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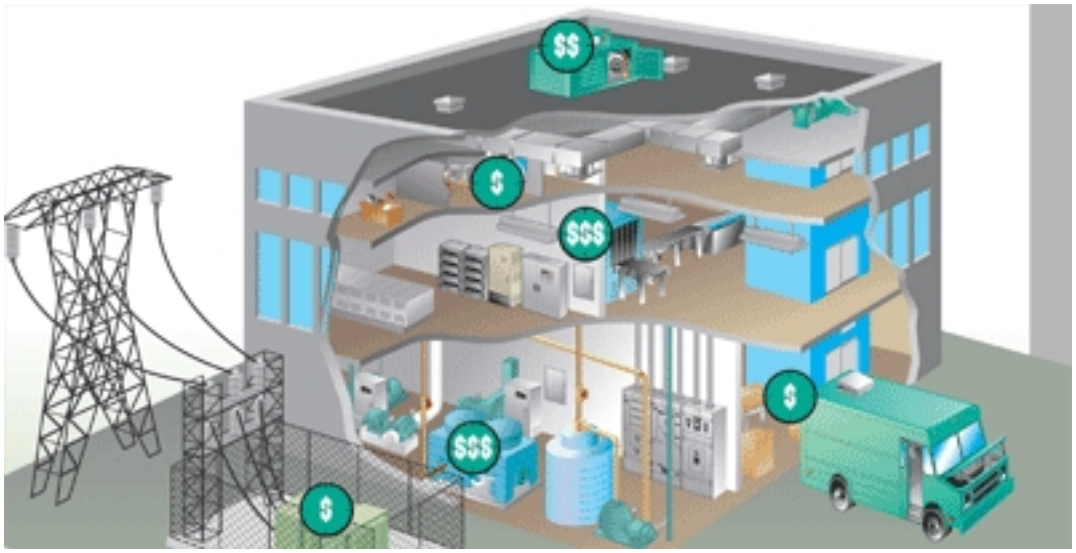
On the hunt for big bucks? Target in on these tools, techniques and useful resources.

Somewhere, there's a technician climbing up onto a facility roof with a thermal imager. Inside, the head of operations and the HVAC person are calculating the effect of raising or lowering indoor temperatures just a bit. Someone else is over in the side office with six months of electricity bills, analyzing usage patterns and rate fluctuations. They're all on a hunt—*but not for critters.* T
he big bucks these hunters are hoping to harvest are associated with increased operating efficiencies and reduced energy consumption. They're tracking everything, looking for savings anywhere they can find them...hidden in a vent that's stuck open...in inefficient lighting...in a chiller that's running an hour a day more than necessary...



We've all heard and/or read the exhortations: "You can find annual savings of $200,000, $500,000 or more, in the unlikeliest of places." "You can save 18% on energy costs with minimal capital investments." "You can discover enough immediate savings to pay for an energy audit and the recommended system upgrades."

Alas, many people have dismissed such claims as fantasy. Some may think that their operations are too lean and don't have the budget or the staff to find the savings. "We've already cut everything we can cut. Management will never approve this use of time and money." On the flip side, contractors may be hearing "not now" from clients that are already stretched too thin.

Here's the missing ingredient: We know more now than we did, even a few years ago, about where to look for unnecessary waste. We also know how to quantify the dollar value of that opportunity. That allows you to create a more accurate proposal that's more likely to be approved and achieved.

Size for who you are

The big dollars are usually associated with audits at large facilities with lots of heavy machinery and little preventive maintenance. The energy audit team collects data ahead of time, spends three to five days inspecting, decides what to change, then implements fixes, updates and process improvements. Depending on the facility, the inspections may cover everything from motors and drives to electronic equipment usage patterns to waste-management practices. If you can do a comprehensive audit, you should—*and not just because the overall dollar amount will be larger and quicker to achieve.* By inspecting multiple areas in the same time period, you'll also notice common waste patterns and find ways to leverage improvements across multiple systems. But some facilities find that three

days and a full team of experts and tools is just too much. For them to get started, it might make more sense to tackle one system at a time. This is fine, as long as you circle back to see how changes in one system have affected other areas.

The leanest companies often find the best value in outsourcing all or part of their energy inspection to a contractor that specializes in energy audits. Then, as improved practices reduce the immediate troubleshooting load, existing staff can retrain on system upgrades and inspection practices. Contractors can add particular value by knowing all the local, regional and national tax incentives, providing ROI for system upgrades, mastering the more complex power-logging tools and, simply, having enough tools, expertise and people to get the job done.

Applying Energy-Audit Tools

Tool	Application
Power logger	Conduct load studies; perform energy consumption testing
Clamp meter or clamp accessory	Make branch circuit and individual load evaluations; take quick power measurements
Thermal imager	Scan electrical, electro-mechanical, process, HVAC and other equipment for hotspots noting inefficiencies; scan buildings for leaks
Logging digital multimeter	Monitor power usage cycles; measure pressure and temperature
Infrared thermometer	Scan motors, insulation, steam pipes, ducts, breakers, connections and wires
Air meter	Evaluate and adjust ventilation levels; verify HVAC controls

Build and pitch your plan

If you run into opposition in getting a complete audit approved, you may need a more convincing proposal. What you may not realize is that much of the savings can be discovered up front, using a power logger and your computer.

1. Tabulate the kind of equipment in use and log how often it's deployed.
2. Review utility bills.
3. Plug that data into energy calculators.
4. Quantify and monetize the savings opportunity.

With reasonably solid numbers and a return-on-investment schedule, management is more likely to approve and support an energy audit. For calculators and other tools to estimate ROI and build your proposal, see the reference list on the next page. There's no need to reinvent the wheel! Learn what others have done and apply their best practices.

While the Internet is full of great information on energy audits, finding it can take some time. Here's a head start. Use these sites to get reports on successful audits, online tools, best practices, technology evaluations, even financial incentives.

- *EPA Energy STAR, www.energystar.gov , has calculators, guidelines, checklists, schedules, how-tos and many other tools for designing and implementing energy plans and audits.*
- *American Council for an Energy Efficient Economy, www.aceee.org , convenes conferences and workshops for energy-efficiency professionals, conducts technical and policy analyses and offers advice for program managers.*

- *Building Owners and Managers Association, www.boma.org , offers a sustainable operations Webinar series for training on operational cost savings and evaluating green building opportunities.*
- *Consortium for Energy Efficiency (CEE), www.cee1.org , has a database of companies that manufacture CEE and Energy STAR equipment. An energy and efficiency think tank, CEE is a good source for technology reviews.*

- *Commercial Building Tax Deduction Coalition, www.efficientbuildings.org , explains tax deductions for energy-efficient building expenditures made by a building owner.*

- *Database of State Incentives for Renewables and Efficiency, www.dsireusa.org , is a comprehensive source of information on state, local, utility and federal incentives that promote*

energy efficiency.

- *U.S. Department of Energy, www.energy.gov , is the gateway to thousands of pages of how-to energy-audit information.*
- *U.S. Department of Energy's Energy Efficiency and Renewable Energy Network, www.eere.energy.gov . Click on "Industry" on the left of the page for industrial and operations information and research.*

- *Tax Incentives Assistance Program, www.energytaxincentives.org , provides information about federal income tax incentives for energy efficient products and technologies.*

- *OpenEco, www.openeco.org , has assembled helpful news, resources and calculators.*
- *FacilitiesNet, www.facilitiesnet.com/energyefficiency , is focused squarely on facilities.*

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