White Paper

Who's Asleep At The Switch?

How To Reduce Cost In The Hotels You Manage

VERISAE

Abstract

How To Reduce Cost By Increasing Accountability For Energy Efficiency In The Hotels You Manage

You may be surprised to learn what goes on in your hotels when you're not watching. Or at least you'd be surprised to know what doesn't *get turned off*. This is especially true for energy managers in large organizations that operate many different facilities.

Outdoor lights often go on before dark and stay on after dawn. Makeup fans and air handlers may run around the clock. HVAC systems condition the air in unoccupied rooms. Kitchen staff leave open the doors of walk-in freezers to cool themselves during an especially grueling shift. Water heaters operate long after swimming pools and spas have closed for the day.

> "If they hadn't tried real-time energy monitoring, they never would have known about this big source of profit leakage."

You **know** it happens. But unless you're doing real-time energy monitoring, you probably don't know **when** or **how often** it happens . . . Or how much it's costing you.

While none of these oversights would seem to cost much in itself, they can add up fast when you multiply them by the number of properties you manage. Before long you're paying a small fortune in excess energy cost.

This is especially important now, when the recession has held down room rates. A 10% reduction in energy cost is the equivalent of raising your average daily rate (ADR) by $2.45 at a full-service hotel and by $0.83 at a limited service hotel.

The Smallest Of Things Really Do Add Up

Consider what happened at business that's similar to yours in a few relevant ways. A regional U.S. grocery retailer operates a 130-store chain in the Southwest. While piloting a system for monitoring real-time energy use at 10 stores, they discovered that employees at four stores were regularly leaving ceiling lights on at night.

Their corporate energy manager did a quick calculation. The stores were using about 1,341 kWh of energy per day before they identified the problem. They went to using 1,095 kWh per day after they began turning off their lights at night.

Multiply the difference (246 kWh) by 365 days in a year, and you get 89,608 kWh of annual energy reduction per store. At their average utility rate of $0.0877 per kWh, this simple adjustment will save the chain $7,590 per store each year. That's about $30,400 in the four stores where they found the problem. If the same problem is occurring at 40% of their 130 stores, they could save about $395,000 a year.

If they hadn't tried real-time energy monitoring, they never would have known about this big source of profit leakage.

Another food retailer was more sophisticated and therefore even more surprised. They have a centralized control system that automatically shuts off the lights in every one of its 200-some regional stores after

closing. They were confident the lights were going off under their control.

They learned otherwise by chance. The company had implemented real-time energy monitoring to check the performance of their refrigerators and freezers. The same metering system could also monitor other electrical use. As they compared the numbers across locations, they learned that several stores were still leaving their lights on at night.

On further investigation, they found that their local electrical contractors had improvised a bypass of the remote-controlled lighting systems. The contractors had made it possible for the stores to leave the lights on all night.

Opportunities For Energy Conversation Cut Millions

The opportunities for energy conservation in the hospitality industry are real. Hilton Worldwide reported in April 2010 that use of their proprietary new LightStay system had helped them trim energy use by 5% in 1,300 pilot hotels during 2009. Hilton also said the system had helped hotel owners cut energy and water costs by $29 million at these hotels compared to 2008.

Hilton has also linked annual bonuses for hotel managers to their performance in reducing energy use. This requires a detailed energy-reporting system, though not necessarily in real time.

Similarly, the Intercontinental Hotels Group (or IHG) has begun rolling out a software application that they estimate can save the company $200 million in energy and other utilities across 4,000 properties.

IHG CEO Andy Cosslett said pilot projects suggest that the homegrown GreenEngage software can help the company ***reduce energy costs by 25%.*** It will do so primarily by making hotel managers aware of how efficiently their peers are managing their energy in other properties.

> "Considering the benefits these organizations are achieving, could it make sense to pursue similar initiatives for the properties your company manages?"

GreenEngage requires hotel managers to enter data manually. But that shouldn't be necessary, thanks to real-time monitoring systems that are now available at reasonable cost.

Considering the benefits these organizations are achieving, could it make sense to pursue similar initiatives for the properties your company manages?

Many facilities engineers in the hospitality industry have assumed that real-time energy monitoring is not worth the cost or effort. But that may be because they are making assumptions that are no longer valid.

To answer the question of whether it makes sense . . . ***"It depends on your situation."***

The balance of this guide poses six relevant questions about your situation and explores the implications of your answers:

- What do you want to accomplish?

> “ If your company does not use data to drive continuous improvement, you may find yourself fighting against the current to suggest real-time monitoring. ”

- How will you use your data?
- Where and how often should you monitor energy use?
- Who should see your data?
- How efficiently can you manage the processes?
- How cost-effectively can you do it?

