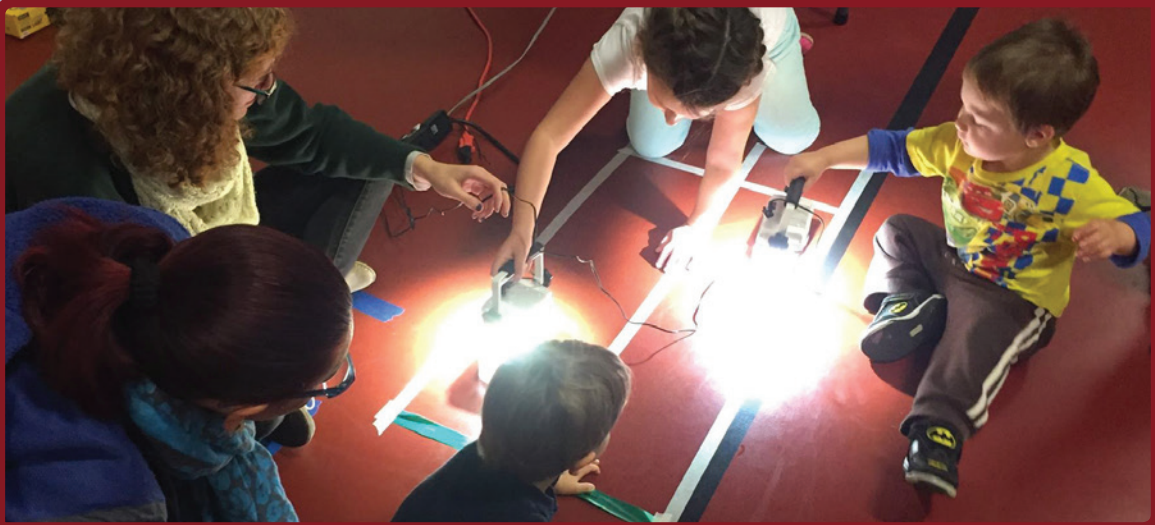
	ACTION	LEAD PARTNERS	TIMEFRAME	COST
2.2.a	Update the Sustainable Development Incentive program and develop a mechanism to track utilization of the program and post data to BClear	Planning and Transportation, IT	2019	\$*
2.2.b	Develop an educational program on sustainable building certifications and incentive programs in collaboration with the business community <sup>8</sup>	ESD, Planning & Transportation, Chamber of Commerce, Living Building Collaborative (LBC)	2019	\$*
2.2.c	Evaluate the development of a SMART goal for increasing the use of sustainable building certification program, per the development of a 2019 baseline	Planning & Transportation, ESD	2020	\$
2.2.d	Develop a list of sustainable building projects to establish a baseline for 2019, and a mechanism for tracking this data moving forward	ESD, Planning & Transportation, LBC	2020	\$
2.2.e	Create annual sustainable building tour for commercial builders <sup>9</sup>	ESD, Planning & Transportation, LBC	2020	\$*
2.2.f	Complete at least one Living Building Challenge petal certification project	Planning & Transportation, LBC, developers	2021	\$\$\$\$
2.2.g	Host an annual green home show to showcase sustainable building features and programs	ESD, Planning & Transportation, LBC, other community partners	2021	\$\$*





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### **SUCCESS** **Stories**



#### **MONROE COUNTY ENERGY CHALLENGE**

MCEC is a coalition of community organizations working to reduce energy use. It addresses community energy vulnerability, with a particular focus on reaching lower-income households who suffer the most from high energy bills. From 2015 to 2018, MCEC provided free energy assessments for more than 550 homes and 19 daycare facilities, installed attic insulation in 42 low-income households, participated in more than 250 energy fairs and community outreach events that reached an estimated 17,000+ participants, and distributed energy LED bulbs and weatherization kits to community members. MCEC is currently focused on community education and outreach through their Solar, Wind, Watts school program and their EnergyBus, a mobile energy lab that provides hands-on education in renewable energy resources and home energy conservation.

Water Conservation



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### PEAK OIL UPDATE

Peak Oil is the point at which oil extraction reaches a maximum, to then go into a terminal decline. Because oil is an essential energy source, especially for transportation, this decline will have serious repercussions for our society. It is therefore important for our community to plan for this inevitability, and implement patterns of living that require less oil use.

The Bloomington Peak Oil Task Force produced a report, *Redefining Prosperity: Energy Descent and Community Resilience*, that provides an energy descent action plan as a blueprint for the coming transition. Since the report was issued, conventional “easy to extract” oil has been on a bumpy plateau of production.

To meet demand over the last ten years, so-called “unconventional” oil — hydro-fracturing of shale deposits, oil sands, and deep water extraction — has been tapped to fill our growing needs. These unconventional oil sources are difficult to extract, are highly polluting, and in the case of fracked oil (tight oil) deplete quickly, requiring constant drilling. Because they are more difficult and expensive to extract, they require a higher price to produce in order to be economically feasible.

Much of this cost has been so far hidden, as producers have relied on cheap credit, in the form of low interest rates, and issuing debt in the form of bonds. To date, few tight oil producers have made a profit.

Within this lens, the “Shale Miracle” is far from the panacea that it is claimed to be. As we rely on expensive unconventional oil to an ever greater degree in the future, our reliance on oil becomes ever more precarious. Shale oil will peak and decline as conventional oil is peaking now, but likely at a greater rate. This inevitability of production decline must be prepared for in advance, and it is in the interest of our community to implement steps to do so now.

The threats of Peak Oil and Climate Change are mutually reinforcing, and both demand reduction of our reliance on fossil fuels. Energy conservation, alternative transportation, expanding the local food economy, and land use planning decisions are even more urgent than when *Redefining Prosperity* was issued in 2009. Implementing these strategies will mitigate these threats while enhancing our quality of life and our community’s resilience.



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### Notes

1. 2016 City of Bloomington Community Greenhouse Gas Inventory, 12.
2. 2016 City of Bloomington Community Greenhouse Gas Inventory, 6.
3. Energy Information Administration, Indiana: State Profile and Energy Estimates, <https://www.eia.gov/state/analysis.php?sid=IN>
4. Action recommended in the STAR Community Rating System Technical Guide Version 1.2 (March 2015), 108; Many actions were also topics of discussion in the SAP Climate, Energy, and Built Environment Working Group.
5. Action recommended in the City of Bloomington Comprehensive Plan, 49; also implemented by Iowa City, Iowa.
6. Similar action was discussed in the SAP Climate, Energy, and Built Environment Working Group.
7. Action was discussed in the SAP Climate, Energy, and Built Environment Working Group.
8. Action discussed in SAP Climate, Energy, and Built Environment Working Group.
9. Similar action discussed in SAP Climate, Energy, and Built Environment Working Group.