



Twenty proven ways to save energy in limited-service hotels

*Another great article from The Rooms Chronicle, the #1 journal for hotel rooms management! ***Important notice: This article may not be reproduced without permission of the publisher or the author.*** College of Hospitality and Tourism Management, Niagara University, P.O. Box 2036, Niagara University, NY 14109-2036. Phone: 866-Read TRC. E-mail: editor@roomschronicle.com*

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Limited-service hotels are typically smaller than full-service hotels, but nowadays, have much of the luxury of the larger properties. Limited-service hotels typically are two to three stories high, with a small indoor pool, and most of them have a small buffet-style dining area, usually for breakfast. One of the most notable characteristics is that almost all of them heat and cool their guestrooms and other spaces with package terminal air conditioners (PTACs).

After performing audits on many of these hotels across the country, we have noticed that there are about 20 definitive and very cost-effective ways to reduce energy consumption without directly affecting guest comfort:

1. At the top of the list, and perhaps one of the most cost-effective, is the guestroom energy control system. This consists of a motion sensor that sets back temperature supplied by the PTAC when the room is unoccupied for more than fifteen minutes. Depending on the features you choose, these devices can cost anywhere from \$150 to \$300 per room; typically with under a two-year return on investment.
2. Install seven-day timeclocks on all mechanical devices in your property that can be turned off at some period of the day. Typical examples of this are the guestroom exhaust fan system, the corridor supply fan system, the pool air handling unit, the pool heater, and public restroom exhaust fans. If some type of kitchen hood exhaust fan exists, that should also be placed on a timeclock. Simple timeclocks cost about \$100 each, and can easily be installed.
3. If the hotel's indoor pool is in a lockable room, install an insulating pool cover on both the pool and the whirlpool. The pool cover consists of material that looks like bubble wrap used for shipping purposes. It can be folded up and placed in a storeroom during daytime periods. The cost of this product for both pools will be less than \$300.
4. Install a Vending Miser® on all vending machines accessible to the public. This is a motion sensor located in the area of the vending machine that turns off the compressor when the vending machine is not used over long periods of time. The cost is less than \$150 each.
5. It is estimated that over eighty percent of guests leave their bathroom light on continuously for convenience. Consider installing a guestroom bathroom motion sensor that will automatically turn the light off after fifteen minutes. The motion sensor will also turn on an LED night light, for obvious reasons. Cost is about \$35 each and it can easily be installed by in-house maintenance staff in the existing light switch.
6. There are two types of motion sensors for use throughout the hotel. One is a light switch motion sensor that installs in any existing

Pictured below: Vending machines such as these can consume upwards of \$381 per year in energy expense per machine. By installing an energy saving Vending Miser®, hotels can typically cut this expense in half.



light switch. The other is a ceiling-mounted motion sensor that is used to control an entire area. Typical areas to apply this type of product are public restrooms, storerooms, offices and housekeeping closets. The light switch sensor is under \$20, and the ceiling mounted type costs approximately \$150. The hotel may need to retain an electrician to install the ceiling type.

7. Convert all old style two-foot, four-foot and eight-foot fluorescent lighting from inefficient "T-12" type fixtures to energy efficient "T-8" type fixtures. This will increase lighting efficiency in these areas by about twenty percent. This conversion can be made by replacing the old inductive ballast with a new electronic ballast and installing new "T-8" lamps. Cost is less than \$30 per fixture.
8. Convert all incandescent lighting to one of many types of compact fluorescent lamps. Guestrooms are the first place to start. A 23-watt spiral type compact fluorescent works great. These lamps are also available for recessed can fixtures that use reflective type spots. Flame tip type compact fluorescents are also available for decorative purposes. All of these lamps range in price from \$2.50 to \$8.00 each, and are available from many reputable vendors.

9. During new construction or renovation, be sure to utilize air-to-air heat pumps for your PTAC units, rather than electric resistance heat. This is particularly true for all states north of Florida. The added cost of a heat pump is less than \$100 and will reduce the cost of heating a space by about twenty percent.



