HELPING TO MAKE
A WORLD OF DIFFERENCE

Hospitality
Energy Conservation Measures (ECMs)
Where does your energy go?

**Electric**
- Cooling – 27%
- Lighting – 23%
- Space Heating – 11%
- Office Equipment – 7%
- Ventilation – 7%
- Refrigeration – 6%
- Water Heating – 5%
- Cooking – 2%
- Other – 13%

**Natural Gas / Fuel**
- Space Heating – 55%
- Water Heating – 31%
- Cooking – 9%
- Other – 5%
Areas of Focus

- Lighting
- Space Conditioning (heating & cooling)
- Pumps and Fans
- Domestic Water
- Pools
- Laundry
- Restaurants / Cooking
- Plug Loads
Potential ECMs

• Lighting
• HVAC Equipment Upgrades
• Variable Frequency Drives (VFDs)
• Controls / Occupancy Sensors

• Ozone Laundry
• Pools Pumps, covers, and dehumidification
• Kitchen Ventilation
• Walk-in Coolers
• Low-flow DHW devices
• Thermal Envelope
Lighting

Installation of efficient lighting including, but not limited to, efficient fluorescent lamps, ballasts, and fixtures, solid state lighting, and efficient high intensity discharge (HID) lamps, ballasts, and fixtures.

- **Interior**
- **Exterior**
- **Lighting controls**
  - occupancy sensors and daylight dimming controls
Space Conditioning

Improving the overall efficiency of heating and cooling equipment will minimize unnecessary energy utilized to condition the facility. Look for high thermal efficiency, COPs, HSPF etc.

• Equipment upgrades
  – PTACs
  – Single Package or Split System Heat Pump Systems
  – Condensing Boilers
  – Chillers
Variable Frequency Drives (VFDs)

Variable frequency drives applied to fans and pumps in commercial and industrial buildings.

- AHU supply and return fans
- CHW pumps
- Cooling tower fans
- Condenser water pumps
- Heating hot water pumps
- HVAC exhaust fans
- Process exhaust or make-up air fans
- Process cooling pump
- Boiler draft fans
- Water supply or wastewater pumps
- Boiler feedwater pumps
Occupancy Controls

Installation of hotel occupancy sensors (HOS) to control packaged terminal AC units (PTACs) with electric heat, heat pump units and/or fan coil units in Hotels.

Occupancy schedules are highly variable, and rooms are frequently conditioned while vacant.

- Controls include:
  - Occupancy sensors
  - Window/door switches for rooms that have operable window or patio doors
  - Set back to 65 F in the heating mode and set forward to 78 F in the cooling mode (unoccupied mode)

- Average annual kWh reduction per unit: 438 kWh
Control Installations

Site #1 – South Yarmouth Hotel
• 63 Room Hotel
• Upgraded from manual thermostats to programmable with occupancy sensors
• Installed Cost = $36,000
• Annual Savings = $3,000
• Simple Payback (after incentive) = 5 years

Site #2 – Hyannis Hotel
• 102 Room Hotel – Chain
• Upgraded from manual thermostats to programmable with occupancy sensors
• Installed Cost = $37,000
• Annual Savings = $11,750
• Simple Payback (after incentive) = 0.63 years
Ozone Laundry

An ozone system consists of an ozone generator that creates the ozone gas from ambient air and injects it into the wash water where it dissolves, opens up the fibers and releases stains.

- Add-on retrofit to existing washers
- Reduce the need for hot water (~90%)
- Increase textile life
- Limit chemicals
- Decrease water and sewer costs (~35%)
- Cut dryer times
**Pools**

The installation of a 2-speed or variable speed drive pool pump. Operating a pool pump for a longer period of time at a lower wattage can move the same amount of water using significantly less energy.

Pool covers minimize evaporation from both outdoor and indoor pools. Covering a pool when it is not in use is the single most effective means of reducing pool heating costs. Savings of 50%–70% are possible.

