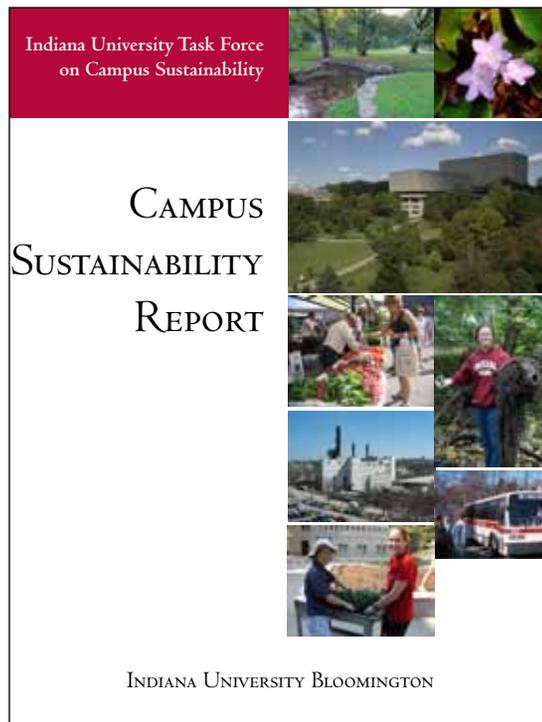


SUSTAINABLE PLANNING



Campus Sustainability Report

Building on the groundbreaking *Campus Sustainability Report* (January 7, 2008), this Campus Master Plan embeds sustainability throughout. The Campus Master Plan has focused on a purposeful and strategic incorporation of both quantitative and qualitative improvements to the setting of the academic mission, to promote a campus that manifests sustainable planning principles. Implicit in the plan is the goal of developing the campus as a learning environment where innovation is promoted, interpreted, and celebrated.

Overlaid on the key themes of the Campus Master Plan, the recommendations are grouped under several broad sustainable planning principles:

1. Adopt environmentally sensitive land use practices.
2. Move toward a carbon-neutral campus.
3. Ensure a range of transportation options.
4. Plan for innovative sustainable buildings and landscapes.

1. Adopt Environmentally Sensitive Land Use Practices.

“Through research, self-reporting, and adoption of environmentally sensitive land-use practices we seek to help IUB use resources sustainably and improve environmental quality and to protect the health of citizens on campus, in Bloomington, and beyond.”

—“Environmental Quality and Land Use,”
Campus Sustainability Report, 2008

Building on the extraordinary environmental quality of the Bloomington campus, the Campus Master Plan increases the campus area dedicated to quality habitat—woodland, stream, and meadow. Tree cover is increased from 20 to 40 percent of the campus area. By strategically consolidating the location of residential and student recreational areas, pedestrian activity and transit ridership is promoted and the quality of student life enhanced. The Jordan River corridor is enhanced and reconceived as the central piece in an on-campus biological stormwater treatment and flood accommodation system.

Sustainability Principle 1 Recommendations

- Enhance and protect existing woodlands—Dunn’s Woods, Bryan Hollow, and the Research and Teaching Preserve.
 - Expand and connect existing woodland fragments outside the campus core.
 - Protect existing ephemeral streams; restore subsurface hydrology and seasonal flow.
 - Eliminate invasive species and control non-native, non-invasive species.
 - Promote an increase in native landscaping, including restoration of riparian vegetation, no-mow zones, and forested areas.
 - Decrease use of hazardous lawn chemicals, pesticides, and fertilizer wherever possible.
 - Implement Integrated Pest Management in both outdoor and indoor environments, wherever possible.
 - Locate opportunities for community gardening, composting, and permaculture, with potential links for Residential Programs and Services and Indiana Memorial Union dining facilities.
 - Capture and treat water where it falls or as close as possible.
- Release water from the campus at volumes no greater than that released by the site in its native state.
 - Allow the Jordan River and its tributaries to flood in controlled areas upstream.
 - Establish or enhance vegetated buffers for the Jordan River.
 - Protect and restore aquatic habitat on the Jordan River and its tributaries.
 - Create wetlands within stream corridors for habitat and flood control.
 - Diversify uses throughout the campus to encourage walking and increase quality of life.
 - Increase density of academic and cultural uses along the East Seventh Street corridor.
 - Create academic and residential campus quads between East Tenth Street and the railroad tracks and between North Jordan Avenue and North Union Street.
 - Steadily move uses south and west from the northeast portion of campus and create/reinforce woodland, stream corridor, and meadow habitats and community gardens.



