



Sustainability

The Master Plan is one instrument of UIC's overall commitment to increasing sustainability and achieving carbon neutrality. It offers the opportunity to take a comprehensive, holistic look at environmental issues and to formulate a strategy for further action. UIC has already started to take action with the UIC Climate Action Plan. Many sustainability strategies that relate to the physical planning of the campus, indicated in the Climate Action Plan, are described within.



Walking Radius Diagram: By consolidating parking needs into existing, expanded and new parking structures, surface lots on campus are greatly reduced. This lowers the heat island effect and improves opportunities for more efficient land use by limiting sprawl. Circles shown represent five minute walking radii (1/4 mile) from each proposed parking location, highlighting the walkability of all destinations within campus. Blue indicates existing parking spaces and gold are future parking spaces.

OVERVIEW

- **Energy Efficiency & Conservation**

Improve energy efficiency of existing and future buildings—envelope, systems, monitoring and controls.

- **Clean & Renewable Energy Sources**

Incorporate the use of renewable energy sources including solar, wind, geothermal and biomass technologies.

- **Improve Transportation Options**

Minimize number of students, faculty, and staff driving to campus with parking management, incentives, expanded public transportation network, car sharing programs, improved bicycle facilities and pedestrian networks.

- **Improved Open Space Operations**

Discourage sprawl and thereby minimize the loss of open space and the amount of fuel wasted in moving people and goods. Make changes to the campus' landscape design to enhance plant and animal habitat, emphasize local species, reduce the use of fertilizer and pesticides, and address water quality and stormwater runoff issues.



Lincoln Hall Before Renovation



Lincoln Hall After Renovation - LEED Silver Certification

SUSTAINABILITY GOALS

Smart Growth Development

Improved Land Use - Limit Sprawl

Sustainable communities can provide a high quality of life and sense of place by incorporating a wide range of services, amenities and opportunities that enable those who live on-campus and in neighboring communities to focus their lives and support local development. By discouraging or limiting urban sprawl and thereby minimizing the loss of open space, the positive outcomes include reduction in the amount of fuel necessary to move people and goods and support local businesses. Therefore, outlying facilities and properties should be relocated closer to the “core” of each side of campus. On the East Side, the Chemical Engineering Building and CUPPA Hall, among others, are planned to be relocated south of the Eisenhower Expressway and west of the Dan Ryan Expressway. On the West Side, the School of Public Health West will be relocated near Ashland Avenue into the new Teaching-Learning-Research Center 1 (TLR 1A).

Pedestrian-oriented land use patterns will enable users of the campus to move around without the aid of transit and private autos. All academic and student support/life functions and 24/7 activity zones shall be located within a 10-minute walk. Parking shall be located at the perimeter in concentrated parking structures to provide for convenient and safe internal pedestrian circulation.

Effective Existing Space Utilization

A conservation development strategy shall be applied to effective use of existing buildings to maximize space utilization. Although not part of the scope of this Master Plan, a detailed evaluation of current spaces shall be undertaken to determine best use of space and how it can satisfy new program requests.

New Construction LEED Silver Certification

New construction should be built to the highest standards of sustainability available given the capital project and life cycle maintenance costs. The rating system provided by the U.S. Green Building Council for new construction - Leadership in Energy and Environmental Design (LEED) should be used for all new construction with a minimum of Silver certification. Six areas of building design and construction addressed by this system are: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation.

