

Proposal to Study Utilization and Cost of Electric Receptacle Control Per Florida Code Requirement

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Introduction

Florida Building Code requires office spaces built in accordance with ASHRAE 90.1-2013 Section 8.4.2 to have 50% of electric outlets (125 volt, 15-and 20-amp) on a control that cuts power off after some period of time in private offices, conference rooms, copy or printer rooms, break rooms, and individual workstations. The control may be based upon occupancy/vacancy sensor or some time schedule.

Research Questions:

How are controlled receptacles being utilized in occupied Florida business spaces?

What energy is required to control these receptacles and what energy is being saved in Florida installations?

Are there additional safety issues that should be considered?

What are the associated increase in design, equipment and installation costs of code required controlled receptacles in Florida?

Code and Background Relevant to Florida:

The Florida Building Code permits different methods for compliance. One common compliance path is in accordance with ASHRAE 90.1-2013. This specific code requires that 50% of electric outlets (125 volt, 15- and 20-amp) be on a control that cuts power off after some period of time in private offices, conference rooms, copy or printer rooms, break rooms, and individual workstations.

Some Florida electrical contractors have reported that there are significant associated costs to comply with this. There is concern that in actual practice there is very little energy saved. The reasons for potentially diminished savings depend upon occupants choosing to use the controlled receptacles and upon the actual power saved when chosen devices are automatically switched off.

Possible reasons occupants may not use controlled outlets with space occupancy controls have to do with if they tolerate interruptions to things like computers or phone chargers. Many computers are plugged into uninterrupted power supplies that are not designed for much more than 5 minutes without power. Others intentionally leave personal computers on to allow access from outside the work location. Other spaces such as break rooms with microwaves, refrigerators, or other appliances with clocks and coffee pots kept warm are not desirable to be on an occupancy based control. Centralized electric service panel control based on a business schedule can be much more expensive.

Electric contractors have also expressed concerns that the potential for overloading uncontrolled circuits may increase. The added use of extension cords, power strips, and overloaded circuits increase fire hazards.

Scope of Work:

1. Visit 10 office buildings that have complied with having the controlled office outlets and determine the type and number of items plugged into controlled outlets and type and number of items plugged into non-controlled outlets. The method of receptacle control will also attempt to be determined.
2. Develop an estimated annual energy savings potential for a personal office, break room and conference room using data from the site visits. The energy associated with required receptacle controls will also be accounted for in the estimate and will be used to offset potential savings. Energy use will not be measured. Appliance energy will be estimated based upon appliance power ratings and a representative control schedule. Reduced power draw of appliances with sleep modes will also be accounted for.
3. Contact electric contractors that have bid and installed controlled electric outlets in accordance with code to determine cost of design, equipment and installation.
4. Write a final report with study results and provide any warranted recommended changes to Florida code.

Deliverable:

An interim report will be prepared about mid-way into project to discuss progress and findings to the Code Technical Advisory Committee. A final report will be prepared that provides results of the research. The rate of utilization, potential for energy savings and cost of the required measure will be reported. Recommendations for Florida code changes will be made if warranted.

Budget:

Budget total is estimated at \$21,000 and covers all costs for labor, expenses, and overhead.