3

environment

Overview

All life depends on the vitality and interplay between three main categories of the natural environment: air, water, and land. While these are broad categories of interrelated systems, residents of Bloomington have long held their protection close to their hearts and high among their priorities. This Chapter is organized around some of the threats and opportunities to the natural environment and associated ecological services regarding breathable air, drinkable water, energy consumption, food production, waste mitigation, and ecologic protection.

Bloomington residents consistently express their hopes for a better natural environment. These hopes include: reducing air-contaminating pollutants by lessening our reliance on fossil fuels; reducing waste and increasing recycling and composting; protecting both water quality and quantity for humans and nature; and enhancing urban ecology through increased biodiversity.

In order to foster a healthy environment, we need to work together to improve natural resource stewardship. For example, the City has engaged in efforts to reduce energy use and to diversify its sources of energy. The Green Building Ordinance, City facility and community-wide solar initiatives (2017 Solarize Bloomington Initiative), and community-based efforts like Earth Care and the Monroe County Energy Challenge have all targeted a cleaner, reduced energy footprint. Developing a long-term environmental plan, as part of a larger sustainability plan, is a priority. The City recognizes that environmental protections and enhancements are critical parts of our urban infrastructure. These will contribute towards a more sustainable Bloomington.

This chapter highlights key components of the environment and sets goals for creating an environmentally sustainable community through energy, the built environment, water, urban ecology, waste, air quality, and food and agriculture.

Energy

Energy use plays a key role in environmental protection. Reliability, efficiency, and a diverse portfolio of energy services all contribute to community resiliency. The use of fossil fuels impacts water quality, air quality, floral and faunal health, as well as human health.

In Bloomington, our particular challenges include a major dependence on fossil fuels and a housing stock made up of two-thirds rental properties, which creates barriers to significant progress in efficiency. While the City has already engaged in numerous efforts to reduce energy use and to diversify its sources of energy, more remains to be done.

There are encouraging developments nationwide as well as local opportunities that will help Bloomington reach a better, more resilient energy future. These include:

- "Smart city" technology that will enable better use of data, better communication with consumers, and more nuanced control of demand.
- Steadily decreasing prices in renewable energy.
- Increased opportunities to integrate renewables like solar and wind with other technologies to create fossil-fuel-independent, and potentially localized, generation and distribution systems.
- Opportunities for increased efficiency and renewable energy in new and existing facilities.

Built Environment

The built environment includes all of our human-constructed surroundings: buildings, roads, bridges, parking lots, and much more. It is where most people live, work, and play. The choices we make about our built environment have critical consequences for how we live and for the health of the broader environment. Much of the impact of the built environment overlaps with the other sections of this chapter, from the way materials used in construction and operations affect air quality, to the ramifications of how we handle stormwater, to the implications of location on transportation choices.

Increasing opportunities exist to reduce the environmental footprint of this sector, including rating systems for buildings, public infrastructure, and cities. Communities share and build on best practices. However, as a population and wealth grows, so does the built environment.

Water

Water is a vital natural resource for human survival. Most of us now live in an urban ecosystem, and we all need to be more cognizant of how water functions in it. Consider the hidden environmental costs associated with both drinking water and surface water. In 2015, to prepare and transport clean water for human consumption, the City of Bloomington Utilities Department accounted for 46% of energy use and 60% of greenhouse gas emissions. These represent large portions of our environmental footprint and have impacts on the City's budget.

Human consumption is not the only use for the water sanitized and transported by our Utilities Department. Commercial and industrial processes have a range of needs for water. Heating and cooling, cleaning, and manufacturing all require water. And, of course, clean water is necessary to support the plants and animals in our ecosystems and food systems. Access to clean water is an essential component of a sustainable community.

Sanitary sewer service is another key component to sustaining clean water. Sanitary sewer overflows (SSOs) are when untreated sewage is discharged into the environment prior to reaching sewage treatment facilities. Some sanitary sewer systems were designed to combine both storm water and waste water, which during storm events and other conditions can result in increased SSO events. CBU provides sanitary sewer service using a system designed for just waste water. Overflows resulting from rain/snow melt infiltration, sewer main blockages, grease-related blockages, and private system overflows do occur and are a priority to prevent. Investments and best practices have reduced SSOs from approximately 30 million gallons in 1996 to 5 million in 2015.

Surface and stormwater quantity and quality are different, yet related, issues to consider in addition to drinking water. Moving surface water needs to be slowed down enough that it has the opportunity to infiltrate instead of flowing away at speeds that can cause dangerous and costly flooding and erosion and prevent the filtering of pollutants. Installing modern "green infrastructure" features around town could improve the overall quality of surface and stormwater going to drinking water sources, support a healthy ecosystem, and mitigate flooding.

