A FRIEND'S HOUSE

A Friend's House is a 25,285 square foot lodging facility in McDonough, GA that implemented several energy conservation measures in 2014 through the Grants to Green program.[1] A Friend's House partnered with Southface to analyze building performance before and after retrofit implementation through the U.S. Department of Energy sponsored Advanced Commercial Buildings Initiative. Actual building performance data was collected with circuit-level energy monitors and temperature sensors deployed for two years. Southface studied monitoring data to assess the actual performance and savings of efficiency strategies implemented at A Friend's House.

BUILDING SPECIFICATIONS:

Where:	McDonough, GA
Building Use:	lodging
Year Built:	1998 (2006 addition)
Square Feet:	25,285
Floors:	1

GRANTS TO GREEN™

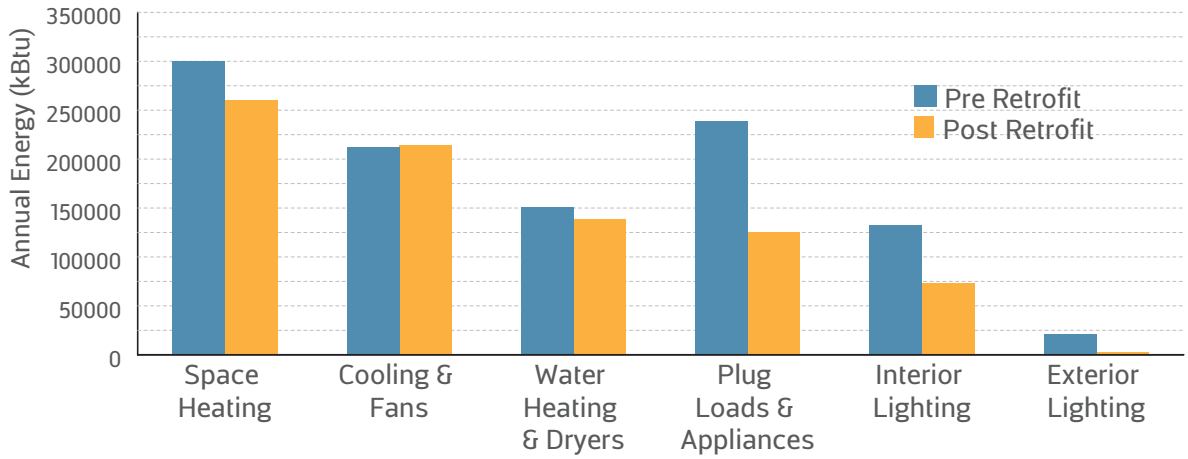
Where is energy being used?

Before retrofits, HVAC related end-uses (heating, cooling, and fans) accounted for the largest energy end-use, at 48%, followed by appliances and plug loads at 23%, water heating and dryers at 14%, interior lighting at 13%, and exterior lighting at 2%.

Findings

A Friend's House is currently saving 23% in energy consumption relative to their pre-retrofit energy performance.

Figure 1. Energy use segmented by end-use before and after energy retrofits.



What is driving energy savings?

INTERIOR LIGHTING

Incandescent and fluorescent fixtures were replaced with LEDs operated by occupancy-based controls. This project reduced annual interior lighting energy consumption by 45%, saving approximately $1,700 each year.

EXTERIOR LIGHTING

Metal halide wallpacks were replaced with LED fixtures operated by photocells and bi-level occupancy controls. Bi-level occupancy controls operate the fixture at a lower power unless occupancy is detected. This project reduced annual exterior lighting energy consumption by 87%, saving approximately $500 each year.

ENERGY STAR APPLIANCES

Five appliances were replaced with ENERGY STAR® equipment, and one appliance was removed. This project accounted for 47% of the total energy savings realized with the fastest payback of 2.4 years.

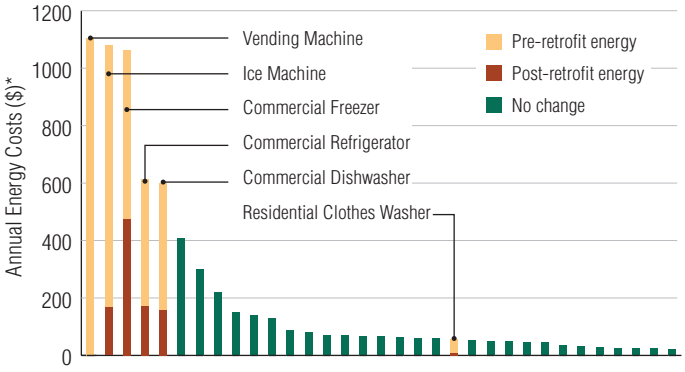
1 Grants to Green is a partnership between Southface and The Community Foundation, providing technical assistance and funding for energy efficiency upgrades.