Jordan River “Environmental Quality and Land Use,”
Campus Sustainability Report



Pedestrian Routes

- Create recreation fields convenient to residential uses.
- Create residential neighborhoods centered on green space and amenities.
- Reinforce existing campus pedestrian routes through additional academic and residential buildings, campus amenities, and site amenities.
- Mix academic, residential, recreational, student services, cultural, and administrative uses throughout campus.

2. Move Toward a Carbon-Neutral Campus.

“To raise awareness of IUB’s energy use among faculty, staff, and students and implement strategies to maximize the efficiency of on-campus production and distribution systems as well as reduce energy consumption and greenhouse gas emissions.”

—“Energy,” *Campus Sustainability Report*, 2008

The Campus Master Plan proposes a number of pathways that could lead to a significant reduction in greenhouse gas emissions up to 80 percent by the year 2050. It identifies strategies that, if fully implemented, would result in a

30 percent reduction in carbon emissions by 2020, even while increasing the built area by 25 percent. As an example, this is consistent with targets established by the American College and University Presidents Climate Commitment (ACUPCC). The emissions addressed here result from the use of electricity and the generation of steam and chilled water. The University may wish to address the full range of emissions related to travel, commuting, and procurement through the evolution of other policies

Sustainability Principle 2 Recommendations

- Use carbon emissions as a metric to measure future energy production and use efficiency.
- Diversify energy sources to anticipate unpredictable futures (availability, regulation, and cost).
- Anticipate solar thermal applications in the design of buildings and systems.
- Investigate biomass fuel opportunities leveraging regional agricultural wastes or University-owned woodland management.
- Plan to co-generate electricity while making steam or chilled water.
- Identify disproportionately high energy users to prioritize investments in energy efficiency.
- Set payback parameters to qualify energy efficiency initiatives.
- Reduce the energy requirements for computer servers by consolidation and virtualization into space designed for Data Center use.
- Improve the energy efficiency for the Data Center through layout best practice, temperature control, and improved cooling technologies.



Central Heating Plant, “Energy,” *Campus Sustainability Report*



IU Bus, "Transportation," *Campus Sustainability Report*



North Indiana Avenue

- Establish campus-wide standards for equipment efficiencies (computers and office equipment, food service equipment, and lab equipment).
- Investigate funding and financing tools to reward/monetize emissions reduction.
- Improve energy efficiency in new construction by 30 to 50 percent over the baseline.
- Install occupancy sensors and more efficient lighting in new and existing buildings.
- Optimize laboratory energy use with high-efficiency fume hoods.
- Renovate 10 percent of existing buildings to improve energy efficiency by 26 percent over the baseline.
- Retrofit commission the remaining existing buildings to optimize performance.
- Continue to repair the steam distribution system to reduce losses.
- Purchase green power to accelerate the progress towards carbon neutrality.

3. Ensure a Range of Transportation Options.

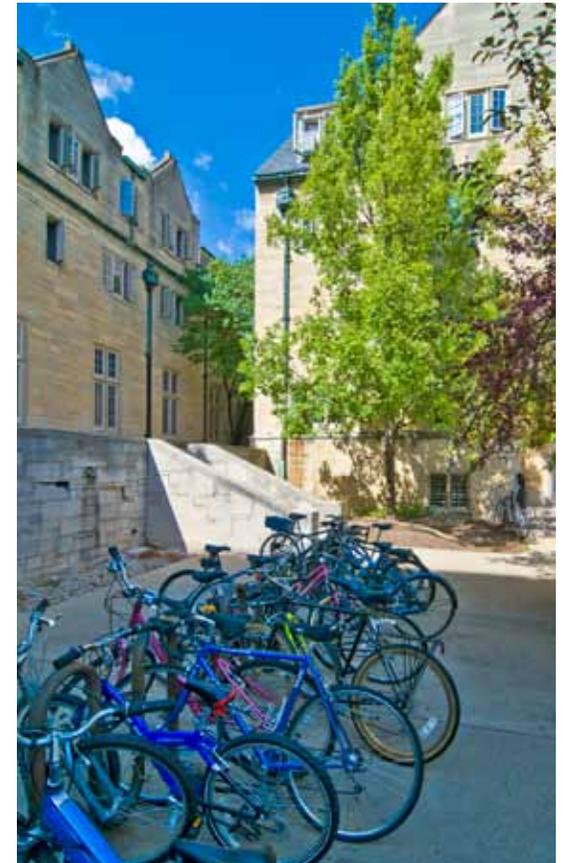
"To promote a sustainable transportation system that will provide safe access and mobility for students, faculty, staff and visitors, and to ensure that individuals have a broad range of safe and convenient transportation options to walk, bicycle, carpool, or ride public transit to and around campus."