10. Install seven-day programmable thermostats on all thermostats located in public spaces. Be sure to install a heavy duty locking cover on them and program them appropriately for night setback.
11. Install ceiling destratification fans in the indoor pool room and the lobby. These fans improve cooling in the summer and redistribute stratified heat in the winter. Cost is about \$100 each.
12. Be sure to implement a basic preventive maintenance program with the use of filing cards. Be sure to tag each piece of equipment with a metal number to be used for establishing maintenance schedules for all equipment.
13. Verify that showerheads throughout the hotel consume no more than 1.75 gallons of water per minute. This can easily be accomplished by placing a white bucket under the shower for sixty seconds and measuring the amount in the bucket. There are many very attractive and comfortable low-flow showerheads on the market today that cost less than \$20 each. This will save hot water and domestic water use.
14. Set the water temperature correctly for all domestic water use systems. Guestroom hot water should not exceed 120 degrees at the coldest point of delivery. The National Swimming Pool Institute suggests that swimming pools should never exceed 80 degrees, and hot tubs should not exceed 102 degrees. Laundry water and dishwashing water must not be heated to over 140 degrees.



15. Eliminate electric resistance heat throughout the hotel wherever practical. Typical locations are vestibules, stairwells, storerooms and corridors. If possible, install direct vent gas heaters or utilize heat pump PTAC units in larger areas.

16. All guest PTAC units have an outside air opening under the cover, which is about one and one-half inches in diameter for guestroom ventilation. During routine maintenance, close this opening and disconnect the operable switch on the front of the panel. Leakage from each PTAC unit typically provides enough ventilation in a guestroom.

17. Train all housekeepers how to set guestroom thermostats appropriately for the time of year. Use a sketch of the thermostat for employees with language barriers. Also, be sure to have housekeepers close blackout draperies to within six inches after the room is cleaned and to report all maintenance items observed in the guestroom.

18. Establish a rudimentary form of energy accounting for the hotel. Keep all utility bills in files so the hotel manager can tabulate this year's use and compare it to last year's. Easy access to this information will be helpful for managers seeking to buy energy in deregulated areas. Energy accounting is also an essential tool to use when budgeting for energy.

19. Install photocells or an astronomical timeclock on all exterior lighting. Be sure the photocell is located directly in the sunlight and clean the lens once a year to make sure it is operating correctly. Also, convert all exterior lighting that consists of reflector-type spotlights to some type of high-pressure, sodium wall-mounted fixture.

Did you know?

In 2001, the Tufts Climate Initiative at Tufts University undertook a pilot study to examine if installing Vending Misers on the University's soda vending machines would realize a savings, both in terms of energy and money. The results are shown in the table below.

—	Without Vending Miser	With Vending Miser
Length of time monitored	1 week	1 week
Electricity Use	66.71 kWh	33 kWh
Cost of device	N/A	\$165
Cost of electricity @ \$0.11/kWh (for one week)	\$7.34	\$3.63
Cost over 52 weeks	\$381	\$189
Payback	N/A	less than 1 year
CO2 savings per machine	—	2300 lbs/year
CO2 savings on 75 machines	—	86 tons/year

The estimated savings from one machine was pegged at approximately \$192/year. However, the less the machine is used the greater the energy savings, because the lights shut off when no one is standing in front of the soda machine and the refrigeration mechanism powers down when the sodas are cold.

- Over half of the aforementioned suggestions likely are eligible for some type of utility rebate. These rebates vary dramatically, depending on your hotel's location in the country. Simply call your utility representative or go online and look up their website to examine an overview of their rebate program for commercial customers. ✧

(TRC's resident energy expert, Phil Sprague is a member of the AHLA Executive Engineers Committee and president of PSA Hotel Energy Consultants. Based in Minneapolis, PSA Hotel Energy Consultants assists lodging companies and individual properties to develop effective, cost-saving energy strategies by auditing and assessing all energy consuming devices and appliances, and delivering comprehensive, customized recommendations in an actionable format. They can be reached at 952-472-6900.)