Circuit Level Monitoring
Data Analysis & Project Results

ENERGY STAR APPLIANCES

Energy costs for the top five largest energy consuming appliances were cut in half or more by replacing them with ENERGY STAR qualified models (Figure 2). Circuit level monitoring verified the savings from the ice machine, freezer, refrigerator, dishwasher, and clothes washer upgrades.

Figure 2. Appliance and plug load annual energy costs before and after retrofit.

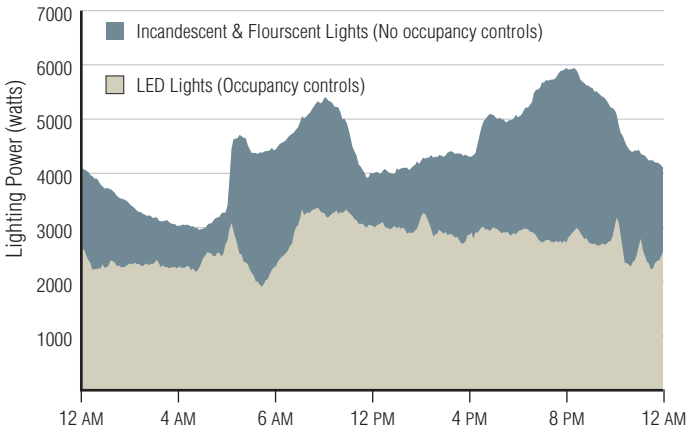


These projects reduced total annual energy use by 10% with a combined payback of 2.4 years. In 2017, A Friend's House will be replacing the next highest energy intensive appliances, a second freezer and an electric clothes dryer.

INTERIOR LIGHTING

All interior lighting was replaced with LED fixtures and occupancy-based controls in January 2015. From the monitoring data, the average interior lighting power before and after retrofits could be compared (*Figure 3*). Substantial reductions in lighting power throughout the day were realized from this project.

Figure 3. Average interior lighting power before and after retrofits

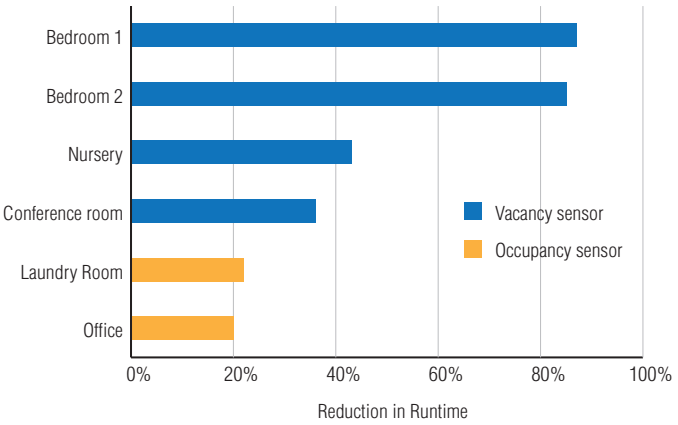


In addition to the more efficient LED lights, occupancy-based lighting controls substantially reduced lighting runtimes. Two occupancy-based sensor types were installed: occupancy and vacancy.

- In a room with an occupancy sensor, the sensor turns on lights when occupancy is detected, and turns off lights after a specified period of un-occupancy.
- In a room with a vacancy sensor, lights must be manually turned on by the occupant and the sensor will turn off the lights after a specified period of un-occupancy.

Room lighting controlled by vacancy sensors had higher reductions in lighting run time compared to rooms with occupancy sensors (*Figure 4*).

Figure 4. Comparison of rooms with vacancy and occupancy sensors, percentage reduction in lighting runtime.



↘ In the future, occupancy-based lighting controls should be set to vacancy mode for increased energy savings.

Additional Information

Grants to Green | *www.grantstogreen.org*

ACBI | *www.southface.org/programs/acbi*

* Cost savings assume $.0.10/kWh