SECTION: Campus Sustainability **Number: 14.02.01**
AREA: Facilities

SUBJECT: Green Build and Energy

I. PURPOSE AND SCOPE

As an institution of higher education the University of Houston has the responsibility to be a leader in sustainable practices. This document establishes consistent operational practices, sustainable design principles, long-term cost-effective procurement guidelines, and an energy conservation plan in accordance with various state statues, including the Governor's Executive Order RP49 and Texas Government Code §447.002(e).

II. OVERVIEW

A. Universities are charged with educating the next generation of decision makers and, through research, finding solutions to tomorrow's problems. The University of Houston commits to defining sustainability through energy conservation and what it means for our campus, measuring our efforts, and translating these measurements into a comprehensive strategy for university sustainability.

B. 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.

C. 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 reduction 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.

III. DEFINITIONS:

A. 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.

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B. 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.

C. The green build principles and practices are applicable to all building construction projects for which programming and design commenced after December 1, 2010, and will be incorporated into existing university construction procurement and design policies and practices, to be employed in the design of all qualifying building construction projects.

IV. PROCEDURE

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. 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 standards (latest edition at the time of contract).

2. Every dorm construction project will achieve energy efficiency that is 30% above ASHRAE 90.1 standards (latest edition at the time of contract).

3. Every athletics and recreation construction project will achieve energy efficiency that is 20% above ASHRAE 90.1 standards (latest edition at the time of contract).

4. Every lab construction project will achieve energy efficiency that is 20% above ASHRAE 90.1 standards (latest edition at the time of contract).

5. All other building types will achieve energy efficiency that is a minimum of 20% above ASHRAE 90.1 standards (latest edition at the time of contract).

D. In the case of 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 standards (latest edition at the time of contract) by 15%.

E. In addition to the above requirements, all new buildings and total renovation projects will be built according to the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) "Silver" certification requirements or higher. Projects with a budget of $1 million or more must obtain LEED "Silver" or higher certification.

Any projects wishing to have this requirement waived will need to submit a design request waiver through their Project Manager and it will need to be forwarded to the Executive Director of Facilities Management and Executive Director of Facilities Planning and Construction for consideration. All waivers will require both Executive Directors approvals prior to being approved for design.

F. Plant Operations Project managers will work in conjunction with the Sustainability Task Force in monitoring the impact of this policy, which is critical in determining its contribution to achieving campus sustainability and compliance with related state law(s).

V. SUSTAINABILITY THROUGH ENERGY CONSERVATION

The Executive Vice President for Administration and Finance has convened the Campus Sustainability Task Force (CSTF) in recognition for the need of central collaborative structure for the development of the university's sustainability strategy and policy development.

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. University of Houston is committed to improving energy efficiency, reducing energy consumption, and investigating cost effective options for use of renewable energy sources. The university is developing a strategic energy plan with a goal of 25 percent reduction in energy utilization index (EUI – Btu/sf/year) by 2025 using fiscal year 2005 as the baseline. The following building operation and maintenance practices will be observed:

A. Building Energy Management

1. 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.

2. 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.

3. As funded, building system controls will be added, modified, and integrated into the existing building management system (BMS). This will allow for greater control over operating schedules and will permit implementation of demand management strategies to reduce energy consumption and related costs.

4. 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.

B. Heating and Cooling

1. 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 (8:00 p.m. to 7:00 a.m. Monday through Friday, 5:00 p.m. to 7:00 a.m. weekends and holidays).

   a. Student Services 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.

   b. Temperature control requirements for research, animal care, laboratory areas shall be established by Office of Research, or Animal Care Operations as mandated by the associated requirements. Similarly, temperature control requirements for archival spaces (library special collections, etc.) shall be established as mandated by the associated requirements.

2. 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 Director of Utilities and Technical Services 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 Director of Utilities and Technical Services. All units must meet equipment and installation standards of the university Areas that are too hot or too cold should be reported to Facilities Management by calling FIXIT (3-4948)

C. Building Leases

It should be recognized that leases should be evaluated on an individual basis and on its own merits, with an emphasis on the overall value of the arrangement.

D. Utility Metering and Cost Allocation

1. 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.

2. All new buildings must be individually metered to allow easy identification of energy inefficiencies.

3. A project completion schedule to individually meter existing buildings must be prepared and maintained by Plant Operations. Major renovations projects will include full utility metering when the cost of metering does not exceed 10% of the total project cost.

4. A progress report must be submitted annually to the Campus Sustainability Task Force.

VI. SUSTAINABILITY THROUGH WATER CONSERVATION

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 Facilities Management by calling FIXIT (3-4948).

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.

VII. 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.

VIII. TRANSPORTATION

A. Use of the Campus Bus Service, 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, and develop amenities to encourage methods of alternate transportation.

C. The university's fleet shall continue to explore possibility of including alternative fuel vehicles.

XI. PURCHASING

A. Energy efficiency standards (e.g. the U.S. Environmental Protection Agency Energy Star products list) must be taken into consideration when purchasing any energy consuming equipment.

B. When possible, the University will purchase desktop and laptop computers that meet the Electronic Product Environmental Assessment Tool (EPEAT) Silver standard or higher.

C. The University will increase the percentage of renewable energy purchased as part of its energy purchase agreement.

D. In an effort to reduce carbon footprint, the university will continue to investigate cost effective renewable energy options and will recommend implementation when a viable option is identified.

X. METRICS

Success of energy and sustainability program will be monitored on a continual basis in a number of ways. Existing State mandated metrics will be maintained and others added as the energy plan begins implementation. All metrics will be tracked and updated yearly.

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REVIEW AND RESPONSIBILITY

Responsible Party: Executive Vice President for Administration and Finance
Executive Director Facilities Management

Review: Every two years, on or before September 1

APPROVAL

_____
Executive Vice President for Administration and Finance

_____
President

Date of President's Approval: _____

REFERENCES

Executive Order RP-49 -Texas Office of the Governor
Texas Government Code Section 447.004– State Energy Conservation Office
Texas Administrative Code Title 34, Section 19.14– Utility Management Planning
Texas Administrative Code Title 34, Section 19.32– Energy Conservation Design Standards
Texas Education Code, Sec. 51.927, Energy Savings Performance Contracts
Texas Education Code, Sec. 61.0651, Management Policies