

Saving Energy and Reducing Costs in RI Hotels & Restaurants

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Presenter

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Strategies for Reducing Energy, 1

Alternatives approaches:

1. List energy efficiency projects:

- Free
- Cheap
- Expensive and quick payback
- Expensive and longer payback

Do these in order, from top to bottom.

2. Lump all capital expenses for energy efficiency into one loan that is paid out of savings on energy bills--called a performance contract

Strategies for Reducing Energy, 2

3. Follow the EPA Energy Star steps:

- Operations and maintenance
- Upgrade lighting
- Reduce plug load
- Upgrade HVAC systems and other energy consuming systems

4. Retro-commission

Operations and Maintenance, 1

- Some hotels reduce energy use by 10% with a rigorous maintenance schedule:
 - clean coils
 - replace filters
 - calibrate controls
 - lubricate and adjust equipment
 - repair leaks in heating system ducts
 - optimize fresh air economizer operations
- Train bldg operators; consider Building Operators Certification Program (www.theboc.info/)

Operations and Maintenance, 2

- Turn off when not needed:
 - HVAC
 - lighting
 - electronics
- Best option for shutting down this equipment: up-to-date EMS's with occupancy sensors; if not, have staff do it

Operations and Maintenance, 3

- Drapes: strategically open or close them; keep closed during summer to eliminate heat gain; keep them open to gain heat in winter and provide free lighting
- De-lamp
- Towel and linen re-use program: design to be “opt-out” rather than “opt-in”
- Set guest hot water at 120 degrees

Saving Energy with Lighting

- Use natural light when possible
- Replace standard incandescent bulbs with ENERGY STAR compact fluorescents (CFLs)
- Replace T-12's with T-8's or T-5's
- Install LED's for exit signs and hard-to-replace lights; cost them out for other applications
- Fluorescents and LED's cast off much less heat than incandescents
- Shut off unneeded lights with motion or occupancy sensors and timers; use photocells for exterior lighting

Saving Energy with Efficient Equipment and Appliances

Reduce Plug Load

- Use Energy Star equipment for guest rooms, kitchens, offices and common areas

Saving Energy in your HVAC System, 1

- Proper size is important
- Energy-efficient boilers and chillers
- Use free cooling when possible
- Consider an energy recovery ventilation system
- Recover waste heat: combined heat and power, laundry waste water, refrigerators

Saving Energy in your HVAC System, 2

- Variable speed drives
- Demand control ventilation
- Insulate ducts, pipes, etc.
- Use ceiling fans to augment a/c

HVAC: Distribution and Terminal Units

- Favor heat pumps over electric heating
- Energy-efficient PTAC's, VTAC's and motors
 - Replace AC motors with Electronically Commutated Motors (ECM) in fan coil units (there is a “dramatic reduction in power required to operate them versus a typical AC motor”)
- Variable air volume (VAV) air handling systems and variable flow pumping stations
- Energy Mgt. Systems: make sure they have good user interfaces, occupancy sensors, and scheduling and setback capabilities

Building Shell

- For B&B's and inns: insulation and air sealing are important, too! They are less important for larger properties.

Other Major Energy Consuming Systems

- Laundry:
 - Ozone
 - Wash full loads only
- Guest room hot water: tank-less systems
- Kitchen: variable flow exhaust control on hoods; new dishwashers use $< \frac{1}{2}$ the hot water of older units
- Computers: ↓ energy use by up to 50% by using Energy Star equipment, laptops, power mgt, web-based software, fewer servers, etc.

On-line Resources for Saving Energy

- **ENERGY STAR for Hospitality:**
www.energystar.gov/index.cfm?c=hospitality.bus_hospitality
- **ENERGY STAR Tools and Resources:**
www.energystar.gov/index.cfm?c=tools_resources.bus_energy_management_tools_resources
- **NStar's Energy Advisor:**
www.nstar.com/business/energy_efficiency/energy_advisor/
- **National Restaurant Association's "Conserve, Solutions for Sustainability"** <http://conserve.restaurant.org/index.cfm>

Consider Renewable Energy

- Solar thermal (hot water) and PV (electricity): more expensive than many efficiency measures; but rich incentives often make them reasonable
- Solar electricity costs keep dropping in price
- Solar panels can be a marketing tool
- Purchasing Renewable Energy Certificates (REC's):
 - Select green-e certified
 - Consider reverse auctions

Transportation, 1

- Bicycle program for guests
- Facilitate bicycle commuting by staff
- Facilitate walking
- Carbon offsets: make it easy for guests to purchase

Transportation, 2

- Hotel van or car: CNG, hybrids, bio-diesel or Smart Cars
- Preferred parking for low-emission vehicles
- Charging station for electric vehicles
- Subsidize staff's use of mass transit

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