Urban Ecology

Typically, people tend to think they live either in the "town" or in the "country." People's attitudes toward how space and resources are used can differ widely between the two in relation to the environment. Population distribution continues to change, as do attitudes about what defines quality of life, such that now the conveniences and amenities of a "town" and the quality of "country" or the natural environment — air, water, and biodiversity — are both priorities of modern urban living.

Urbanization and the amount of land and resources it takes to support population growth degrade the natural environment to the point that it needs protection and enhancement. Urban dwellers also look to lessen their ecological footprint. Increasing the use of native plants for landscaping, protecting waterways, and enhancing urban forests can enable essential ecosystems to merge between urban and rural land.

Solid Waste

Archaeologists have unearthed piles of everyday waste from the very first inhabitants of what is now Indiana. Today, we still produce solid waste from living our everyday lives. Protecting our health, safety, and welfare is necessary for basic sanitary needs. Trucks drive all around Bloomington to collect our wastes; then they drive about 55 miles to dispose of it in the Sycamore Ridge Landfill. Burning fossil fuels to collect and dispose of solid waste with large trucks produces greenhouse gasses and particulate pollution. Furthermore, once in the landfill the solid waste begins to decompose and produce powerful greenhouse gasses including carbon dioxide and methane. We can reduce the amount of solid waste ending up in a landfill by recycling, reusing, and composting. We should be collaborating with county and regional partners to lower our environmental impact and improve efficiencies in managing solid waste. Diverting solid waste from landfills also reduces greenhouse gasses.

Air Quality and Emissions

Air quality is possibly the most important of all environmental issues facing humankind. Air quality is directly affected by the built environment, from the way we generate energy, to the energy we use for heating and cooling buildings, to the energy used in the transportation sector. All of these activities emit gasses. We cannot survive without oxygen (O_2) for much longer than three minutes, and health problems such as asthma, emphysema, lung cancer, and other respiratory disorders are associated with polluted air. Reducing pollution and particulate matter benefits everyone. Simple reduction in emissions through efficient use of energy can improve air quality. Energy-efficient buildings and the use of alternative energy sources can reduce air emissions from the building sector. In the transportation sector, reducing miles traveled by vehicles with internal-combustion engines is one effective strategy for improving air quality. Together these two sectors contribute approximately 38% of greenhouse gas emissions.

For decades, transportation policy and infrastructure investments have focused on supporting motorized vehicles. That focus created a legacy that we are now working to overcome. Chapter 6, Transportation, focuses on a shift to retrofitting our infrastructure and policies to create a diverse, safe, efficient, and well connected transportation system that also stands to benefit air quality and emissions.

Food & Agriculture

The City of Bloomington Common Council endorsed the Bloomington Food Charter in 2015 as "helping to guide community decisions and programs that affect the local food system." The Food Charter recognizes that food security is a basic human right; that collaborations among local government, businesses, and community groups should take place to support a sustainable, well-functioning local food system; that urban agriculture should be supported, including farming, community gardens, rooftop and home gardens, orchards, and edible landscaping; and that local food processing and marketing should be facilitated and not hindered by local regulations.

Residents have consistently demonstrated an interest in the economic, social, and health issues connected to local food access. These concerns have found expression through the Bloomington Food Policy Council and relate to the three E's of sustainability: environmental impact, equity of access to food, and economic impact of local food production and processing. Taken together, they establish a holistic way of thinking about food or local food systems. Urban agriculture reexamines the traditional mindset of agriculture uses and activities within rural settings. It assesses the cultivation, processing, and distribution of food within an urban context. Food and agriculture offer a key opportunity to work locally and regionally to develop a more sustainable and resilient local economy that supports health, the natural world, as well as improved quality of life for residents. The City of Bloomington supports and recognizes that residents desire opportunities to produce, process, sell, purchase, and consume local foods of their choosing. The City itself has embraced these goals through adoption of the Bloomington Food Charter.

Goals & Policies

The policies in this chapter respond to the adopted 2013 Vision Statement objectives to:
"Ensure all land development activity makes a positive and lasting community contribution";
"Encourage healthy lifestyles by providing high quality public places, green space, and parks and an array of recreational activities and events," and to
"Nurture a resilient, environmentally responsible community by judiciously using our scarce resources, enhancing our natural assets, protecting our historic resources, and supporting a vital local food system."

Energy

Goal 3.1 Increase renewable energy sources and reduce community-wide fossil fuel consumption.

Policy 3.1.1: Serve the community's energy needs using renewable energy sources and target efficiency improvements in the public and private sectors.

Built Environment and Green Space

Goal 3.2 Drive increased efficiency and reduced environmental impacts in the built environment.