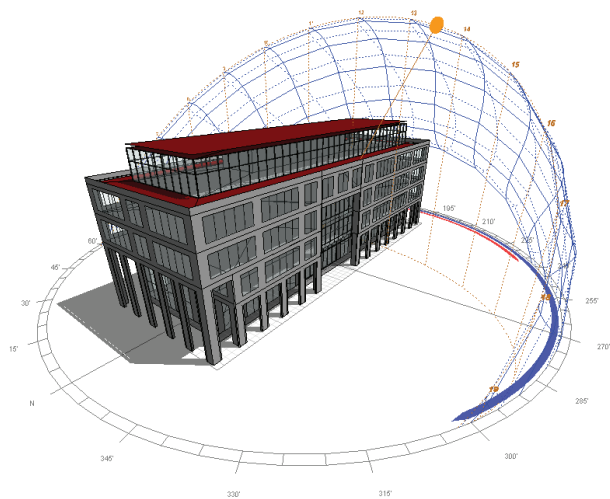
Building Siting & Configuration

Locating buildings to reduce the overall heat gain and provide outdoor spaces with a pleasant environment has been part of the master planning effort. Locating buildings with an east/west axis, the optimum orientation to minimize solar heat gain by limiting east and west facades, has been reviewed for each site. If located with primary east/west facades, costly shading devices are required and should be avoided. However, developing a cohesive urban campus with spatial definition will require several north/south axis buildings. When doing this, arrangement can be made for other buildings to shade the east and west facades. External shading devices and shade trees are recommended. Additionally, configurations of buildings can define smaller open spaces or courtyards. These courtyards can not only provide shade but wind blocks from the prevailing winds to create pleasant microclimates. Buildings depths are held to 60-90 feet depending on building program to allow all occupants access to natural daylight and ventilation.

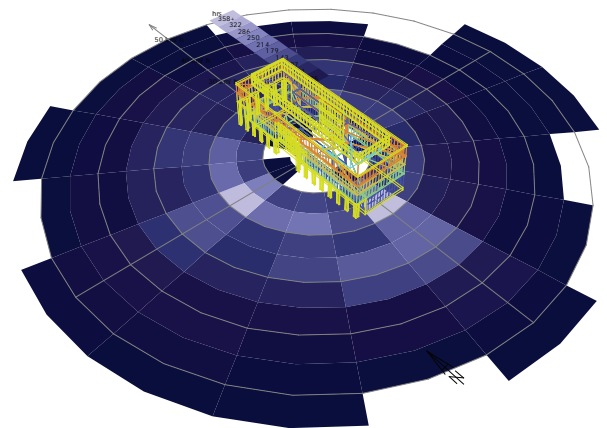


Building Sites and Open Spaces: With study of the prevailing winds effect on the building orientation and adjacent open spaces, courtyards and quadrangles are designed to be inviting comfortable landscapes that will shield pedestrians from winter winds, and shade windows from the low hot sun angles.

Energy Conservation



Solar Analysis: All new buildings should have solar orientation and shading studies to understand the affect the sun has on the building orientation.



Wind Analysis: All new buildings should study the affect of prevailing winds on the building orientation and adjacent open spaces.

SUSTAINABILITY GOALS

Existing Building Energy Conservation & Efficiency

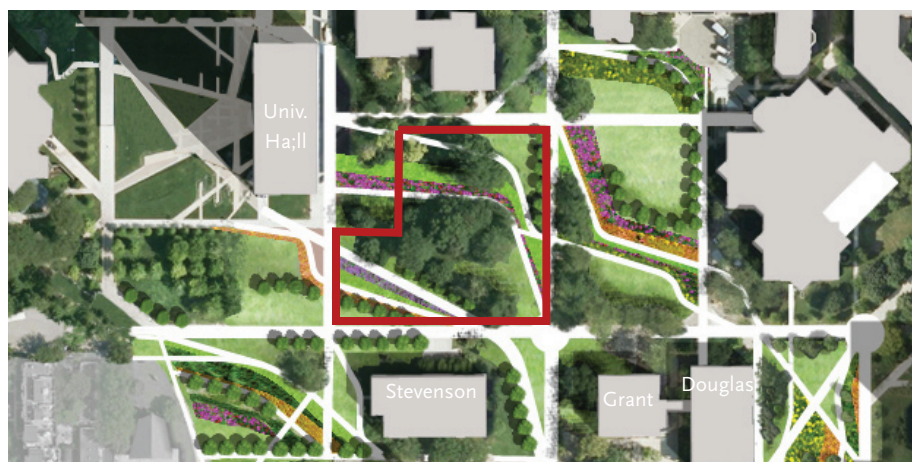
Improvement of the energy efficiency of existing buildings shall occur in renovations or retrofits to building envelopes, lighting system upgrades, HVAC retrofit systems, and new state-of-the-art monitoring and controls. These elements have been further detailed in the UIC Climate Action Plan.

Renewable Energy Actions

The use of renewable energy sources such as wind turbines, solar photovoltaic and thermal panels, and geothermal and biomass technologies shall be utilized more in the future. Technologies are becoming more efficient and costs are continuing to come down so that they could be used on all new facilities in the future and can be placed on top of many existing buildings. Modifying existing power plants to incorporate gasification options (e.g., switchgrass) or biogas generated as an industrial by-product or waste management process would allow for the energy generation to be more renewable. UIC has begun this effort by employing geothermal heating and cooling systems within the renovated Grant, Lincoln, and Douglas Halls. Lincoln Hall has the largest solar photovoltaic array installation on campus.



