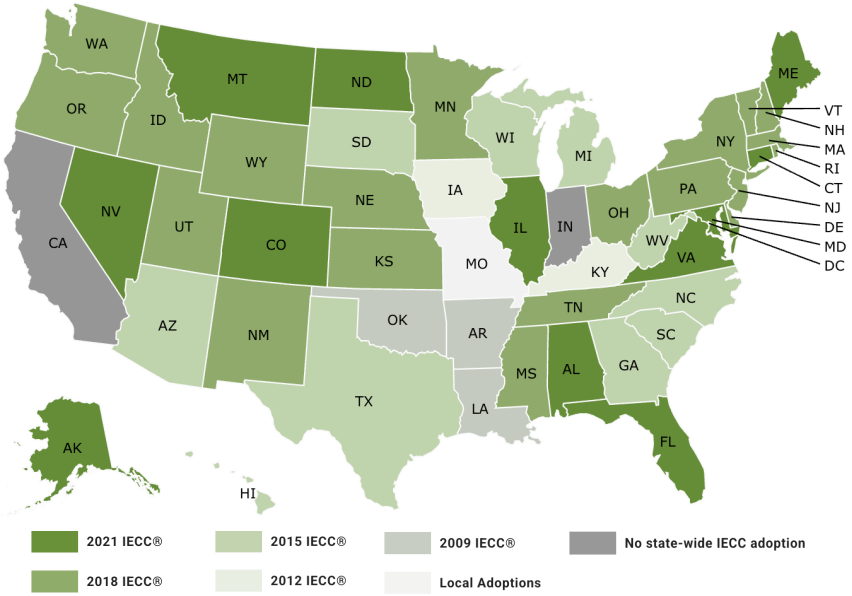
3 WAYS TO CUT PLUG LOADS

Plug load control impacts many commercial buildings, and it's not slowing down. As you can see from the map below, much of the country has already adopted, or recognizes, ASHRAE Energy Efficiency Standard 90.1 as an acceptable code for energy compliance. While it may take some time for all states to adopt the latest version of the energy code, many are well on their way.



WHAT IS PLUG LOAD CONTROL?

ASHRAE Energy Efficiency Standard 90.1 requires that at least 50% of all 125-volt, 15- and 20-amp receptacles must be controlled – turning themselves on and off to save energy. A closer look at Section 8.4.2 of ASHRAE 90.1 reveals that these receptacles shall be controlled by an automatic control device that shall function on the following: a scheduled basis, an occupant sensor or a signal from another control system. Plug-in devices do not need to comply with this standard.

WHAT DOES PLUG LOAD CONTROL DO?

By controlling devices in this way, plug load control helps building owners save energy – and money. In many commercial buildings, energy is wasted through "vampire loads." These "vampire loads" occur when equipment is plugged in and still drawing power, but no one is using it. Even in standby mode, printers, computer monitors, water coolers and other miscellaneous electrical loads (MELs) waste energy in this manner, as they are commonly left plugged in overnight, consuming energy when the building is vacant.

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When a facility manager takes an honest inventory of these receptacles, they can see real opportunity for energy savings with automatic plug load control.

As governed by the energy codes, there are three main ways that this can be achieved. No matter which method you choose, you're looking at big savings in time and energy costs. No longer will you have to worry about these power sources yourself – manually sweeping floors and unplugging equipment; these systems can help you control that behavior automatically.

1. SCHEDULE-BASED

Schedule-based control utilizes programmed time clocks to automatically shut off power to the receptacles. This simple method for control allows you to tailor your strategy to the needs of the building's occupants. For example, if the workday ends at 6:00pm for the employees that occupy Floor 1, Zone 2 of a building, then you can program the time clock to shut off power accordingly.

This scheduling can be done in many ways and is quite flexible, thanks to the many Legrand solutions that exist. For control of entire circuits, entire zones or even entire floors, scheduling can be done at the panel with any number of Wattstopper® panel-based solutions. Or, for a more localized approach, consider the Plug Load Timer Receptacle. These wiring devices feature a 15 or 20 Amp receptacle combined with a programmable time clock and relay rated for switching 20-Amp loads. These products make for an easy install or retrofit and can stand alone without the need for more sophisticated programming. No matter how big or small your needs may be, Legrand has a solution for automatic schedule-based plug load control.