Your answers to these questions will point you in a direction that’s right for you.

What Do You Want To Accomplish?
Organizations often undertake real-time energy monitoring for one or more of these reasons:

- To spot instances of waste, inefficiency, error or neglect
- To increase accountability by setting energy budgets, assigning costs and tracking usage against budgets
- To avoid triggering higher utility rates when you exceed your prior peak loads
- To provide timely feedback to influence the behavior of people who consume energy
- To avoid financial surprises by accruing energy costs between utility billing statements
- To take advantage of time-sensitive energy rates available from some electrical utilities.

As with any other initiative you undertake, it pays to start with the end in mind. Clarity about your goals will help you answer the remaining questions.

How Will You Use Your Data?
Does your organization regularly use data and quantitative analysis to drive management decisions? Do you use Six Sigma methodology? Are you committed to the principles of lean services? If so, you already have a culture that is likely to welcome real-time energy monitoring.

If your company does not use data to drive continuous improvement, you may find yourself fighting against the current to suggest real-time monitoring.

Even if your company has an unquenchable thirst for data, you will still need people on staff (or ***access to outside resources***) who can analyze and interpret the data in ways that can lead to useful decisions.

Another consideration is whether your people, operations or processes are likely to respond to fast feedback. Is your organization flexible enough to revise your operations or processes in response the data you collect? If your answer is “no,” then the benefits you can achieve from real-time monitoring are likely to be more limited.

Where And How Often Should You Monitor Energy Use?
With current metering systems and data-collection technologies, you can see data at almost any level of detail you could want. At the most granular extreme, for example, you

can monitor the amount of energy that every significant appliance or piece of equipment in your operation consumes every 15 seconds. For most purposes in the hospitality business, of course, that would be way too much data.

Toward the other end of this spectrum, you can see a central view of all your energy use in all facilities, broken down by building and by day or week.

You have a lot of leeway within this broad range. The most desirable level of detail for your organization depends on your purpose.

Do you want to measure and report energy use for a division, profit center, region, site, building, room, work shift, customer, event or department? Is it important for you to allocate energy costs to functions such as Catering, Meetings & Conventions, Sales, Engineering, etc.?

If your goal is only to increase accountability and to allocate costs for groups that use energy during an entire utility billing cycle, you can probably do so to through metering or submetering, without necessarily tracking usage in real time.

On the other hand, if you want to charge energy costs to specific events, meetings, projects or customers within a utility billing cycle, you must be able to align your charges with appropriate starting and ending dates and times.

Hilton Worldwide offers a good example of such use. Hilton executives claim their LightStay system includes a "meeting impact calculator." They system, they say, measures the environmental impact of any meeting or conference held at a property they manage.

"If your goal is to provide feedback to energy users, it is most effective to do so as close as possible to the time they consume the energy."

Hilton's ability to provide such data appeals to meeting planners, many of whom are increasingly committed to buying green. The system, Hilton says, also enables corporate customers to include data on the environmental impact of their meetings in their own sustainability reporting. This suggests that the system reports environmental data in considerable detail.

If your goal is to provide feedback to energy users, it is most effective to do so as close as possible to the time they consume the energy. The desire for faster feedback will move you in the direction of real-time monitoring and reporting.

If you want to catch inefficiencies or analyze processes and operations within a department, you will need to monitor at intervals granular enough to show you changes at intervals that could be as short as a few times a minute.

You want to monitor the energy use of individual pieces of equipment and other assets such as walk-in freezers and refrigerators; outdoor lighting systems; water heaters for laundry, dishwashers, pool and spa; HVAC units such as compressors, chillers, air handlers, makeup fans,

exhaust fans; computer systems and peripherals, etc.

You will want to monitor only the assets that consume enough energy to contribute significantly to your total cost.

If you want to be alerted when you're on track to exceed your budget, you'll probably want to track and report energy use at least daily, weekly, monthly and quarterly.

Who Should See The Data?

The cost and feasibility of real-time energy monitoring will depend, in part, on who needs to see your data and in what form they need to see it.

These questions are relevant:

- Will you provide energy-use data to your own local teams, as real-time feedback to encourage greater efficiency?.

- Will you provide it to general managers to document their performance and possibly to determine their eligibility for rewards and incentives?

- Will you provide data to heads of departments, functions or profit centers to provide feedback or to substantiate charge backs?

- Will you provide usage data to customers or meeting planners to substantiate the energy fees you charge them or the greenness of your facilities?