- **Pumps**
  - ~55% energy reduction
- **Covers**
  - Conserve make-up water needed by 30%–50%
  - Reduce chemicals by 35%–60%
  - Reduce cleaning time
- **Dehumidification**
  - Heat recovery
Pool Pump Installations

Site #1 – Yarmouth Hotel
• Two (2) Pumps @ 1.5 HP
• Run Hours (January – December)
• 27,000 Gallon Pool & 7,500 Gallon Spa
• Installed Cost = $6,400
• Savings > 21,000 kWh
• Simple Payback = 1.7 years (without incentives)

Site #2 – Hyannis Hotel
• One (1) Pump @ 1.5 HP
• Run Hours (March – October)
• 35,000 Gallon Pool
• Installed Cost = $3,200
• Savings ~ 6,300 kWh
• Simple Payback = 2.8 years (without incentives)
Kitchen Ventilation

Controls that sense temperature and smoke under the hood may vary the fan speed to maintain safe and effective kitchen exhaust.

• Hood Controls
• ANSI/ASHRAE/IES Standard 90.1-2010
• Energy used for:
  – Fans
  – Heat and cool makeup air
• Maintain necessary airflow to capture and contain smoke, effluent, and combustion products
Additional Kitchen ECMs

Electric and gas high efficiency cooking equipment are available for a multitude of technologies. Savings may include reductions in preheating, idle time, cooking efficiency, water and sewer quantities. Equipment must be noted as Energy Star® certified.

- Fryers
- Steam Cookers
- Convection & Combi-ovens
- Holding Cabinets
- Ice Machines
- Griddles
- Dishwashers
- Service Hot Water
- 5% to 20% increase in efficiency
Evaporator Fan Replacement Motors & Economizer Cooling

Installation of various sizes of electronically commutated motors (ECMs) in walk-in coolers and freezers to replace existing evaporator fan motors.

Economizer cooling directly vents outside air into the interior of a walk-in cooler given favorable ambient conditions.

- Walk-in Coolers and Freezers
- Retrofits to existing system
- Microprocessor controls
- ~65% reduction in load
- Reduced heat from evaporator fans (kWh savings)
- Decrease compressor run time during cooler months
Low-flow DHW Devices

Fixtures that minimize the quantity of outlet water while maintaining effectiveness have the potential to reduce water consumption by 25 to 60%.

Installation is easy to perform and paybacks are less than 1 year.

- Showerheads (2.5 gpm or less)
- Aerators (1.5 gpm or less)
- Low Flow Pre-Rinse Spray Valves
- Water and Sewer savings
DHW Installation

Site #1 - Mass
- 147 Room Hotel
- (163) 1.75 GPM Low-Flow Showerheads
- (169) 1.5 GPM Faucet Aerators
- Installed Cost = $7,400
- Simple Payback = 0.75 years
*not including water savings

Site #2 - Mass
- Four (4) buildings
- 78 Room Inn
- (78) 1.5 GPM Low-Flow Showerheads
- (78) 1.5 GPM Faucet Aerators
- Installed Cost = $3,500
- Simple Payback = 0.62 years
*not including water savings
Thermal Envelope

You can reduce your facility's heating and cooling costs through proper insulation and air sealing techniques. These techniques will also increase customer comfort.

- Insulation and Air Sealing
- Increase R-value
- Walls
- Attics and Ceilings
- Roof
- Floors
- Reduction in heating and cooling loads
Thermal Envelope Installation

- Falmouth Resort
- 5 Buildings (27 units)
- Air Sealing and Attic Insulation (~5,600 square feet)
- Natural Gas & Electric Heat
- Installed Cost = $10,400
- Simple Payback = 3 years (after incentives)
- Measure Life = 25 years
Other Benefits

In addition to a direct reduction in energy consumed on site, most efficiency upgrades have additional advantages associated with their installations.

- $$$
- Emissions
- Maintenance
- Equipment Life
- Non-energy Savings (water, sewer, chemicals)
- Comfort
- Appeal
- Marketability