Lincoln Hall Photovoltaic Panel Installation



Grant, Lincoln, and Douglas Halls Geothermal Field

SUSTAINABILITY GOALS

Transportation

Multi-Modal Options

A coordinated and integrated transportation system can promote health and reduce energy and emissions by single occupancy vehicles. This integrated approach begins with the pedestrian and bicycle, then the public transit options, and finally new programs to provide incentives to share all modes. Making effective connections from each mode of transportation to facilitate transfers from one type to another and allow vehicular occupants to park their cars and transition to the pedestrian oriented campus modes of movement has been a goal of the Master Plan. With a campus having two sides up to a mile apart, providing efficient, comfortable means to move back and forth will further bring the experts of each side together for collaboration and interdisciplinary learning and research.

Public Transit: CTA & Campus Bus Shuttle

Location of new buildings proximate to existing transit connections is important for the large “commuter” population on campus. Likewise, to achieve a goal of bringing the two sides more effectively together, a new shuttle bus system is proposed that is as efficient as possible to decrease travel and wait times. Use of such technology as “Bus Tracker” would allow shuttle bus users to know exactly when buses will arrive.

Bike Routes

To supplement the existing City bike network, routes have been extended to connect around and through campus. Destination-oriented, sheltered and secured bike parking is indicated within and adjacent to major parking facilities. A campus bike repair shop is recommended in at least one of these major hubs to support bicyclists and manage a new bike sharing system. This system, possibly with university smart cards, could allow the campus population to “borrow” bikes for minimal costs while promoting overall reduction of vehicles on campus.

Ride Share-Car Share Programs

As an objective of encouraging a more sustainable and efficient campus and similar to bike sharing, a car sharing program such as I-Go or Zipcar programs should be established on campus and located around major parking facilities.



Bike Sharing Program: These stations can be located around campus and allow the campus population to borrow a bike for on-campus use.



Car Sharing Program: Systems such as I-GO and Zipcar allow for use of cars in convenient locations.

SUSTAINABILITY GOALS

Open Space Environment

Landscape Standards

The campus landscape should be comprised of a diverse population of hardy, native plant selections that can withstand the harsh Chicago climate. Hardy plant material planted in appropriate soils and locations provide the best defense against these conditions and require less care than non-native materials. UIC can reduce its overall lawn areas with gardens of native groundcovers, low maintenance perennials, shrubs and wildflowers, and seasonal plantings. UIC should update its detailed database and map of the campus tree population. This can be facilitated by adding existing site information as new buildings are developed. This resource will help develop arboretum concepts throughout the campus as well as monitoring tree diversity, health, stature, and preservation of important specimens.



Rain Gardens: Structured rain water systems can reduce stormwater runoff and provide additional plantings at the street edge.



Bioswales: Removing curbs and draining parking towards planting beds can reduce stormwater runoff and increase planting areas to reduce urban heat island effect.

Pedestrian Environment

The pedestrian environment will improve greatly by editing existing pavements and promoting ease of movement across campus through improved streetscapes and greenways. With updated site furniture and wayfinding, UIC will promote greater pedestrian access and use. With new CTA stations and greater connection to the City, the UIC community will be encouraged to take advantage of other transit options other than cars.

