Case Study: Commercial Building Plug Load Control with Smart Plugs

Smart Plugs Reduce Energy Consumption

Equipment connected to building receptacles draw a considerable amount of power, often on a 24x7 basis. Based on US Department of Energy estimates, this “plug load” accounts for approximately 25% of the electricity used within commercial buildings. The BOSS Smart Plug family of products is designed to address this opportunity to enable energy and operational savings. Utilization of Smart Plugs enables the management, monitoring, and control of end use devices including: computers, copiers, printers, water coolers, water fountains, vending machines and window A/C units.

Through intelligent scheduling of device off times to match periods when the equipment is not utilized or when the building is unoccupied, facilities are able to achieve significant energy savings with simple paybacks of under one year for deployment of Smart Plugs. By leveraging existing network infrastructure, the BOSS Smart Plugs family enables centralized monitoring and control of the connected devices via standard web browsers and mobile applications. Furthermore, the connected Smart Plugs provide a means to support advanced applications including demand response and peak load management.

This case study provides comprehensive information on achieving over 53% energy and electricity expenditure reduction by utilizing the BOSS Smart Plugs.

BOSS. Smart Buildings Start Here.

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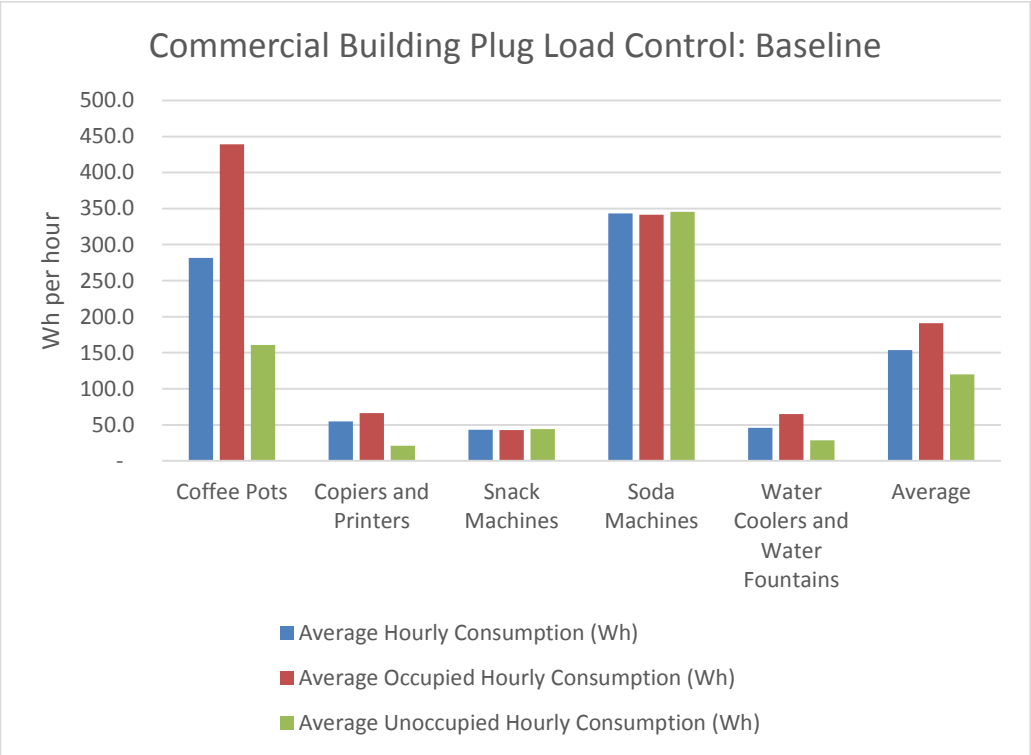
What We Did

BOSS Controls and its partnership team of energy service companies (ESCOs), building operators, and service companies engaged a variety of commercial facilities for field trial. The selected facilities are dispersed over a wide geographic with a variety of building types including commercial office high rise, small commercial campus, and light industrial. Within those facilities the BOSS team selected a variety of plug loads including: copiers and printers, water coolers and water fountains, coffee pots, and vending machines. The BOSS Smart Plugs have integrated power measurement and reporting capabilities which simplified the data collection and reporting.

"The BOSS Smart Plugs are easy to use and works to save you money!"

Greg Lok, PE CEM
VP of Engineering and Product Development,
The Efficiency Network (TEN)
Pittsburgh, PA

The Smart Plugs were installed and connected to those devices to collect baseline data for a minimum period of 14 days.



After the baseline data collection period, schedules were implemented to turn the devices off during unoccupied periods. These unoccupied periods were typically weekdays before 6:00 AM, weekdays after 6:00 PM, and during weekends. The Smart Plugs were run with the implemented schedule for a minimum of 14 days to measure and validate the energy savings.