Policy 3.2.1: Continue to limit the amount of impervious surface in new development or public improvement projects and increase green infrastructure to reduce urban runoff into storm drains, creeks, and other watersheds.

Policy 3.2.2: Increase the overall greenspace and increase protection for environmentally sensitive areas.

Policy 3.2.3: Encourage and facilitate tree planting on both public and private properties.

Policy 3.2.4: Implement best management practices to reduce non-point pollution and localized flooding.

Water

Goal 3.3 Conserve water resources and protect water quality to support our natural environment, public health and safety, plant and animal life, and our urban activities.

Policy 3.3.1: Reduce pollution in urban runoff from residential, commercial, industrial, municipal, and transportation land uses.

Policy 3.3.2: Encourage conservation and protection of water sources in our region.

Urban Ecology

Goal 3.4 Increase the areas of native shrubs, trees, and herbaceous plants to increase ecosystem services associated with green infrastructure, including improved soil, air, and water quality and increased carrying capacity of pollinators, birds, and other wildlife.

Policy 3.4.1: Create a vegetated-habitat connectivity plan.

Policy 3.4.2: Eliminate, to the greatest extent feasible, invasive plant and animal species.

Solid Waste

Goal 3.5 Increase the amount of solid waste diverted from landfills.

Policy 3.5.1: Create new best practices and regulations for collecting solid waste, recycling, and reusing materials, including regional composting and management of organic waste.

Air Quality and Emissions

Goal 3.6: Protect local air quality from pollutants.

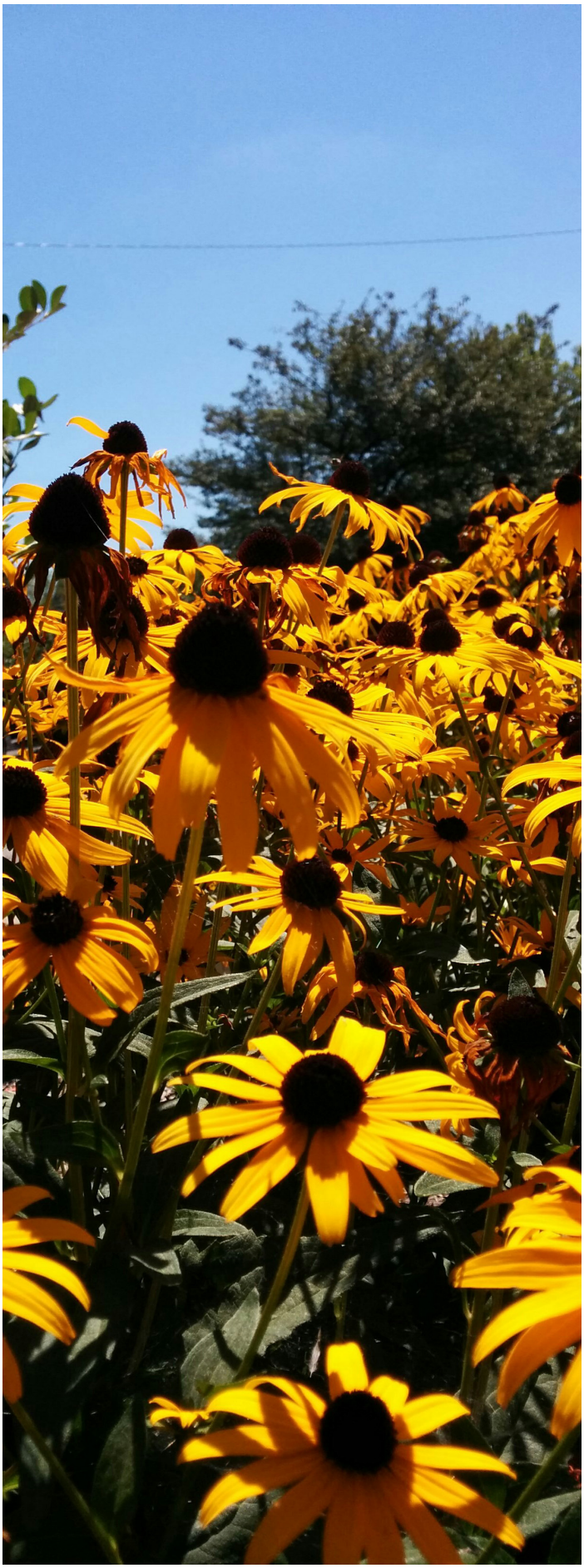
Policy 3.6.1: Ensure that the air we breathe is safe for all Bloomington residents and visitors.

Food and Agriculture

Goal 3.7: Promote and protect local food culture and Bloomington's food system.

Policy 3.7.1: Work to provide residents with access to safe, nutritious, and affordable food, including through a sustainable, resilient local food sector.

