

The University of Iowa

SUSTAINABLE ENERGY DISCOVERY DISTRICT



More information about our efforts can be found online:

<http://facilities.uiowa.edu>

<http://sustainability.uiowa.edu>

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The projects listed below are located in the area roughly bounded by the University Services Building (USB), Madison Street Services Building (MSSB), and the UI Power Plant.

The **Sustainable Energy Discovery District** is home to multiple sustainable energy technologies that include:

- ✓ Electric vehicle charging station
- ✓ Smart grid technology station
- ✓ E85 and biodiesel fueling station
- ✓ Biomass energy production
- ✓ Photovoltaic solar array
- ✓ Thin film solar roof
- ✓ Wind energy research turbine
- ✓ Energy Control Center

Several of these projects are the outcome of collaborative efforts between UI Facilities Management and its partners such as the UI College of Engineering and UI Parking & Transportation.

Electric Vehicle Charging Station

- The solar electric vehicle charging station provides charging spaces for approximately 20 electric vehicles.
- One stall is equipped for solar energy-related research, utilizing smart grid technology.
- The power generated by the station, over 70 megawatt hours annually, is distributed to the UI grid and offsets what is taken from the grid to power the vehicles. This provides a projected reduction in gasoline use by 15,686 gallons.
- The cost of construction of the station was approximately \$950,000 and was funded by a coalition including the Iowa Office of Energy Independence, U.S. Department of Energy, UI Office of Sustainability, UI Facilities Management, and UI Parking & Transportation.

Smart Grid Technology Station

- One stall in the solar charging station is equipped for solar energy-related learning and research, such as solar and utility grid integration, power storage, and smart grid technologies.

Thin Film Solar Roof

- Located on the roof of the Cambus Maintenance Facility Addition.
- 38kW photovoltaic system.
- Power generated is sent to the campus utility grid.

continued ⇨

Vision 2020

The University of Iowa's Sustainability Targets

The University of Iowa has established the following sustainability targets to be met on or before December 31, 2020.

1. Become a Net-negative Energy Consumer
2. Green Our Energy Portfolio
3. Decrease Our Production of Waste
4. Reduce the Carbon Impact of Transportation
5. Increase Student Opportunities to Learn and Practice Principles of Sustainability
6. Support and Grow Interdisciplinary Research in Sustainability-focused and Related Areas
7. Develop Partnerships to Advance Collaborative Initiatives, both Academic and Operational

The complete 2020 Vision document can be found online: <http://sustainability.uiowa.edu>.

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E85 and Biodiesel Fueling Station

- Used by the UI flex fuel vehicle fleet.
- Cambus uses a seasonal biodiesel blend to power its fleet.

Wind Energy Research Turbine

- 2.4kW wind turbine, 37-foot pole tower.
- Connected to the UI utility grid.
- Serves as a teaching tool for the UI College of Engineering
- The wind turbine and its instrumentation were purchased with a \$39,778 grant to Professor Pablo Carrica -- the first of its kind from IAWIND (Iowa Alliance for Wind Innovation and Novel Development).

Main Power Plant

- Envisioning a 100% renewable energy future for the UI main campus future.
- Expanding use of biomass fuels including oat hulls, wood chips, Miscanthus grass and other potential local fuel sources.
- Exploring the use of alternative energy sources on campus that include solar, wind, landfill gas and hydroelectric.

Energy Control Center

- One of the most advanced and extensive energy management tools available in a campus environment.
- Streamlines energy usage and production management across campus (17 million square feet), has the potential to save millions of dollars and reduce the UI's carbon footprint. Saves \$500,000 annually.
- Serves as a centralized location for the monitoring, analysis, and forecasting of energy supply and consumption across campus. Utilizes over 100,000 data collection points across campus.
- Enables energy engineers to optimize the production and distribution of steam, electricity, and chilled water while reducing costs and energy use.
- Saves time in the analysis and troubleshooting of utility systems and allows staff to detect and fix problems before customer is even aware of it.
- Improves occupant comfort and customer service.
- Web-based "dashboards" of real-time energy consumption will help building occupants reach target goals for energy reduction and provide immediate feedback on their efforts.
- Uses historical data and weather forecast information to predict the building-by-building campus steam, electric and chilled water loads for the campus 24 hours in-advance, thereby improving occupant comfort.
- Helps decide which chillers, boilers and turbines to use in advance of their need, which, in kind, provides for better strategies in purchasing and using raw energy such as coal, natural gas and electricity.

(Updated August 2016)