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Energy Efficient Lighting Policy at UNC Chapel Hill

Background

In December 2005, The University of North Carolina at Chapel Hill adopted a Sustainability Policy to serve as a guide to fostering and demonstrating approaches to sustainability. In this Policy, Carolina committed to developing "*policies, practices, and curricula (which) should, when possible, embody approaches that reduce life cycle costs, restore or maintain the functioning of natural systems, and enhance human well-being*." The Sustainability Policy included a commitment to continuous improvement in procuring and managing energy in a manner that conserves wisely, while fully supporting UNCs' mission of teaching, research and public engagement. In addition to reducing unnecessary use, energy conservation also promotes reduced air and water emissions, improves overall environmental health and promotes human health and well-being.

One of the aims of the Vice Chancellors Sustainability Advisory Committee (VCSAC) has been to develop policies that encourage reduced energy consumption and efficient use of material resources. The most significant source of energy consumption in campus buildings is building component systems such as heating, air conditioning, and lighting. Within campus buildings, lighting systems are one of the largest consumers of energy. The majority of interior lighting systems on campus are currently a mixture of incandescent and fluorescent lamps.

One major drawback to incandescent lamps is their relatively low efficacy or efficiency; typical incandescent lamps produce less than 20 lumens per watt (lpw) while typical fluorescent lamps produce about 60 lpw. Another drawback is the short life of incandescents (750 to 2,000 hours) compared with the 15,000 to 30,000 hours expected from a typical 4-foot fluorescent tube.

Lamp manufacturers have responded to the demand to retrofit lamps in existing incandescent fixtures by developing compact fluorescent lamps that are not much larger than incandescent lamps. Unlike the more familiar long, narrow tube fluorescents, these lamps can be screwed directly into an existing incandescent fixture. The lamps are folded into a u-configuration or spiral-configuration to increase lumen output dramatically. These 5- to 40-watt lamps vary greatly in size, shape, and appearance. Typically, the lamps simulate incandescent light, but lamps that blend in with the fluorescent lamps commonly used in offices are also available. Color rendition is good to excellent, and the lamps produce 30 to 69 lpw. Typical 60 watt and 100 watt incandescent bulbs can be replaced with 13 watt and 26 watt compact fluorescent lamps respectively, with the same light output. Most compact fluorescents have a life of 7,500 up to 15,000 hours, which means they do not need to be replaced as frequently as incandescent bulbs.

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With the commercial development of cost-effective compact fluorescent light (CFL) bulbs, UNC has an opportunity to further reduce energy consumption by replacing current incandescent bulbs with CFL bulbs in compatible fixtures across the campus. This policy requires:

1. The campus to ensure that all future building projects that include lighting will dictate fluorescent fixtures and lights and,
2. That all existing incandescent lamps on campus be replaced with fluorescent lamps no later than January 31, 2008. Departments are responsible for replacing such lamps in departmental equipment; Facilities Services is responsible for replacing such lamps in all other equipment.

Campus Policy Regarding Incandescent Lamps

Whereas incandescent lighting inefficiently converts electricity into illumination, and generates significant heat;
Whereas compact fluorescent lamps are approximately four times as energy efficient as incandescent lamps while producing the same light output;
Whereas compact fluorescent lamps last up to ten times as long as incandescent lamps, thereby reducing labor costs for replacement;
Whereas compact fluorescent lamps are now commercially available to replace incandescent lamps in virtually all fixtures, and at reasonable cost;

The University shall henceforth:

- **Cease the use of conventional incandescent lamps, those with medium screw bases, in all existing University lighting systems for which replacement fluorescent lamps are available, no later than January 31, 2008. Dimmable incandescent lighting systems are currently exempt from this deadline and will be phased out over time.**
- **Discontinue specifying incandescent lamps in all capital projects, including new buildings and major and minor renovations, except for those cases where fluorescent lighting is not commercially available or where other considerations, such as security, safety, original art work, specialty space functions, or existing whole building systems require other than fluorescent lighting. All exceptions will require dimming control of lighting with lighting level designed for 90% maximum setting. Dimming preset appropriate to space function to be set during system commissioning.**

Exceptions to this policy require approval from the UNC Energy Conservation Manager. The Energy Conservation Manager can be contacted at 962-7283 or at Save.Energy@unc.edu

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