



## OBJECTIVE

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This policy is created to comply with Ohio House Bill 251 which establishes a goal to reduce on- and off-campus building energy consumption by at least 20 percent by 2014, using fiscal year 2004 as the benchmark year, and all other state and municipal requirements affecting energy efficiency in building design and construction at The Ohio State University.

## POLICY

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Applies to: Entire University and Vendors  
Issued: 12/2008

### I. Overview

- A. The Ohio State University, as a flagship of public education and research and as a function of its commitment to sustainability, has the responsibility to be a leader in addressing sustainability in the design of both new construction and renovation of existing buildings and structures.
- B. Sustainability - broadly defined in the context of campus development is “creating a campus that is timeless, maintainable, and flexible; incorporating responsible use of fiscal, environmental, and human resources; and having minimal environmental impact.”
- C. The principles and practices governing the design of new campus buildings and structures, and design of renovating the same, promote the university's definition of sustainability and support the University Master Plan with the additional objectives of:
  - inspiring teaching, learning and research;
  - providing accessibility to a broad cross-section of the population;
  - conserving resources; incorporating green design principles; and
  - balancing initial and long term operating costs.



II. Green Build Principles and Practices

- A. The green build principles and practices are a companion to university policies relating to sustainability and design, specifically:
- "[Principles and Practices for a Sustainable Ohio State University](#)" issued October 2006
  - "[Design Values for Campus Development](#)" issued December 2006
  - [University Building Design Standards](#)
- B. These principles and practices are applicable to all building construction projects for which the budget is equal to or greater than \$100,000 and for which programming and design commenced after July 1, 2008.
- C. For the purposes of this policy, building construction projects shall be understood to mean new construction, improvement, renovation, enlargement or other alterations to buildings and structures, or part of a building or structure that includes a major energy consuming system, component or equipment.
- D. Given that The Ohio State University is a signatory to the [American College and University Presidents Climate Commitment](#) and that green building energy efficiency and energy use, as well as the associated greenhouse gas emissions, are sometimes considered in relationship to campus energy generation and supply, our green build principles extend beyond buildings to include employing a mix of renewable and non-renewable energy sources and to increase the efficiency of generating and delivering energy to campus buildings and reducing energy consumption within buildings.
- E. The principles and practices of this policy are incorporated into existing university construction procurement and design policies and practices and are effective immediately, to be employed in the design of all qualifying building construction projects.



## PROCEDURE

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Applies to: Entire University and Vendors  
Issued: 12/2008

### I. Green Build and University Design Standards

- A. The university is committed to being a leader in developing new and renovated buildings that use resources efficiently and create environments that promote building occupant health and comfort.
- B. For each qualifying building construction project, life-cycle cost analyses shall be undertaken by a qualified engineer or architect and in accordance with the standards established in Ohio House Bill 251. This will include an energy systems analysis and the results of these considerations shall be a primary consideration in developing the project design.
- C. The following are minimum standards that shall apply to design and construction of subject building construction projects for new buildings and total renovations, as follows:
  - 1. Every classroom and administrative building construction project will achieve energy efficiency that is 25% above ASHRAE 90.1 2004 standards.
  - 2. Every dorm construction project will achieve energy efficiency that is 30% above ASHRAE 90.1 2004 standards.
  - 3. Every athletics and recreation construction project will achieve energy efficiency that is 20% above ASHRAE 90.1 2004 standards.
  - 4. Every lab construction project will achieve energy efficiency that is 20% above ASHRAE 90.1 2004 standards.
  - 5. Every hospital and medical construction project will achieve energy efficiency that is 20% above ASHRAE 90.1 2004 standards.
  - 6. All other building types will achieve energy efficiency that is a minimum of 20% above ASHRAE 90.1 2004 standards.
- D. The following standards shall apply to building construction projects to improve, renovate or otherwise alter an existing building or structure which has been deemed to have inferior systems; for which the life cycle analysis identifies that building



systems perform negatively; or, for all other applicable building improvements, renovation, or alteration projects, such projects must exceed ASHRAE 90.1 2004 by 15%.