—“Transportation,” *Campus Sustainability Report*, 2008

While 90 percent of undergraduate students, 75 percent of graduate students, and 57 percent of faculty live within 3 miles of campus, almost half of all campus users drive to campus alone each day. In addition, significant numbers of students move their cars during the day. This suggests that walking and riding city or campus public transit are not sufficiently convenient. The Campus Master Plan identifies land use changes to consolidate diverse campus uses within easy walking distance and reorganizes some of the critical routes through campus to increase convenience and safety.

Sustainability Principle 3 Recommendations

- Increase the use of lower impact modes of transportation in lieu of reliance on single-occupancy vehicles.
- Create pedestrian and bicycle priority on campus.
- Organize transit routes and select vehicles for short headways and passenger convenience.
- Reinforce inter-system connectivity with Bloomington Transit, and make the transfer between systems seamless and convenient.
- Plan and advocate for potential future regional passenger rail service and locate a future station to support campus circulation patterns.
- Increase density of central campus land use to increase pedestrian connectivity.
- Develop new buildings and pathways along the Jordan River to reinforce desirable pedestrian routes.
- Develop new separate and safe bike routes and furnish covered and protected bike racks liberally throughout the campus.
- Develop grade-separated railroad crossings for bicycles and pedestrians.
- Provide retail and service opportunities relevant to the several distinct on-campus populations to encourage the meeting of day-to-day needs on foot.
- Create a safe and convenient pedestrian and bicycle crossing at East Tenth Street and the SR 45/46 Bypass.
- Create vehicular east-west cross-campus alternatives to East Tenth Street away from the campus core.
- Concentrate new residential uses south of the railroad tracks and along North Fee Lane.
- Leverage available sites within the campus core and between East Tenth Street and the railroad tracks for new academic uses.
- Locate new parking to intercept traffic at the campus edge to reduce internal traffic and the need for shuttles.
- Develop and implement Transportation Demand Management strategies to reduce future parking demand—parking pricing, bicycle sharing, marketing for carpooling and Guaranteed Ride Home programs, and car-sharing.



Collins Quad



"Built Environment," *Campus Sustainability Report*

4. Plan for Innovative Sustainable Buildings and Landscapes.

"To promote campus sustainability through innovative building design and engineering principles that promote functionality, safety, and energy efficiency while respecting campus culture and heritage."

—"Built Environment," *Campus Sustainability Report*, 2008

By 2020, the Campus Master Plan anticipates that a significant number of existing buildings will be renovated, over 3 million gross square feet (GSF) of new buildings will be constructed, and a number of older, inefficient buildings will be demolished. This is an ideal time to establish standards of sustainable design to guide this new development. The University has set LEED® Silver certification as its benchmark. In addition, the Campus Master Plan outlines strategies to build on the significant past water conservation initiatives to further reduce potable water use by 50 percent over today's use, even while increasing the overall built square footage on campus.

Sustainability Principle 4 Recommendations

- Design buildings for daylight harvesting without unwanted heat gain or glare.
- Orient (and pitch) roofs for solar thermal and photovoltaic applications (immediate or future).
- Site buildings for microclimate characteristics such as cooling summer breezes, protection against winter winds, sunlight, and shade.

- Site vegetative and landscaping features to create beneficial local microclimates to minimize energy and water usage in campus buildings.
- Install meters to create a thorough database of existing campus building energy (electricity, chilled water, and steam) and water use.
- Use efficient plumbing fixtures in new construction.
- Retrofit existing plumbing fixtures, especially in residential facilities.
- Consider graywater capture and re-use in new construction.
- Systematically identify and remedy leaks.
- Meter water use at each building.
- Decrease impervious land cover in the site development associated with new construction.