A Webinar Series:
Connecting Sustainable Energy and Tourism

November 3rd, 2009

Session 1: Sustainable Energy for Tourism Explained with guest expert Martha Gettys, NC GreenPower

Session 2: Energy Conservation at Attractions and Accommodations with guest expert Chris Metzler, President of GreenWise Business Consultants
Energy Conservation at Attractions and Accommodations

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Why Should Tourism Care about Energy?

- According to the EPA, an average hotel spends $2,196 per available room each year on energy.
- According to Pacific Gas and Electric's Food Service Technology Center, the commercial food service sector wastes $8 billion on inefficient cooking, holding and storage.
- According to the US Energy Information Administration, commercial electricity prices have risen about 40% between 1999 and 2009.

- Lodging and food service are two of the biggest users of energy.

Source: fishnick: Energy, Efficiency and Equipment
Energy in the Tourism Industry

Where does all that energy go?

**Hotel**
Total Energy Consumption by End Use

- Office Equipment: 4%
- Cooking: 5%
- Other: 9%
- Lighting: 12%
- Cooling: 15%
- Water Heating: 17%
- Ventilation: 4%
- Refrigeration: 3%
- Space Heating: 31%

Source: [EPA Hotel Energy Use Profile](#)

**Restaurant**
Total Energy Consumption by End Use

- Food Preparation: 34%
- HVAC: 28%
- Lighting: 13%
- Refrigeration: 7%
- Sanitation: 18%

Source: [A Profile of Energy Use In Restaurants](#)
Step One: Developing an Energy Plan

**Assemble “Energy Team”**
responsible for and passionate about saving: energy/environment/costs

**Evaluate**
blow your own horn! - what needs more work?

**Analyze**
what type of systems do you use, what opportunities are there

**Prioritize**
best ‘bang for buck’, which are most important

**Execute**
be proactive and actually pull the trigger
Measurements of Energy:

- **Electricity** is typically measured in Watts (W)
  - A typical coffee maker uses 600 watts
  - 1,000 watts = 1 kilowatt (kW)
  - One 100 watt bulb on for ten hours = 1000 watt hours (Wh)

- **Natural Gas** can be measured in 1,000 Cubic Feet (Mcf) or in British Thermal Units (Btu)
  - A typical backyard gas grill ranges from 25,000 to 65,000 Btu
  - 1 Cubic Foot ~1,028 Btu; 1 therm = 100,000 Btu

- **Fuel Oil** is typically measured in gallons

- **Water** is typically measured in gallons
  - Water is not generally thought of as energy, but is just as, if not more, precious and important and affects the bottom line
To calculate how much an appliance would cost to operate per year:

1. Appliance’s wattage multiplied by the # of hours used per day multiplied the # of days used per year
2. Divide the by 1,000 to get the number of kilowatt-hours used annually
3. Then multiple the number of kilowatt-hours by your electricity rate in $/kilowatt-hour (typically around $0.08 per kWh)

**Step #1**
Lamp with three 60 watts bulbs X 10 hours/day X 300 days a year = 540000 Wh/year

**Step #2**
900000 Wh/year ÷ 1000 Wh/kWh = 540 kWh/year

**Step #3**
9 kWh/year X 0.08 $/kWh = $43 a year
Energy Audits and Paybacks:

- An analysis or inspection of energy flows within a building or a process
- Conducted to identify
  - Where improvements can be made
  - Establish baselines compare with industry standards and measure success of future efforts
- Focus primarily on electricity and HVAC systems
  - Test system’s efficiencies and calibrations by analyzing the type of system and current output
- Building envelope and plumbing audits
Energy Audits and Paybacks:

3 Levels of Energy Audits recognized by ASHRAE:
(American Society of Heating, Refrigeration and Air-Conditioning  www.ashrae.org)

Level I — low hanging fruit, water, no engineer necessary
- many templates and resources available to use
  • NC State Energy Office (www.energync.net)
  • Center for Sustainable Tourism Checklists (www.ecu.edu/cs- acad/sustainabetourism/Business-Resources-Checklists.cfm)
  • check with local utility or government (www.wastereductionpartners.com)

Level II — more in-depth analysis, engineer needed
- many available directories of energy professionals
  North Carolina: www.greenprofessionals.org
  Colorado: www.coloradoenergy.org/directory/

Level III — highest level of analysis
Price ranges : $.025 - $.12 psf
Savings: average “systems tune up” = approximately 15%
Energy Audits and Paybacks:

1. Check for local, State and Federal incentives

[DSIRE website link: www.dsireusa.org]
Energy Audits and Paybacks:

Smart $aver® Incentives

What are Smart $aver® Incentives?
Duke Energy’s Smart $aver® Incentive program rewards your business for installing energy efficient equipment. If you have considered updating an existing facility, or anticipate building another, we can help your organization offset up-front costs, reduce payback time and accelerate energy savings.