- E. In addition to the above requirements, each new building or total renovation construction project with a budget of \$4 million or more and which qualifies as a function of its characteristics and/or scope of work for [United States Green Building Council \(USGBC\)](#) Leadership in Energy and Environmental Design (LEED) certification will set a minimum standard to be designed and certified to LEED "Silver" or higher and such designation shall be achieved with direction to achieve university mandated points:
1. Optimize energy performance (2 and 4 points)
  2. Enhanced commissioning
  3. Enhance refrigerant management
  4. Low-emitting materials (EQA 2 and 3)
  5. Indoor chemical and pollutant source control
  6. Thermal comfort: design

Any projects wishing to have this requirement waived will need to submit a design request waiver and it will need to be forwarded to the university engineer for consideration. All waivers will require both senior vice president and Board of Trustee approval prior to being approved for design.

- F. The university expects that, in the first five years of this policy, the policy may cause an increase in project design and construction costs when compared to campus building design that is linked exclusively to current Ohio building code standards. The allowance for this is 5% increase in project costs. The university's experience with this budget allowance will be documented and the policy will be revisited at the end of the first four years of its implementation to determine the need for a cost adjustment.
- G. Monitoring the impact of this policy is critical to informing its contribution to achieving sustainability for the campus and for complying with related state law(s). The university will develop regular reports on the impact of this policy, including those stipulated in Ohio House Bill 251, and make them available to the public through internet postings, present their findings at relevant university forums, and use their



findings to inform other university led sustainability initiatives. Contributing to this, a project impact assessment will be conducted for all applicable building projects over \$100,000. This report will describe the fiscal effects of energy efficiency and conservation measures pursued within the project.

- H. The mix of renewable and non-renewable energy sources employed and the increase in the efficiency of generating and delivering energy to campus buildings will be considered on the basis of their relative value in reducing greenhouse gas emissions, their lifecycle cost effectiveness, their ability to incorporate the findings of university driven research, and their ability to advance the university toward its greenhouse gas emission and other energy goals. Such improvements will be implemented as part of the university's commitments to reduce greenhouse gas emissions, diversify fuel sources, improve the efficiency of energy delivery and comply with all relevant state laws, including Ohio House Bill 251.

## II. Energy and Sustainability

- A. In October 2006, The President's Cabinet adopted "[Principles and Practices for a Sustainable Ohio State University](#)". In spring 2008, university president E. Gordon Gee signed the American College & University Presidents Climate Commitment (ACUPCC). In support of these principles, the University Master Plan also contains several principles that encourage sustainability and energy conservation. Energy management is a responsibility shared by building designers, departments that produce and provide the utilities for campus, departments that maintain buildings and systems that use energy, and employees and the entire campus community that consumes the energy. Ohio State is committed to improving energy efficiency, reducing energy consumption, and investigating cost effective options for use of renewable energy sources.
- B. Energy efficiency and conservation guidelines have been established for state institutions of higher education in response to Ohio House Bill 251 (ORC Sec. 3345.69). The university is developing a 15 year strategic energy plan to comply with these guidelines. The plan includes a mandatory funding requirement of five percent increase in construction costs and applicable fees to ensure energy efficient design and compliance with the Green Build requirements referenced earlier in this document. The strategic plan will also request resources to conduct energy audits and implement energy conservation measures. The overall goal is a 20 percent reduction in energy consumption using fiscal year 2004 as the baseline. The following building operation and maintenance practices will be observed:



1. Building Energy Management

- a. Periodic energy audits and/or re-commissioning of existing building systems will be performed at regular intervals to ensure that systems are operating at maximum efficiency.
- b. Recommendations on resources and building selection for the energy audit program will be made through the University Energy Committee and the Strategic Energy Program Plan. Audits, level of commissioning efforts, energy conservation projects, the preventive maintenance program, and the renewal and deferred maintenance program will be prioritized and implemented as funded through the annual budget process and the capital plan. Level of funding received will determine programs goals and deliverables. Performance Contracting will be utilized to support projects and related efforts where possible.
- c. As funded, building system controls will be added, modified, and integrated into the existing building automation system (BAS). This will allow for greater control over operating schedules, which will permit implementation of demand management strategies to reduce energy consumption and related costs.
- d. The campus community (faculty, students, staff, visitors, and contractors) is responsible for practices and behaviors which effect energy demand. In conditioned spaces, windows and doors shall be kept closed. Energy consuming devices, such as personal computers, other office equipment, lights and window air conditioners shall be turned off when not in use. Information Technology support teams will ensure at set up and during maintenance periods that all personal computers, monitors, laser printers, and copiers have their energy management features enabled.