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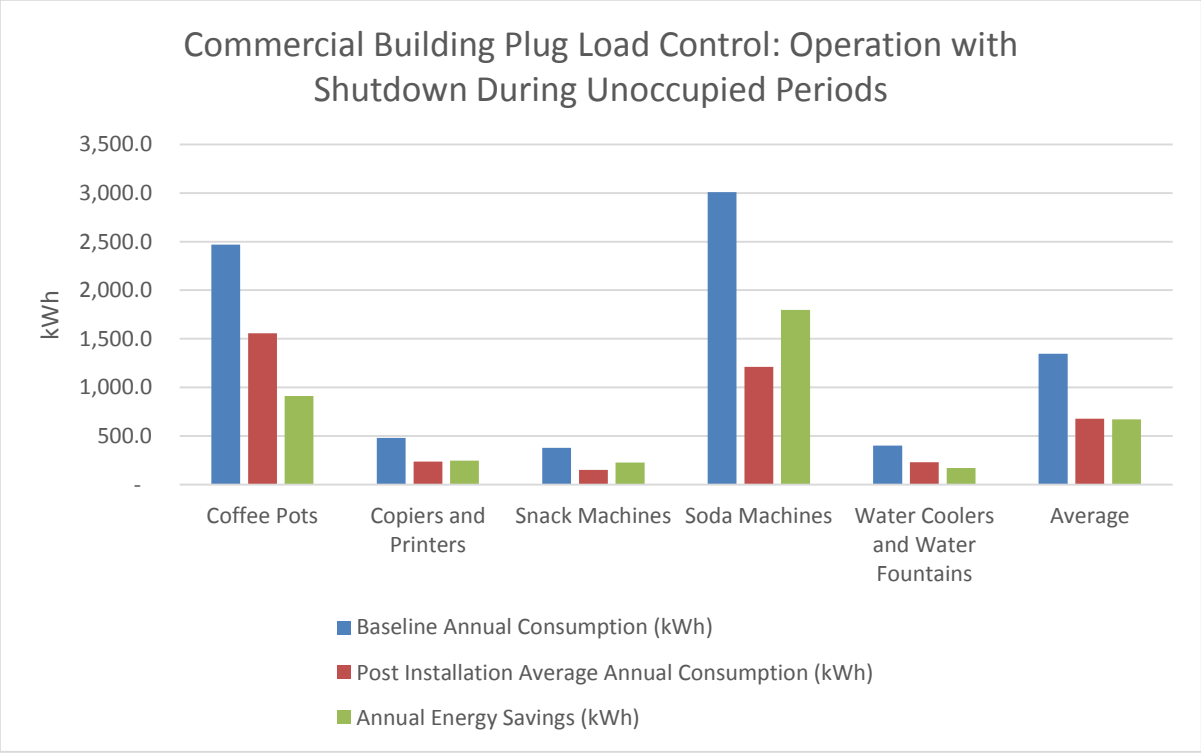
Demonstrated Results

The program demonstrated the following key results:

- **SCHEDULE-BASED CONTROL HAS SUBSTANTIAL ENERGY SAVINGS.** Use of schedule-based shutdown during unoccupied periods results in substantial energy savings in excess of 50%.
- **EQUIPMENT WITH THE HIGHEST ENERGY CONSUMPTION HAS THE GREATEST BENEFIT.** On a total energy savings basis, the benefit is the largest for the equipment with the highest energy consumption (e.g., soda vending machines) with a lower benefit for equipment that has low consumption or low unoccupied consumption (e.g., water fountains, copiers)
- **SHORT PAYBACK PERIOD.** For the Smart Plugs installed in this study, the simple payback for all areas is less than 1 year with simple payback as short as 4 months for high energy consuming equipment.
- **JUSTIFICATION FOR WIDE DEPLOYMENT.** The energy savings, short simple payback, and verifiable results substantiate wider deployments throughout the selected facilities.

"Everyone should be interested in 'going green'!"

Gary Sechler
Engineering Manager at
Winthrop Management LLC
Pittsburgh, PA



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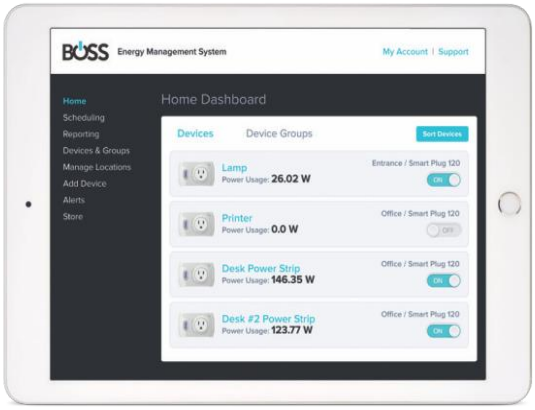

ATMOSPHERES

BOSS Smart Plug Product Features

Single 120V (15 Amp) or 220V (20 Amp) grounded plug-in controller

Use your existing WiFi network with no additional networking infrastructure required

Controlled via mobile device or computer with internet connection

Program with 7-day schedules and easily upload saved schedules to large groups of devices simultaneously

Monitor real-time and peak power usage (watts)

Monitor and graph energy consumption (kilowatt hours)

Group and simultaneously control multiple devices by location, device type or any user defined category

Don't just manage, **BOSS.** Contact our sales team today.

BossControls.com/Sales

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