Features & Benefits
- Receive cash incentives for installing high-efficiency equipment
- Improve the environment
To qualify, your business must
- be a Duke Energy customer and new to the incentive program
- submit a completed application within 60 days after new, high-efficiency equipment is installed and operational.

Applying for Smart $aver Incentives
You can find more information on eligibility and learn how to apply by reviewing the Application Process & Contact Information. For detailed information on specific equipment measures, select the appropriate application below.

- Lighting Incentive
- Heating & Cooling Equipment Incentive
- Chillers & Thermal Storage Incentive
1. **Check for local, State and Federal incentives**
   (www.dsireusa.org)

2. **Check with your local utility companies for incentives, rebates or other programs**

3. **The marketing and image/perception value is positive and getting more valuable**

   **TripAdvisors.com’s 2010 “Eco-nsiderations”**
   
   – Thirty-two percent of travelers consider their carbon footprint when traveling, and as a result, 44 percent of these travelers choose to stay at "green" or environmentally-conscious hotels
   
   – A hotel having "green" policies factors into 33 percent of travelers' booking decisions

Source: www.tripadvisor.com/PressCenter-i274-c1-Press_Releases.html
1. **Level 1 Energy Audit:**
   - Inspect plumbing and building envelope analysis
     example: awnings/window tinting

2. **Indoor/Outdoor Lighting Evaluation and Replacement**
   - Higher efficiency bulbs
     example: Replacing Incandescent with CFL’s and T-12’s with T-8 or T-5’s
   - Induction lighting for parking

3. **Hot Water Heater**
   - Accounts for 17% of typical hotel’s energy use

4. **Indoor Air Quality (IAQ) Analysis**
   - [www.epa.gov/iaq/](http://www.epa.gov/iaq/)

5. **Programmable Thermostats and Energy Management Systems (EMS)**
   - an EMS can reduce energy costs by as much as 35% to 45%
1. Create or convene your Energy Team
2. EnergyStar energy audit, plumbing and building envelope analysis (awnings or window tinting for example)
3. Lighting evaluation and replacement
   - Higher efficiency bulbs and induction lighting for parking
   - Lighting on timers or motion sensors
4. Technology usage analysis
   - Power strips that can turn off everything
5. Programmable thermostats
6. Recycling program, use sustainable office products
Energy Efficiency in Guest Rooms:

1. HVAC unit (window) evaluation and cleaning
2. Window/door seals
3. Lighting evaluation and replacement
   • Higher efficiency bulbs
   • Timers
4. Low flow plumbing fixtures (hand sinks, toilets and showers)
5. Re-use of towels
Energy Efficiency in Kitchens and Restaurants:

1. Kitchen hood/ventilation systems checked, cleaned, maintained
2. Hot water heater evaluation
3. Coolers and freezers coils cleaned regularly
4. Lighting evaluation and replacement
   • Higher efficiency bulbs
   • Timers
5. Low flow plumbing fixtures (hand sinks/toilets)
6. Tabs on kitchen use of rags/towels (dishwasher)
7. Programmable thermostats
8. Use sustainable or local products when possible
5 Energy Practices You Can Implement Today:

1. Get the Plan Started: Assemble an Energy Team, do an Initial Energy Audit, and Visit Web Sites for Education:
   - www.dsireusa.org
   - www.epa.gov
   - www.doe.gov
   - Local Utility Companies

2. Look for Low Hanging Fruit: Lighting Options, Low Flow Plumbing Fixtures, and Programmable Thermostats

3. Clean and Maintain Current Appliances and Fixtures

4. Most Energy is used for Heating/Cooling. Building Envelope: window/door seals and opportunities

5. Conserve! Recycle! Use sustainable products when you can and let others know about it!!!
Contact Information

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