2. Heating and Cooling

- a. Office and academic space should maintain temperatures during the heating and air conditioning seasons at 70°F and 76°F respectively when occupied. Whenever it is economically and technically feasible, night setback and building scheduling features of the BAS system will be utilized to allow temperatures to reset to 60°F and 80°F during heating/cooling unoccupied periods (9:00 p.m. to 6:00 a.m. Monday through Friday, 5:00 p.m. to 7:00 a.m. weekends and holidays).
  - i. Temperature control requirements for patient care and medical procedures areas of the Medical Center shall be established by the appropriate medical care provider in consultation with Medical Center Operations.



- ii. Student Life and Athletics will develop and maintain temperature control requirements for their facilities that do not fall under the above policy, including housing and recreational facilities.
  - iii. Temperature control requirements for research, animal care, laboratory areas university laboratory animal housing areas shall be established by ULAR, Office of Research, or College of Veterinary Medicine as mandated by the associated requirements.
  - iv. All areas noted above will participate in the development of an annual report detailing their established conservation measures, control requirements, and associated outcomes in conjunction with the University Energy Committee.
- b. Building temperature control schedules shall be established through a Building Energy Management Agreement for each building. The agreement will identify any special care, human needs, or research requirements to maintain the building outside the normal schedule and temperature range. Absent special needs, the University Energy Committee will evaluate exemption requests on an individual basis and will utilize the most energy efficient means of supplying heat or cooling for approved exemption requests. Use of electric space heaters and window air conditioners in university buildings must be authorized in advance to ensure proper installation and safety measures by the District Leader or Facilities Manager of the associated area. All units must meet equipment and installation standards of the university. Areas that are too hot or too cold should be reported to Service2Facilities by calling (614) 292-HELP (Medical Center call 293-8645)
3. Building Leases
- a. For building leases of 20,000 square feet or more, the above policies should be complied with wherever practical.
  - b. It should be recognized that leases should be evaluated on an individual basis and on its own merits, with an emphasis on the overall financial value of the arrangement, with consideration provided to not allow energy efficiency to impact or impede a desirable and financially sound business arrangement.
4. Utility Metering and Cost Allocation
- a. Quality utility metering is essential to provide the data and information required by the Strategic Energy Plan and to allocate costs effectively for billable customers.



- b. New buildings or renovations of more than 50% of replacement value or building area shall have full utility metering per the Building Design Standards.
  - c. Metering systems for existing buildings are being upgraded over time as outlined in the Facilities Operations and Development (FOD) Metering Plan ([http://fod.osu.edu/ess/metering\\_plan\\_final\\_2006-mar-1.pdf](http://fod.osu.edu/ess/metering_plan_final_2006-mar-1.pdf)). Metering upgrades for existing buildings are funded through the annual budget process and will be managed through Facilities Operations and Development - Energy Services and Sustainability.
  - d. Utility billing rates shall be developed annually and costs will be allocated by methods determined by the Office of Business and Finance Resource Management Systems and university billing practices.
- C. Sustainability
- 1. Renewable Energy
    - a. In an effort to meet the climate neutrality goal of the ACUPCC, the university will continue to investigate cost effective renewable energy options and will recommend implementation when a viable option is identified and funded.
    - b. Projects requested by students, staff or faculty that connect to the utility infrastructure or to building systems must be reviewed and recommended jointly with FOD and the Office of Research prior to any project commitments or initiation.
  - 2. Waste Management – Recycling and Composting
    - a. The university recognizes that disposal of materials in the solid waste stream represents an increasing cost to the environment and for the university. As a result, the university has adopted a goal of 40 percent waste reduction by 2010.
    - b. The university will continue to improve existing recycling programs such as the All-in-One and outdoor area recycling programs.
    - c. Composting programs will be developed and expanded for biomass from food operations and landscaping activities.
    - d. Design of campus facilities will incorporate the facilities necessary to make recycling convenient for university users.



