

COMMERCIAL PARTNER

HEI HOTELS & RESORTS



ORGANIZATION TYPE

Hospitality

BARRIER

Lack of centralized information on energy, other key data

SOLUTION

Energy management tracking tool

OUTCOME

HEI is now able to recognize areas for improvement and realize savings

Overview

Your Hotel Name		September 25, 2012	
ENERGY Looking Glass® (v29)			
YOUR PROPERTY			
Cooling Degree Days	0.0		
Heating Degree Days	37.0		
CR - Yesterday PM	353		
CR - Yesterday AM	294		
Energy Conservation Committee Bob Holick - Chief Engineer Mark Klein - Banquet Manager Dan Maloney - Housekeeping Laura Gram - Executive Chef		Property Characteristics Sq. Ft. 330,000 Yr Built 1986 Orig Rating 43 (BROK) RED Curr Rating 41 (BROK) RED Top 25% of Peer Group! Qualified for Energy Star	
Approx 2010 Carbon Footprint (metric tons of CO ₂ equivalent) 3,189.4			

HEI developed an energy management tracking tool that analyzes key variables such as weather normalized utility consumption, and hotel occupancy alongside capital and operational energy efficiency initiatives. HEI named their system the Energy Looking Glass (ELG) Dashboard. It serves not only to track energy use and compare use across facilities, but it facilitates organizational behavior change by encouraging teamwork to meet company goals.

HEI's Playbook

Policies



HEI established the following goals for the development of their energy management tool:

- Measure and track the impacts of energy efficiency initiatives across their portfolio of hotels;
- Compare energy usage trends to changes in hotel occupancy rates and weather;
- Roll out and track participation of hotel energy efficiency best practices at each hotel; and,

- Monitor main energy conservation capital project end dates.

To accomplish these goals, HEI outlined all of the data that would need to be collected and updated in the energy management tracking solution on a regular basis. Key system data needs included:

- Monthly energy consumption and cost data by fuel type (electricity, natural gas, water, steam, chilled water)
- Weather data (heating and cooling degree days)
- Occupancy rates for each property
- Property square footage
- Property year
- List of energy efficiency best practices to implement
- Key energy conservation capital project end dates

HEI also identified three system specifications as essential to the functionality of the tool:

Excel Based. It was essential for the tool to be able to import and export data in Excel so that HEI could access the historical property utility data from 2006 from its centralized billing company.

Centralized System. Given HEI's properties are located across the country, it was important to allow both local users (hotel general managers and chiefs of engineering) access to the data as well as to send this data to a centralized location where properties could be analyzed in comparison to others in the company's portfolio.

User Friendly. A custom dashboard was created for each hotel to enable the Chief Engineer to manually enter utility meter readings, heating and cooling degree data and hotel occupancy on a daily basis. The tool calculates if the hotel is using more or less energy for that given day compared to the previous year displayed as a percentage up or down as well as the dollars saved or spent. In addition, month to date comparisons are provided, which compare the month to date data to the previous year as well. The Chief Engineer can then determine if any course of action is required and relay this information to other managers.



Process

HEI followed several key steps to plan and implement its innovative solution, including data collection, regression analysis, staff training, and an annual tool revision process.

Data Collection. In 2009, HEI began requiring the daily collection and reporting of utility meter readings so they could be compared to historic usage patterns. The following are the main data points that are input daily into a collection template to upload into the energy management tracking tool:

- Utility meter readings for electricity, natural gas, water, steam and chilled water
- Heating and cooling degree days
- Hotel occupancy rates

Once this information is entered into the tool, ELG calculates if the hotel is using more or less energy for that given day compared to the previous year, displayed as a percentage up or down as well as the dollars saved or spent. In addition, month to date comparisons are provided for the current and previous year, allowing the Chief Engineer to determine if any course of action is required and relay this information to other managers.

Regression Analysis. In order to establish hotel baselines for each property in HEI's portfolio, a number of variables were collected and analyzed through an Excel-based regression analysis.

Variables included:

- Utility consumption data (electricity, natural gas, water, steam and chilled water)
- Weather data (heating and cooling degree days) for each hotel for the same consumption periods as the utility data to determine weather related impacts on energy consumption
- Hotel occupancy rates for the same consumption period to determine the impact of occupancy on energy consumption
- Main energy efficiency capital project completion dates including lighting retrofits and the installation of programmable thermostats in order to determine their impact on energy consumption

After all of the data was loaded into the tool, HEI analyzed how each variable was normalized in the model in order to establish daily consumption thresholds for each consumable. The data was then placed into a custom dashboard for each hotel and the hotel's Chief Engineer was designated as the responsible party for maintaining the model for the specific property.

Of note, the regression analysis model faced resistance from some of the properties' staff. HEI overcame this barrier by making the tool highly-visible and user-friendly, speaking of energy savings in terms of environmental impact rather than financial savings.