- Will you provide data to regional facilities managers to benchmark their performance against others and to show them opportunities for improvement?

- Will you show it to Engineering and Facilities staffs to diagnose inefficiencies and to recommend improvements?

- Will you show it to property owners to substantiate the business case for capital investments?

Considering the lean staffing of most hotel-management firms these days, it can be cost-effective to make energy managers responsible for energy efficiency across multiple properties. If this is in your plan, you'll need to provide your energy managers with access to energy-use data in near real time.

Building-management systems are not likely to meet this need. Among other limitations, they typically don't allow you to view and aggregate data across widely separated properties.

Four key factors will affect the cost and feasibility of doing real-time monitoring:

- Where the recipients of your data are physically located

- The level of detail that's appropriate for their role

- How often they should see the data

- How you will provide them with access to the data.

How Efficiently Can You Manage The Processes?

The more metering devices you

use, the more data you will have to collect and consolidate. And the more detailed the energy-use data you generate, the more data you will have to manage.

Do you have the means to collect, compile, store, report and distribute the data efficiently? Do you have internal staff or external resources to analyze and interpret the data?

Many organizations use spreadsheets to manage their energy data today. But as you generate more data, at some point it becomes unproductive to collect data manually and to consolidate it on spreadsheets.

Among other problems, manual data collection tends to introduce human error. And the labor cost is high.

If you don't have the people, systems and infrastructure in place to administer the processes of monitoring and reporting on your energy use in real time, you can enlist software vendors, consultants and service providers to help.

Can You Do It Cost Effectively?.
Real-time energy monitoring typically incurs costs in four main categories. You should expect to pay the cost of . . .
. . . buying hardware for metering, sub-metering, data collection and aggregation
. . . installing the hardware
. . . collecting, compiling and analyzing data
. . . generating and distributing reports.

For real-time energy monitoring to be worthwhile, of course, the benefits you achieve must exceed your costs enough to deliver a satisfactory payback and return on your investment.

Let's look at each cost element in more detail… then we'll look at potential benefits.

"But as you generate more data, at some point it becomes unproductive to collect data manually and to consolidate it on spreadsheets."

Hardware For Metering, Submetering, Data Collection & Aggregation
If you've ever bought energy meters and data-collection devices from the very big names in the business, you're in for a welcome surprise.

If you know where to shop, you can buy devices with equivalent or in many cases superior functional capabilities for one-third to one-half the cost you've been quoted by the big guys.

- The hardware will be open (that is, not proprietary), so you can communicate with the devices through standard Internet protocols.

- You can monitor your use of water (including chilled water), steam, natural gas, compressed air, and other utilities on the same data-collection devices.

- You can monitor temperatures in freezers and walk-in refrigerators. This capability alone can help you avoid what could be tens of thousands of dollars in food spoilage if a compressor goes out or if someone leaves open a door on a single freezer filled with frozen meats or dairy products. It

can also protect you against the liability you would face if foods were to spoil.

A. Installing The Hardware

The cost of hardware installation depends on the kind(s) of hardware you choose, how far apart the devices will be, what kind of wiring you already have in place, and the rates your electrical contractor charges you for labor.

B. Collecting, Compiling & Analyzing The Data

One global manufacturing company plans to expand its real-time utility monitoring capabilities throughout more than a dozen plants. Today they gather about half of their data manually. Several engineers spend a few days each every month to walk from meter to meter, writing down readings for dozens of meters on a sheet of paper on a clipboard.

They then consolidate all their utility data into Excel spreadsheets for analysis and reporting.

For all their many strengths and advantages, spreadsheets are unlikely to suffice when you move to real-time energy monitoring. Here's why:

- The process of managing energy by spreadsheet is labor intensive. It consumes scarce or expensive human resources.

- Manual data management can easily introduce human error at multiple levels. Meter readers may not read the meters at exactly the same time each week or each day. This skews consumption from one period to the next. In dim lighting it's easy to misread meter displays. Meter readers can write down the wrong numbers, and their writing may be illegible. A clerk may mis-key the data. The person who consolidates the data may inadvertently overlook data points, change formulas, or forget to use the latest version of the spreadsheet template.

- If your operations span national borders and different languages, you must also translate languages, unit conversions and currencies to a common standard.

- The data in spreadsheets won't stand up to internal or external audits.

- The process takes too long. The front-line people who could most improve your energy performance don't see the relevant data until it's too late to change their behavior.

- The data volumes are too big to manage in a spreadsheet. Depending on the scope and frequency of your metering, you may soon be managing hundreds of thousands or even millions of data elements.

