

Meeting Green Enterprise Objectives in a Sustainable Way

Green businesses are exposing their energy waste and
doing something about it.

A common mistake organizations make when embarking on a green program is to go about it “blindly.” Executives understand the importance of visibility and control in managing financial, supply chain, and quality processes. Energy and green initiatives require similar visibility and control to improve the energy consumption and carbon footprint of existing buildings.

Given today’s information and communication infrastructure, the reduced time and cost necessary to deploy enterprise energy monitoring and control systems are making a greener and more sustainable future possible. Information technology is a proven way to transform energy consumption across corporations and the world.

It is a well understood adage that “you can’t control what you can’t measure.”

Consider this analogy: decades ago, the retail industry recognized that it had no idea what its customers were buying. Its only metric was the cash in the drawer each night. Thus, it wastefully pushed the wrong product out to the market. Poor inventory tracking enabled shrinkage that cut into profits. Today, the retail industry uses point-of-sale registers and other technologies to optimize operations through reducing shrinkage and gain a greater understanding of the buying preferences and behaviors of customers. Most companies have gaps in energy information similar to those the retail industry experienced.

Energy Information Gaps Hide Energy Waste

Unfortunately, executives are almost completely unaware of how companies consume and waste energy. Surprisingly, most commercial buildings have little to no energy management capability; regardless of occupancy or business hours, HVAC systems maintain the same room temperature set point while equipment and lights remain on. Monthly billing data provide too little information too late to elevate understanding and promote changes in usage patterns.

Information: Powerful Change Agent

Significant advances in internet and wireless-mesh sensor network (WSN) technologies are making it possible to monitor and control energy consumption. WSN is the extension of well-established information and related technologies. It leverages and augments familiar devices like thermostats and internet appliances, blending in unnoticed with the current environment but readily adopted to meet consumer needs. Deployments of

consumer-side energy monitoring and control systems can be congruous with yet proceed in advance of Smart Grid developments.

The Green Business needs a *point-of-use* information capability for energy similar to the *point-of-sale* capability for retail. For businesses consuming energy across many facilities, it is vital to establish energy policies, enable and enforce compliance, measure performance, and develop a culture of continuous improvement across the enterprise. This is a change process that many organizations currently use for quality improvements and IT governance.

A Step Forward

Best-in-class companies guided by economics that demonstrate substantial savings and 1-2 year paybacks are currently acting to lower waste and reduce energy costs. Incentive programs that aim to improve energy efficiency make it even more attractive for businesses to conserve energy.

Enterprise energy management solutions are well-aligned with a corporate sustainability strategy. Easy fixes for improving energy efficiency, such as upgrading existing facilities or designing ultra-efficient new facilities, have already been done. However, sustaining better performance requires an on-going effort. Opportunities for energy conservation lie in retrofitting buildings for improved visibility and control. This requires an approach that leverages existing infrastructure (facility assets) while enabling a new reporting level and providing the capability to change policies, adjust operating procedures, and upgrade facility assets when required.

Millennial Net[®] solutions incorporate wireless sensor networks (within a building) and web-based software (across the enterprise) as key enabling technologies. Wireless is ideal for retrofitting existing buildings because installations are simple and non-invasive. Web-based solutions offer secure access and visibility to managers at multiple levels. Thus, it is possible to rapidly and affordably deploy monitoring sensors and controllers across a wide portfolio of buildings.

Some Best-in-Class Examples

A common objective of best-in-class green companies is to determine and eliminate energy waste in order to better respond to peak energy demand. Taking an enterprise-wide approach, these companies find it cost-effective and advantageous to rapidly deploy wireless sensor networks comprised of monitoring and control devices. Millennial Net systems are designed for rapid

deployment and robust low-cost operation. The devices are installed within minutes at selected areas of energy use, such as lighting, HVAC, and production equipment. The wireless network is designed to automatically form and manage itself without administration or IT support. Each building is linked via the internet to allow for enterprise-wide management.

For example, a major retail chain operating approximately 1000 supermarkets is in the process of such an enterprise-wide deployment. Starting in 2008, it began deploying a Millennial Net wireless system comprised of devices that read utility meter outputs and other devices to measure various temperatures. To monitor major electric circuits and equipment (e.g. lighting, HVAC, refrigeration) at each site, it installed sub-meters by LEM, Inc. The LEM sub-meters and other devices worked together to form a system using Millennial Net's MeshScope wireless mesh sensor network. A hundred sites in two European countries have now completed their installations; a second phase will expand this deployment to several other countries. The company expects to realize a payback on the project within 12 to 18 months.

Deployment of the system is managed by a local system integrator. After a three month startup period, during which Millennial Net refined its installation methods and centralized software application, installation rates accelerated. Now deployments are governed more by scheduling and authorization processes.

Prior to wireless energy management systems, those paying the costs relied solely on monthly consumption data to evaluate energy consumption patterns, which seriously limited their analysis abilities. Now, commercial real estate owners plan to deploy similar wireless systems across their portfolios to reduce the total cost to tenants and increase the value and attractiveness of their properties. Banks, restaurants, and retailers operating hundreds of branches and stores now have a solution to

monitor, control, and benchmark sites on a comparative basis. Benchmarks and "competition" between site managers can create a positive dynamic for reducing consumption. Private and public schools can free-up money for education by reducing energy consumption by 30% and can gain valuable insight into the performance of their HVAC systems with an energy management system.

These retailers, businesses, schools, and others use Millennial Net's Energy Management Solutions to closely monitor, control, and analyze energy use at each site and take measures on both a local and enterprise basis to reduce consumption. Minutes after installing temperature, humidity, electrical, and other sub-meters, the sensors can be online measuring and transmitting electric consumption and other vital data. Immediate benefits of the system include the ability to monitor current and historical energy consumption information in detail, aggregate, and comparison.

Continuous energy monitoring and performance metrics allow executives to see the real benefits of capital and operating improvements in meeting green objectives.

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