2011 Case Study

Green Lodging Circuit Rider

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Greater Kansas City Area

Company background
The 2011 green lodging intern worked primarily with hotels in the greater Kansas City area in partnership with the lodging association. The 2011 green lodging project work focused on energy and water conservation.

Project background
In year two of the green lodging intern program, the intern was assisted by lodging association member, Joe Andrick, who helped him gain access to several interested lodging facilities. After contacting interested hotels, facilities were provided a list of services and asked to prioritize the services based on their facilities' needs. The services included the following:

- Water conservation opportunities
- Energy conservation opportunities including lighting, HVAC systems, and appliance upgrades
- Waste-reduction opportunities
- Environmental policy statement

After each hotel determined what services were most important, a site visit was scheduled. Once all information pertaining to the hotel was gathered, conservation opportunities were researched and then documented in facility-specific reports sent to facility contacts.

Incentives to change
Like other industries, lodging facilities are looking for ways to stay competitive while cutting costs and reducing their environmental footprint. In fact, reducing energy use by 10 percent across the lodging industry would save $745 million per year[1]. The hotels requested these services in an effort to identify opportunities for cost savings, reduction of energy and water usage, and minimization in the amount of solid waste sent to the local landfill. Taking these steps and establishing a sustainability policy demonstrates to their staff and guests that environmental conservation is a priority. In addition to the assessment work completed, the intern worked with other state staff and the Greater Kansas City Area Lodging Association to draft a "Green Certification" program.

Projects reviewed for E2/P2
1. Water conservation
Water conservation projects were investigated at nine of the 10 hotels and were primarily focused on guestroom water use. Installation of low-flow faucet aerators was found to have a rapid return on investment, generally only a few months. Even though the most efficient aerator is a 0.5 gallon-per-minute (GPM), a 1.0 GPM aerator was selected instead as the pressure of water generated by the 0.5 GPM aerator was insufficient to meet the standards of the hospitality industry. Due to the low cost and fast installation of these aerators, installation was recommended in all nine cases. If installed at all facilities, the aerators would result in an estimated annual savings of $15,012 and 2,717,316 gallons of water.

Similarly, replacing current showerheads with high-efficiency, 1.0 GPM showerheads could save the hotels an estimated $33,902 and 5,966,646 gallons annually.

2. Energy conservation
A. Lighting
Many of the hotels visited this summer had already installed energy-efficient lighting such as compact fluorescent lamps (CFL) in guest rooms and hallways, and T8 fluorescent lamps in lobby, common, and service areas. A few of the older hotels needed lighting upgrades where older, less-efficient lamps such as T12s, T9s, and incandescent lamps were in use. Occupancy sensors and dusk/dawn timers were also evaluated for use in certain areas of the hotel, including restrooms, gyms, business centers, and service areas. If all recommended lighting projects are implemented, the hotels could save an estimated total of $26,793 and 389,846 kWh of energy annually, all within a reasonable payback period.

B. Heating, ventilating, air-conditioning (HVAC) projects

i. CoolNSave commercial system for condenser units and roof-top units

Several of the hotels visited have split-system HVAC units as well as roof-top units (RTUs). Both systems have a common factor: condenser coils. As most of the condenser units and RTUs are less than 10 years old, upgrades cannot be economically justified. Therefore, other methods were explored for improving efficiency and reducing costs. A company called CoolNSave manufactures custom devices that can be retrofitted to any condenser unit or RTU in order to reduce the load on the compressor units. The CoolNSave system reduces the ambient air temperature, consequently decreasing the compressor load, and resulting in lower electric usage. The CoolNSave system generally offers better payback periods on larger units with high cooling capacities, and thus its use was recommended only when the payback period was realistic. If installed in the area hotels, this system could save an estimated $17,110 and 256,278 kWh of energy annually.

ii. Variable speed drives (VSDs)

A VSD is a solid-state control that varies the speed of an AC induction motor. VSDs allow equipment to operate at lower speeds. This lower speed equals less energy usage, and results in efficient part-load operation and reduced operating costs. VSD application was mainly evaluated for use with air-handling units (AHUs) and pumps, since both these types of equipment make use of a motor to perform work. In the case of an AHU, the motor powers a fan that blows treated air. In the case with a pump, the motor performs work on the fluid. VSD application on pumps was evaluated at two hotels, and generally has shown to have a very competitive payback period. If installed at these two area hotels, VSD application on pumps could save an estimated $80,385 and 1,148,360 kWh of energy annually. Similarly, VSD application on AHUs was investigated at four hotels and could potentially save these hotels $15,653 and 210,464 kWh of energy annually.

3. Solid waste management

A few hotels had a waste segregation and recycling program in place, and one hotel implemented a program as a result of the intern's research. The Overland Park Residence Inn, decreased its trash pickups and costs, diverting an estimated 15 tons of landfill waste annually at a savings of $658 per year.

Summary of 2011 recommendations for Green Lodging Kansas City area hotels

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Water—faucet aerators	2,717,316 gal	$15,012	Recommended
Water—showerheads	5,966,646 gal	$33,902	Recommended
Lighting upgrades	282,465 kWh	$18,998	Recommended**
Occupancy sensors	81,641 kWh	$5,770	Recommended
Timers	25,740 kWh	$2,024	Recommended
HVAC—CoolNSave system	256,278 kWh	$17,110	Recommended**
HVAC—VSD on AHUs	210,464 kWh	$15,653	Recommended**
HVAC—VSD on pumps	1,148,360 kWh	$80,385	Recommended
Solid-waste reduction	15 tons	$658	In Progress
Total savings *	**8,683,962 gal, 2,004,948***kWh, 15 tons solid waste**	**$189,512**	
GHG reductions *	**1595.289 metric tons CO2e**		

*Does not include projects that are "not recommended" or ones for which "further research is needed."
** Values shown only include projects that were recommended and will differ from values in final report.
*** This value excludes a recommended PTAC upgrade. See final report for details.

[1] http://www.energystar.gov/index.cfm?c=hospitality.bus_hospitality