C. Generating & Distributing Reports

It's hard to beat the flexibility of spreadsheets in performing ad hoc analysis and in generating reports. But when you move toward real-time energy monitoring, you will need distinctly different kinds of reports for different people in your organization.

For example, engineering managers should probably see energy performance at the appliance or asset level by time of day. Hotel general managers will want to see total energy cost by day, week, month and quarter versus their budget. They will want to benchmark their hotel's performance against that of comparable hotels. They will want to see these metrics in their own language and currency.

Regional managers and headquarters staff will want to see the performance of multiple hotels by week, month, quarter and year. Sustainability managers will want to see energy consumption by source so they can calculate carbon emissions.

It's probably going to be too complicated and labor intensive to manage these widely varied reporting needs through spreadsheets. Your choices will be to build your own applications or to license software from a vendor.

Should You Build Or Buy The Software You Will Need?

The big advantage of building software in house is that you can get exactly what you ask for. That can also be a disadvantage if you don't know exactly what you want or need.

Even if your own IT organization can develop exactly the software applications you want very quickly and cost-effectively, licensed software offers several advantages:

- If you build software internally, it will take you many months to be able to test what you asked for. By then you'll be stuck with what you thought you wanted.

- Software from third-party vendors is more likely to be enriched by multiple years of focused experience in solving the problems of many clients. Some may be further down the path than you are, and you can benefit from their experience.

- Software vendors may maintain, update and support their software better than your organization can do for homegrown systems. This is especially important in fields like energy and environmental compliance where regulations are changing quickly.

- You can almost always implement a third-part software application much faster than you can develop one in house.

"It's probably going to be too complicated and labor intensive to manage these widely varied reporting needs through spreadsheets"

Among third-party software applications, you have two broad choices: You can license conventional system that you install and run on your own computers. Or you can license a hosted application that your vendor operates for you.

A well-designed, hosted system can offer these additional advantages:

- It can be easily available to everyone who has proper security authorization, a Web browser, and access to an Internet connection.

- You have no application software to install, no computer hardware to buy, no operating systems or database software to license, no maintenance fees to pay on software or hardware, no database administrator to pay for, no internal IT operating costs to pay.

- You can implement it with minimal involvement from your IT organization.

- It can provide secure and highly efficient ways for you to collaborate with service partners and supply-chain partners.

- You may be able to try a low-cost, low-risk pilot before you commit to licensing and implementing a solution for your entire business.

Potential Benefits Of Real-Time Energy Management

The amount of benefit you can expect to achieve from real-time energy management will depend a great deal on how much energy you consume now, how much you pay for it, and how much you've already done to reduce your energy cost.

As risky as it may be to generalize across organizations, a few third-party sources offer evidence that may help you ballpark your potential benefit.

Hilton Worldwide engaged a third-party consulting firm to audit the 5% reduction and $29 million in savings they claimed for 2009. Bouyed by their convictions, Hilton plans to roll the system out to all 3,500 properties globally by the end of 2011.

You've also seen that IHG expects to reduce energy cost by 25% by using their GreenEngage system, based on the results of a pilot they ran in more than 1,000 properties.

Several independent studies have also shown that nothing more than timely feedback on energy consumption can cut use by as much as 5% to 10%—without any further investments in energy-saving technologies other than systems that provide monitoring, reporting and feedback.

To prove to yourself and your management how much you can save, your best bet may be to try a low-cost, low-risk pilot for a few months. The cost could be as low as $15,000 if you choose the right partner.

about Verisae Inc

Verisae is a 10-year-old company that provides software and services.

We can provide the hardware, software and services to help you implement a low-cost, low-risk pilot of real-time energy monitoring in your operations.

We specialize in helping large, complex organizations track and manage their environmental metrics for lower cost and reduced risk. We help our clients achieve higher efficiency and improved environmental sustainability.

We work mainly with energy, water, waste and carbon emissions.

Verisae has been in business for 10 years. We have 42 clients. Our clients have operations in eight countries.

Most of our clients are very large, including WalMart, Target, Costco, Supervalu, Tesco, Whole Foods Markets, and many other well-known brands.

Their annual revenue ranges from about $400 million to about $408 billion. Each operates from about 130 to more than 4,300 locations.

Verisae Global Headquarters
100 North Sixth Street
Suite 710A
Minneapolis, MN 55403
United States of America
Phone: 612.455.2300
Fax: 612.455.2324

Verisae European Office
Golden Cross House
8 Duncannon Street
Strand, London, WC2N 4JF UK
Phone: +44 (0) 208.334.8083
Fax: +44 (0) 207.484.5100

Email: contact@verisae.com
Website: www.verisae.com

VERISAE