2. OCCUPANCY-BASED

Another acceptable means for automatically turning off receptacles is occupancy-based control. Using sensors, this intelligent system can determine when a room is empty, automatically shutting off power. In many cases, this strategy can simply bolt onto your lighting control strategy as well.

Like schedule-based control, Legrand offers a variety of ways to control loads based on occupancy. The simplest is an analog-based sensor solution. Simply select the appropriate Wattstopper sensor for the application, wire it to a Lighting & Plug Load Power Pack and run your wires to a Legrand Plug Load Controllable Receptacle. This approach is similar to many lighting control installations and is often used in new construction for traditional office spaces.

A different approach - one that saves both time and money at installation by eliminating the laborious task of pulling wire and running it from the power pack in the ceiling to the receptacle 18-inches off the ground - is seen with the Legrand Plug Load RF Signal Pack and RF Receptacle. In this case, receptacles are still controlled via occupancy sensing, but rely on radio frequency communication from the sensor (via the Plug Load RF Signal Pack) and the Plug Load RF Receptacle. Since the plug load relay is self-contained within the receptacle, this solution allows for receptacles to be simply upgraded to become more intelligent. It also makes it possible to bolt your plug load control right onto the lighting controls system in the space. Even better, one Plug Load RF Signal Pack can control many different Plug Load RF Receptacles and signals can be reached as far as 150 feet. This wireless solution is extremely efficient for retrofits and only requires one sensor and one power pack to drive both your lighting and plug load controls. It is also compliant with 2017 NEC, CA Title 24 and ASHRAE 90.1.

3. SYSTEM-BASED

For plug load control over an entire building, a systems-based solution is best. With this system, you can utilize a combination of both schedule-based and occupancy-based plug load solutions together.

For example, the Wattstopper Digital Lighting Management (DLM) is a system-based plug load solution that works through an advanced technology platform that provides control infrastructure at every switch, outlet and lighting load in an entire building for optimal energy performance. It is an effective lighting and energy control design for the most comprehensive code compliance, including CA Title 24 code compliance. DLM can be integrated with Building Management Systems to provide insight and data of the entire building's performance. The entire system works together with items like wall and ceiling occupancy sensors, power packs and timer systems.

CONTROLLED RECEPTACLES

No matter your means for control - schedule-based, occupancy-based or system-based - keep in mind that the individual receptacles must be installed in accordance with the NEC and your local energy code. Section 406.3 of the 2023 NEC stipulates that receptacles controlled by an automatic means must be permanently marked with the NEMA-approved power symbol, and must include the text "CONTROLLED" permanently marked on the face of the device. ASHRAE 90.1 and CA Title 24 have similar requirements around receptacle markings. Legrand offers a wide variety of half and dual controlled receptacles that meet these requirements, including PlugTail®, which makes the building's wiring infrastructure more flexible and helps make maintenance easier. For every facility manager and building owner, it's a challenge to find the right plug load control solution that meets code requirements. It's important to always consider ways to save energy, but it can be more complex when there are regulations associated with implementation. However, understanding that the code outlines three specific methods can simplify the process, especially when there are convenient solutions that correspond directly to these specifications.

As widespread adoption of ASHRAE standards continues, making steps now to explore your choices can take a load off your mind – and eventually your wallet. To get started, reach out to vendors that offer plug load control solutions and discuss the needs specific to your building. Good vendors will be able to help you narrow down your choices and recommend a solution that works best for you.

TO LEARN MORE ABOUT LEGRAND'S PLUG LOAD CONTROL SOLUTIONS, VISIT

www.legrand.us/passandseymour/plug-load-receptacles

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Electrical Wiring Systems
60 Woodlawn Street
West Hartford, CT 06110
1.877.BY.LEGRAND (295.3472)
www.legrand.us

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