Policy 3.7.2: Support diverse, native-plant conservation and restoration efforts, to foster the plant pollinating network of animals, which greatly influences crop production.



Programs

Energy

- Create an energy efficiency program aimed at cost-effective, energy-saving strategies for residential households.
- Improve the information available to renters and homeowners to encourage increased energy efficiency.
- Assess incentive programs that encourage greater energy efficiency and the use of renewable energy sources (solar, geothermal, biomass, etc.) in new developments.
- Assess solar programs that enable lower-income households to utilize solar energy.

Built Environment

- Develop a City-wide Green Infrastructure Plan.

Water

- Increase the use of modern best practices for water quality and quantity control.
- Work with the Army Corps of Engineers to prolong the life of Lake Monroe and improve water quality coming from the lake.
- Create and implement a plan to reduce water leakage in the City of Bloomington Utilities infrastructure.
- Prevent sanitary sewer overflows to ensure compliance with applicable state and federal requirements and to avoid pollution of surface or ground water.
- Utilize Low Impact Development measures such as rainwater harvesting and storm runoff infiltration, when feasible, as mitigation strategies for stormwater discharge.
- Assess karst features and regulations to protect sinkholes and other karst features.
- Simplify floodplain regulations without making them less restrictive.
- Develop an assistance and education program for private property owners to install raingardens.
- Incorporate a stream classification system into the UDO to use in waterway and riparian buffer protection and enhancement.

Urban Ecology

- Develop a method to appropriately manage the population growth of urban wildlife.
- Create an action plan to evaluate and prioritize strategies that reduce or eliminate invasive plants and animals.
- Assess rules and regulations that restrict the planting of invasive plant species and curtail the dumping of aquarium plants in any waterways.
- Measure baseline tree canopy coverage and explore options to expand baseline coverage.
- Amend existing tree protection rules to better protect existing trees during construction.
- Encourage the creation of small, neighborhood-scaled “pocket parks.”
- Secure additional property to preserve urban green space.
- Evaluate regulations for new developments to increase vegetative cover and utilize alternatives such as green roofs in very dense or urban contexts.
- Identify existing vegetated areas and the connections between them.
- Gradually purchase or protect key properties to improve connections and ecological quality between vegetated areas.

Solid Waste

- Modernize the City’s sanitation system, including upgrading to safer, more efficient equipment, and integrating smart technology.
- Develop a City-wide program for organic waste (composting), possibly partnering with a private company.
- Assess rules, regulations, and incentives for providing adequate space for recyclable materials collection in new multifamily, mixed use, and commercial developments and within existing apartment buildings.
- Develop safeguards to ensure the City’s recycling contractors are having materials recycled according to regulations.

Air Quality and Emissions

- Assess regulations regarding environmental concerns such as fugitive dust, hazardous waste releases, cleanup policies, and required secondary containment protection.
- Educate the population on how to identify and remediate possible air contaminants in their homes and workplaces.

Food and Agriculture

- Assess "Bloomington's Food System: A First Look" and partner with the Bloomington Food Policy Council, other community organizations, residents, businesses, schools, and government agencies to implement the goals of the Bloomington Food Charter.
- Encourage community gardens throughout the City.
- Modify regulations for protective fence heights surrounding urban agriculture to allow for best practices and flexibility in dealing with white-tailed deer and other nuisance animals.
- Assess the creation of an agricultural zoning district and/or permitted urban agriculture uses within other existing zoning districts.
- Increase the use of native pollinator-attracting plants through the UDO.
- Enhance education about pollinators as a necessity for growing food, and encourage the use of pollinator-attracting native plants on private property.
- Encourage neighborhood associations and home owners associations to be more tolerant of vegetative alternatives to lawns, clotheslines, and other environmentally beneficial practices.

Outcomes & Indicators

Outcome: Detrimental environmental impacts from the built environment are reduced.

- Changed policies and programs that encompass new green building codes
- Development of protocols for new City projects
- Number of LEED and/or Energy Star Certified buildings

Outcome: Fossil fuel consumption is reduced community-wide.

- Monitor community-wide electric, gasoline, diesel, and natural gas consumption data

Outcome: Green space has increased.

- Parks and green space area
- Vegetative cover in the downtown area
- Percent of tree canopy coverage
- Number of community garden plots used and available
- Square footage of green roofs

Outcome: Recycling practices have increased City-wide.

- Amount of waste diverted from landfill as a percent of all waste

Outcome: Water consumption has been reduced.

- Collect water loss data from City of Bloomington Utilities Department
- Gallons of drinking water per household account

Outcome: A local food culture has been promoted and protected.

- Number of restaurants and businesses serving local food products
- Number of home gardens and community gardens
- Economic value of local food economy
- Local regulatory framework facilitates local food production and distribution