Stormwater Management

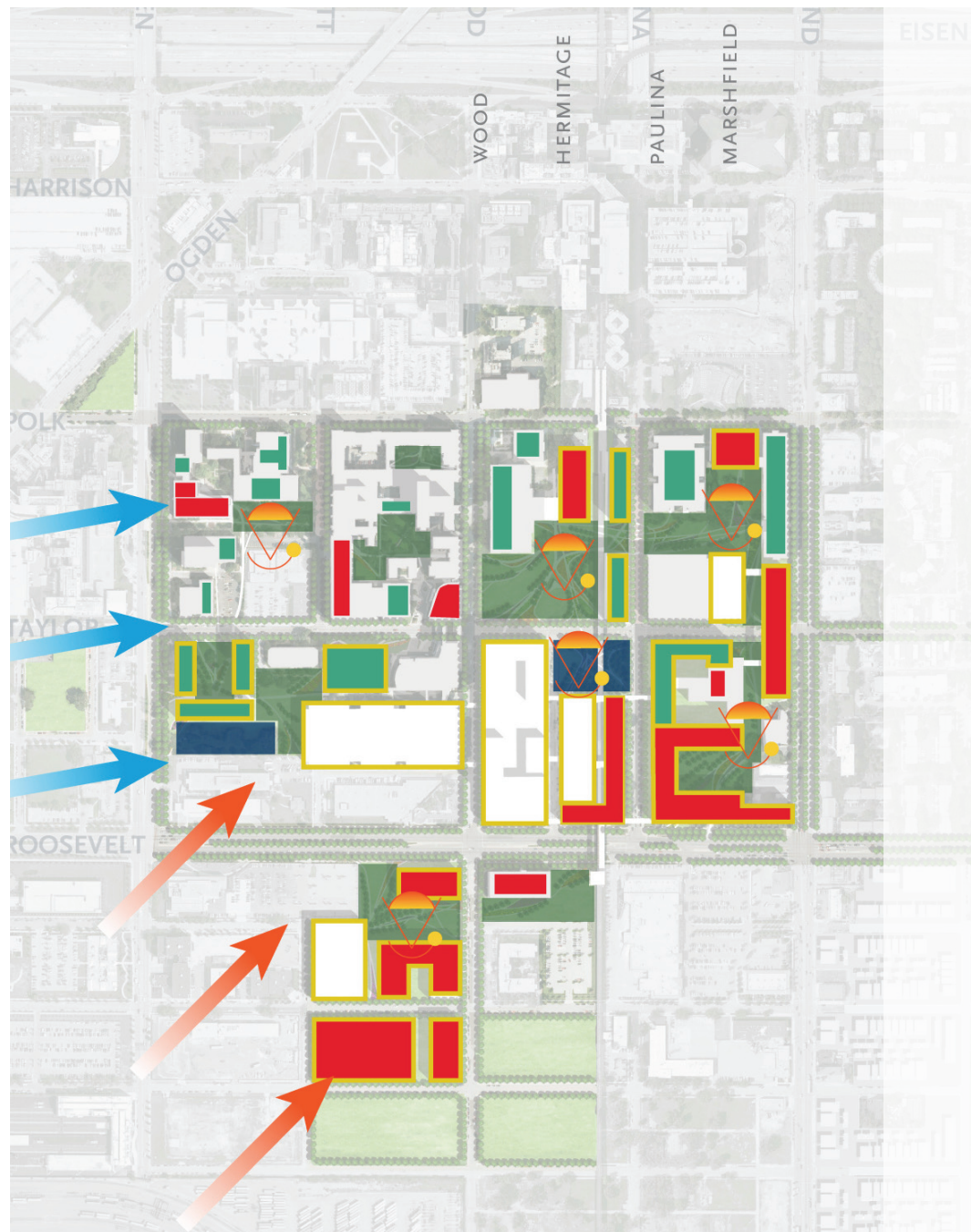
In order to address water quality and runoff issues, the campus open spaces shall be organized to expand and enhance existing site drainage patterns to allow for percolation and filtration of stormwater. A coordinated system of manmade bioswales will collectively reduce the need for a traditional stormwater management. Water collected can be used for greywater systems and landscape irrigation.

Heat Island Effect

The Master Plan provides several ideas on how to transform large areas of existing asphalt areas that contribute to the heat island effect of the campus into planted campus landscapes. Interim landscapes in Lot 5 on the East Side and Lots E and F on the West Side would provide immediate remedy to the Heat Island Effect. By planting trees in swales filled with perennials and grasses, their canopy can shade this dark colored surface to decrease heat gain. A canopy of plantings will also provide a more pleasant pedestrian environment while removing the “parking lot” gateway condition at the edge of campus.

SUSTAINABILITY

CAMPUS INITIATIVES



LEGEND:

- LEED SILVER or SUSTAINABLY DESIGNED BUILDING
- RENEWABLE ENERGY SOURCES AND OPPORTUNITIES
(SOLAR COLLECTORS, CO-GENERATOR PLANTS, ETC)
- GEOTHERMAL FIELD or STORMWATER MANAGEMENT AREA
- GREEN ROOF
- SUSTAINABLE PLANTINGS
- OPTIMAL SOLAR ASPECT,
SHELTERED FROM PREVAILING WINDS
- SUMMER PREVAILING WINDS
- WINTER PREVAILING WINDS

