

Louisiana State University

Office of Facility Services

Operating Instruction 6201

Revision: 3
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SUBJECT: ENERGY EFFICIENT REPLACEMENTS OR NEW INSTALLATION EQUIPMENT STANDARDS

I. General Information

- A, Any new purchase of equipment should consider economics and efficiency. If an energy efficient item, model, solution, etc. is available, it should be purchased as long as the difference in the initial cost is less than the projected energy cost savings over the expected life of the device.
- B. An energy cost study is to be performed on any building-related equipment purchase over \$2,500. The study should, at a minimum, list the normal solution and the energy efficient solution, the projected energy cost savings versus the initial purchase of the most efficient solution, the simple payback in months and the life expectancy of each solution.
- C. The purchase decision is to follow the recommendation of the study unless a waiver is given by the Assistant Vice Chancellor or by the Director of Energy Services. The study will be given to the Director of Energy Services to review. The completed study and any waivers are to be given to the Director of Energy Services who will maintain a file.
- D. Energy Services will provide assistance in performing these energy studies. Energy Services will also assist in locating efficient alternatives and will provide current energy cost data. In order to reduce the number of studies, guidelines will be given for several universal items.

II. Building Components

- A. **Windows**-New windows are to be double-paned and generally inoperable. The use of solar reflective film is recommended.
- B. **Insulation**-Roof insulation is to be a minimum of R-25. Wall insulation is to be a minimum of R-19.
- C. **Weatherstripping**-Weatherstripping is to be replaced or added to all doors and operable windows.

III. Mechanical Components

- A. **Air Handling Units**- A study is to be performed to investigate reducing the unit size by reducing the heat load. The unit is to be connected to the campus Building Automation System (BAS) prior to start-up. The BAS is to control all automatic valves and dampers. The use of variable volume systems is highly recommended. New multi-zone units and single zone units are to control temperature via the campus BAS using electronic room and/or return air sensors.
- B. **HVAC Controls**-Existing pneumatic controllers are to be replaced with BAS components. For example, a defective receiver-controller is to be replaced with electronic sensors driving the existing pneumatic valve.
- C. **Chilled Water Valves**-Chilled water valves on the Central Chilled Water System are to be two way valves.
- D. **Chillers**-A study is to be performed to determine the optimum efficiency and refrigerant option or the feasibility of tying on to a more efficient system.
- E. **Cooling Towers**-Use crossflow tower design in lieu of a counter flow design.
- F. **Water heaters**-Use high efficiency type heaters. The use of electric water heaters is discouraged. Consider point of use type heaters if electric heaters are used. Use of electric water heaters requires written permission from the Director of Energy Services.
- G. **Insulation**-When steam, condensate chilled or hot water lines are replaced or repaired, the appropriate insulation is to be replaced.

- H. **Water Treatment**-Steam and hot water boilers and chiller condenser water systems must be integrated into an effective water treatment program prior to equipment start up.
- I. **Variable Volume System**-Use variable frequency drives in lieu of mechanical speed drives or inlet vanes.
- J. **Window Units**-Use of window units is discouraged. If a building has chilled water available, window units are not allowed. Exceptions require written approval from either the Director of Energy Services or the Director of Facility Maintenance.
- K. **Air Compressors**-Compressed air is to be supplied from the central compressed air system if it is available.
- L. **Pumps**-Minimum pump efficiency is to be 85 percent.

IV. Electrical

- A. Lights
 - 1. The use of incandescent lighting is to be limited to temporary construction lighting and specialty lighting.
 - 2. Replacement of existing incandescent lamps will be with appropriate sized fluorescent fixtures with electronic ballasts and T-8 lamps.
 - 3. Replacement of incandescent lamps is to be with self ballasted fluorescent lamps where there is a time constraint or a conventional fluorescent fixture is impractical. Each use of the self ballasted fluorescent lamp must be approved by the Director of Energy Services.
 - 4. Fluorescent Lamps-Existing 40 watt lamps are to be replaced with 34 watt lamps. If the ballast is bad, upgrade the fixture to the T-8 style lamps and ballasts.

5. **Fluorescent Ballasts**-New and replacement ballasts are to be an electronic type and use energy saving T-8 lamps. Any exceptions to this must be approved by the Director of Energy Services.
 6. **Exterior Lights**-High pressure sodium (HPS) is to be used, unless another type is approved by the Director of Energy Services. Existing mercury fixtures are to be converted to HPS whenever maintenance work is performed on the fixture. Consider using LED or Induction fluorescent lighting if cost competitive.
 7. **Exit Fixtures**-Existing incandescent fixtures should be converted with a fluorescent type retrofit kit or with the LED lamps.
 8. **Motion Detectors**-Motion detectors should be installed in offices, conference rooms, classrooms, etc. applications if connected lighting load exceeds 500 watts. Lighting in restrooms and storage rooms should always be controlled by motion detectors.
- B. **Motors**-Standard efficiency motors are not to be rewound. They are to be replaced with high efficiency motors. Exceptions are permitted with the approval of the Director of Energy Services for non-standard motors or motors with runtimes of less than 1,000 hours per year.
- C. **Transformers**-Transformers 30 KVA and larger are to be purchased with an 80 degree C rise.
- D. **Copy Machines**-Copy machines are to be equipped with an energy reduction feature to reduce consumption (turn off the heater element) if the copier is not being used.
- E. **Appliances**-Energy consumption should be a key consideration in purchasing appliances, such as refrigerators, microwaves, televisions, stoves, ice machines, etc. All items should be Energy Star compliant.
- F. **Computers and Office Equipment**-All computers and office equipment should be Energy Star compliant.