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Rising energy costs are moving energy management into a new era of sophistication, capturing substantial savings for companies large and small.

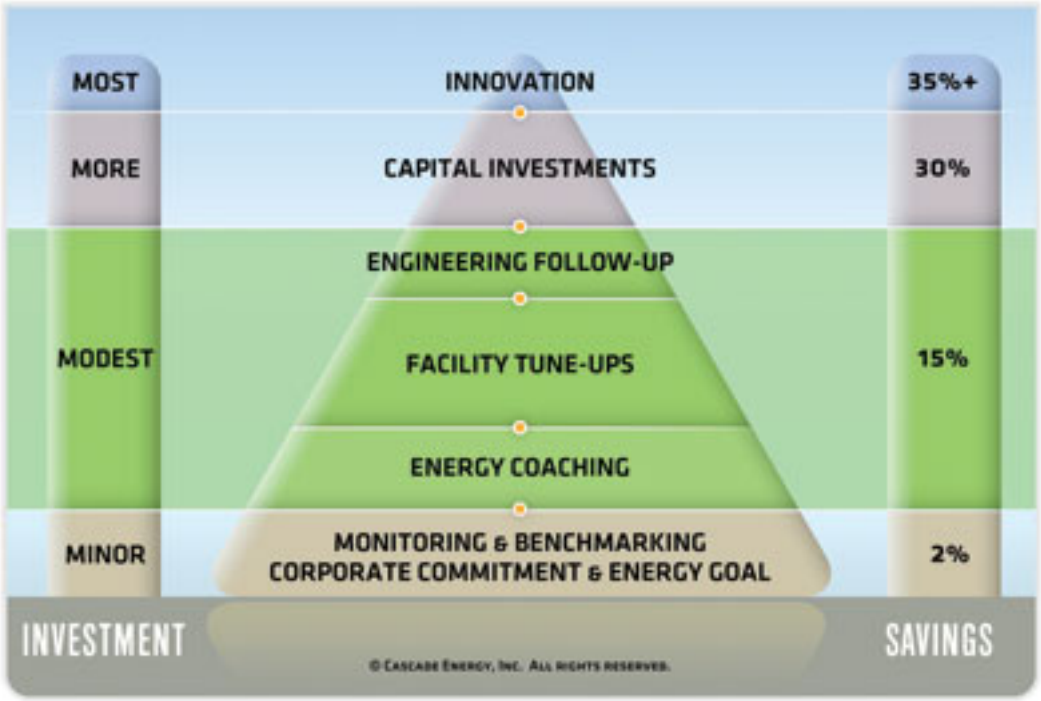
Here's the successful approach one engineering consulting group is taking to help its clients' operations become more efficient. Could it work for yours?

Gone are the days when energy management consisted of the frustrated plant manager asking everyone to turn off the conference room lights after receiving the electricity bill. Today, facilities of all kinds are benefiting from high-tech and high-touch programs that unlock sustainable energy savings by diving deeper into engineering, tracking and application. State-of-the-art energy management is fast becoming a fact of life in industrial facilities where even small-percentage improvements quickly add up to large savings.

Based in Portland, OR, Cascade Energy (Cascade) specializes in optimizing the energy performance of industrial systems for clients across North America. As an independent consulting firm, it brings an unbiased approach to achieving sustainable improvements. Comprised largely of engineers, the company has consulted on a significant number of capital projects over the past two decades and applied its energy-monitoring and management skills in more than 400 facilities. Cascade currently manages programs for many Pacific Northwest organizations including Energy Smart Industrial programs through the Bonneville Power Administration, PacifiCorp and Energy Trust of Oregon.

Through its many experiences, Cascade has developed a comprehensive energy-management process that generates energy improvements ranging from 10-20%, and for some facilities,

considerably more. This includes significant energy consumers such as those with industrial refrigeration, compressed air, chilled water, steam, oil and gas, process equipment, fans and pumps, hydraulics and lighting.



Cascade's step-by-step approach for working with its clients

As noted in the accompanying chart, the Cascade approach involves establishing a system to monitor and predict future energy savings, providing on-location support for energy coaching and facility tune-ups to improve energy efficiency and supporting facility personnel with engineering follow-up and support for capital investments and innovations.

Predicting future energy consumption

When Cascade Energy begins a project, its first item of business is to create a model that establishes the baseline for how the client currently uses energy.

Baselining calls for the application of software, statistics and historic data to understand the

conditions that influence energy consumption—*ranging from weather to production to facility-usage schedules* . Ultimately, Cascade's consultants strive to create a mathematical model that can predict energy consumption in the future, based upon significant influencing variables and how those variables reflected historical energy use.

Unlike most energy-tracking programs, Cascade's energy-engineering experience, application of deep technical rigor and fine-tuned engineering judgment helps them employ mathematical correlations that link energy usage to a reliable facility output measure such as units of finished goods. A predictive model tied to outputs helps these consultants set a benchmark for quantifying the savings of energy-efficiency measures going forward. It's Cascade's "secret sauce."

Establishing a predictive energy model helps show a client's workforce how facility energy use and energy savings are correlated to variables like weather, operations or production. This engages staff and management in a more sophisticated energy-management program and provides a framework for setting energy-management goals that link to business goals.

Monitoring energy usage requires the installation of hardware and software, and services. Hardware packages are customized for each facility. For main utility meters, pulse outputs can be recorded directly from the meter. For sub-metering applications, multiple options are available, depending upon existing wiring, budget and required accuracy and timeliness of the data. Energy-usage data is recorded and time-stamped by the hardware, then transmitted to energy-management software through cellular or Ethernet connections. A powerful suite of software is employed to collect data as a first step toward understanding how and where energy is consumed and how energy use can be optimized (see Sidebar, page 34).

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Energy-Monitoring Musts: Leveraging the Power of Software

Cascade's powerful energy-monitoring software is typically offered as a hosted service with Web-based access. All data remains property of the customer. Data is stored in a Tier 3 facility and backed-up daily. Access to all data and reports is password-protected. Cascade develops actionable information in the form of dashboards from its software packages that is relevant, easy to understand and timely; all adding up to a near real-time presentation of facility energy efficiency. It also allows for aggregation of data from multiple facilities to present corporate-wide results and normalized site-by-site comparisons. Furthermore, alarms may be installed to send alerts whenever excess energy is being consumed.

For more info, enter 261 at www.MT-freeinfo.com