In addition, a "Daily News" section was added to provide property users additional energy facts and conservation best practices for consideration.

Staff Training. HEI's employee training program included two key elements: BUZZ the Energy Bee mascot and an ELG tutorial.

HEI created BUZZ the green Energy Bee as the face of the ELG and HEI's energy conservation efforts. In each hotel, a BUZZ Committee was created to:

- Promote enthusiasm
- Spread the BUZZ
- Coordinate quarterly activities
- Share ideas
- Encourage leadership in energy savings

HEI also created an ELG tutorial to facilitate staff training on the energy management tool. Today, all key hotel managers including GMs, Chief Engineers, Executive Housekeepers,

Executive Chefs and Banquet Managers (200+) take an active role in saving energy at their hotels.

Tool Revision Process. In order to ensure that the energy management tracking tool remains relevant, HEI developed an annual revision process for the ELG.

This process includes the following steps:

- Seek recommendations from key HEI Chief Engineers on what they feel should be enhanced on the ELG
- Update staff training materials and conduct training sessions for HEI employees responsible for overseeing ELG operations (general managers, chief engineers, etc.)
- Update tutorial to train engineers with no dashboard experience
- Modify each hotel dashboard to account for changes in hotel square footage, corporate energy efficiency initiatives, ENERGY STAR score improvements, and hotel best practices
- Link ELG results to the on-going Chief Engineer incentive program
- **Tools:**
 - [Daily Entry Page](#)
 - [ELG Tutorial](#)

Outreach



HEI marketed the energy management tracking tool to hotel staff using a number of innovative approaches to both educate and engage hotel staff in this project.

The following are samples of HEI's marketing materials:

Interactive Tool Design. The tracking tool is a user-friendly, highly visual model that displays energy savings in terms of environmental impact rather than financial savings. This method allows staff to feel positive about reducing the environmental impact of the hotel through their efforts rather than focusing on saving the company money. In addition, a "Daily News" section was added to the tool to give properties additional energy facts and conservation best practices.

Staff Incentive Program. HEI introduced a three year flat screen TV give-away program tied to specific hotel brands, regions and hotel management positions. During this period, over 40 TVs were awarded across the portfolio at a cost of nearly \$40,000 while the energy savings for this same period came in at 14.5%, valued at \$2.7 million.

Quarterly Incentive Programs. In addition to the TV give-away, HEI also offers quarterly recognition for staff in the form of gift cards that can be redeemed for items other than flat screen TVs.

Executive Level Recognition of Staff. HEI's upper management also recognizes staff who are achieving success within the program through formal letters of appreciation, articles and photos featured on the HEI website as well as having photos posted on the HEI Going Green Wall of Fame located at the Corporate Office.

- Tools:
 - [HEI's 2011 Chief Engineer Incentive Program Overview](#)
 - [HEI Staff Recognition Letter](#)



Measuring Success

An important component of HEI's energy management tracking tool is the ability to measure and track energy and cost savings achieved as a result of the program's implementation. The tool calculates hotel energy consumption for a given day and displays it as a percentage up or down and dollars saved or spent. It also provides month to date comparisons throughout a given month as well as comparisons to the same date for the previous year.

HEI is able to measure the impact of energy efficiency related capital and operational programs on energy consumption and cost. During this process, it was determined that \$9 million in energy projects completed between 2005-2008 delivered a 2.79 return on investment (ROI) and saved over \$3 million a year. As a result of its staff incentive program, HEI awarded over 40 flat screen TVs to staff across its portfolio of properties at a cost of nearly \$40,000. The company realized an energy savings of 14.5% for this period valued at \$2.7 million dollars.

The tool has strengthened and supported the commitment of HEI's management to their broader energy program and freed up capital funds, which could be reinvested in additional energy efficiency measures and other corporate expenditures.

- **Tools:**
 - [Consumption Report from ELG](#)
 - [HEI Monthly Consumption Email](#)



Outcomes

When the ELG Dashboard was developed and introduced to the field company-wide in 2009, HEI was optimistic that this energy management tracking tool would help to monitor energy conservation efforts for years to come. Energy and cost savings data collected to date across the HEI portfolio has confirmed the effectiveness of the tool. Another significant outcome of HEI's approach has been the "Annual ELG RR&R's." HEI realized that for the ELG to become a "Living Document," it would need to be "Reviewed, Revised & Refreshed" (RR&R) on a regular basis with input from Key Chief Engineers.

Listed below are the items completed annually to ensure the ELG's continued success.

Annual ELG RR&R's:

- Update Daily News Items
- Update social responsibility conversions
- Review Excel model formulas and calculations

- Load approved energy capital data
- Update ENERGY STAR scores
- Update Your Property data

Also in 2012, the entire report received a complete graphics refresh. A similar refresh is scheduled to occur again in 2014.