### 3. Water Usage

- a. Landscape design should utilize plants that are in balance with the local climate and require minimal resource inputs for landscape care and maintenance.
- b. Use of irrigation water should be minimized through rainfall monitoring. Major construction or renovation projects should also investigate collecting storm water for non-potable uses on campus as part of sustainable design practice.
- c. Low water use flush valves and flow restrictors on faucets and showers will be used in all applicable areas.
- d. No single-pass cooling water will be used on mechanical equipment in new construction or retrofits, except in the case of an emergency.
- e. Water that does not go to the sanitary sewer system (such as lawn irrigation, cooling towers, and fountains) shall have deduction meters installed to obtain a sewer credit from our water supplier.
- f. Water leaks, dripping faucets, and fixtures that do not shut off should be reported to Service2Facilities by calling (614) 292-HELP (Medical Center call 293-8645).
- g. Domestic hot water heating systems will be well insulated and mixing valves, hot water return pumps, and controls should be designed for maximum efficiency and performance

### 4. Studies and Technology Evaluation

Implementing new technology to support sustainability initiatives is most effective when coupled with ongoing research. The university will continue to conduct studies and investigate new technologies to explore feasibility for campus application and do so in collaboration with both academic and research units.

### 5. Education and Academic Collaboration

University faculty, staff, and students will, under the guidance of the Campus Sustainability Committee, support an education program and collaboration on various sustainability topics to allow the campus community to better understand how they can positively impact our campus environment. This work will build off the existing Scarlet, Gray & Green effort, as well as other similar efforts underway, and will continue to provide support in the classroom through instruction, mentoring of student research projects, and partnering on grant proposals.



6. Transportation

- a. Use of the Campus Area Bus Service (CABS), a car sharing program and car/van pooling will continue to be an integral part of our transportation and parking strategy.
- b. Focused communications target the benefits of walking, biking and use of public transportation.
- c. Student fees include a bus pass for unlimited access to the local transit system. Amenities to encourage methods of transportation that are non-fuel supported such as use of public transit, walking and biking will be strong considerations in all physical planning decisions.
- d. [Idling Guidelines](#) have been adopted by the university for all state vehicles and will continue to be endorsed and supported.
- e. The university's onsite fueling station dispenses only soy biodiesel (B20) fuel which is used for all diesel powered vehicles, including the campus bus system.
- f. The university's fleet currently includes alternative fuel vehicles. All requests for vehicle acquisitions are reviewed and flex fuel vehicles are strongly encouraged.

7. Purchasing

- a. Energy efficient and environmentally friendly products will be purchased whenever possible (e.g. the U.S. Environmental Protection Agency Energy Star products list). Recyclable and reusable products should also be purchased when feasible to reduce disposal costs.
- b. Ohio State's [Stores Department](#) offers products and services for green purchasing.
- c. The university has mandated that all [copy paper](#) purchased contain 30 percent post consumer recycled content.
- d. A university-wide stakeholder team is developing an environmentally friendly purchasing policy to reflect the university's commitment to environmental stewardship.

D. Metrics

Success of Ohio State's energy and sustainability program will be monitored on a continual basis in a number of ways. Existing [metrics](#) will be maintained and others



added as the 15-year energy plan begins implementation. Metrics include air pollutant, energy, recycling and waste diversion, and the campus carbon footprint for monitoring the performance of the Columbus campus. All metrics will be tracked and updated yearly. In addition, all reporting requirements for the state and Ohio House Bill 251 will be adhered to. Beginning in FY 2010, annual reports will be published to provide the greater campus community with information on the success of the university energy and sustainability programs.

## RESOURCES

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### Offices:

Ohio State, [Board of Trustees](#), 614-292-6359

Ohio State, [Business Operations](#), 614-292-4135

Ohio State, [Facilities Operations and Development](#), 614-292-0257

Ohio State, [Service2Facilities](#), 614-292-4357 (292-HELP)

Ohio State, [Stores](#), 614-292-2694

### Policies and related documents:

#### [Ohio Revised Code](#)

Ohio State, [Design Values for Campus Development](#)

Ohio State, [Idling Guidelines for University Vehicles](#)

Ohio State, [Metering Plan](#)

Ohio State, [Principles and Practices for a Sustainable Ohio State University](#)

Ohio State, [Recycled Paper Policy](#)

Ohio State, [University Building Design Standards](#)

### Web sites:

American College and University Presidents Climate Commitment,  
<http://www.presidentsclimatecommitment.org>

United States Green Building Council (USGBC), <http://www.usgbc.org>