

City Lights

From Marietta Power and Water

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Accurately Calculating Payback on Energy-Efficiency Improvements Makes It Easier to Justify Upgrades

To sell decision makers on the importance of energy improvements, companies must provide strong evidence that expenditures will boost their bottom lines.

To accurately determine whether investments in energy-efficient improvements, experts suggest that companies weigh the following considerations when calculating payback on energy-efficiency improvements:

First Cost

This term refers to the up-front cost a company incurs before the investment produces any savings. A large first cost puts stress on the business's balance sheet and may cause decision makers to reject an investment, even if it will benefit the organization in the long run.



Net Present Value

Net Present Value (NPV) analysis provides organizations with an accurate means of comparing two competing options or prioritizing investments. NPV indicates what a project's lifetime cash flow is worth today.

Simple Payback

This term refers to the number of years necessary for future cash flows to return the original investment.

Internal Rate of Return (IRR)

The IRR is the interest rate that equates the present value of expected cash flows to the initial cost of the project. By comparing IRR with loan or hurdle rates, a company can determine the profitability of an investment.

Hurdle Rate

This rate can help a business determine whether an investment passes the profitability test, and whether it should be accepted or rejected. The higher the cost of capital and risk, the higher the hurdle rate. ENERGY STAR Buildings recommends using a 20-percent hurdle rate for energy-efficiency investments.

Life-Cycle Costing

Many people consider life cycle costing to be the best measuring stick for making investment decisions. This method takes

Effective Curtailment Strategies Reduce Electricity Bills

Reducing power usage during peak demand periods can substantially reduce your company's electric bill and help delay the need for expensive new utility power plants.

Energy efficiency and renewable energy experts with the U.S. Department of Energy suggest that you begin by categorizing your electric usage into one of three varieties:

- Life, health, and safety driven;
- Mission Critical; and
- Non-critical.



You can then seek opportunities to curtail non-critical loads during peak usage periods. A few relatively simple adjustments in the following areas could save your company a great deal of money:

Lighting - Turn off lights in unoccupied rooms and areas with sufficient daylight. If general lighting provides enough lighting levels to maintain safety and productivity, shut down task lighting. Reduce corridor lighting. Turn off decorative and display lighting. Use motion sensors to automatically

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Comprehensive Motor Analysis Tool Helps Companies Save Energy Dollars

Slight improvements in the efficiency of electric motors can result in big savings for companies of all sizes.

The long-term cost of operating a motor exceeds the capital cost of acquiring motors in virtually every case. Yet many companies focus more on the cost of new motors when they think about replacing older, less efficient models than they do on the amount of money they can save on electricity. Some of this misplaced emphasis results from the difficulty in quantifying the energy savings that can result from motor replacement.

Fortunately, the U.S. Department of Energy has funded the development of a software tool that does all the “heavy lifting” when it comes to analyzing motor efficiency and operating costs. The MotorMaster software tool does everything from calculating payback on a single motor purchase to comprehensive, integrated motor system management. It even lists

more than 25,000 motors from 18 different suppliers, complete with performance data, list prices, warranty periods, size, weights, and more.

Best of all, you can download the MotorMaster tool free of charge at www1.eere.energy.gov/industry/bestpractices/software.html#mm. You can then take advantage of its capability to calculate energy savings, dollar savings, simple payback, cash flows, and the after-taxes rate of return on investment for energy programs – taking into account variables such as load factor, motor efficiency, purchase price, energy costs, hours of operation, and other factors.

If you have to make a rewind/replace decision, MotorMaster will also provide you with recommendations, suggested maintenance procedures, and methods to classify your motors by age, efficiency, and condition. If you need technical data to help

optimize drive systems (such as data on motor part-load efficiency, full-load speed, and power factor) MotorMaster can make these calculations to support your capital investment decisions.

As the following statistics show (*figure 1*), using this information to upgrade motors can produce impressive savings on energy.

In order to determine monthly savings, one must multiply the kW savings by the demand charge and the kWh savings by the kWh charges. The MotorMaster tool not only performs this analysis, but also provides a direct comparison to new, higher efficiency motors to calculate the return you will get on your investment.

For more information on the advantages of using the MotorMaster tool and maximizing electric motor efficiency, please call Marietta Power at (770) 794-5183. ✨

(figure 1)

Motor (Hours)	Efficiency	Monthly kW	Monthly kWh	Monthly kW Savings With Upgrade	Monthly kWh Savings With Upgrade
10 hp (270 hrs)	82.0	9.10	2,457		
Upgrade	92.0	8.11	2,190	0.99 kW	267 kWh
5 hp (270 hrs)	81.5	4.58	1,237		
Upgrade	92.0	4.05	1,094	0.55 kW	143 kWh
7 hp (270 hrs)	78.5	6.65	1,796		
Upgrade	92.0	5.68	1,534	0.97 kW	262 kWh
40 hp (270 hrs)	90.2	33.08	8,932		
Upgrade	92.0	32.43	8,756	0.65 kW	176 kWh
10 hp (240 hrs)	82.0	9.10	2,184		
Upgrade	92.0	8.11	1,946	0.99 kW	238 kWh

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into account the time-value of money, varying cash flow, cost of capital, project life, and different magnitudes of the competing investment decisions to produce an outcome in today's dollars.

Free tools that will help companies accurately evaluate how much return they can expect on investments in energy-efficient improvements include:

ENERGY STAR® Financial Value Calculator

This Excel-based calculator will conduct financial analysis for improvements that reduce energy use for companies in the corporate real estate, healthcare, hotel/motel, grocery, and retail sectors. It calculates

financial returns after depreciation, interest, and tax. A company can access the calculator at

www.energystar.gov/index.cfm?c=assess_value.financial_tools.

Life Cycle Cost in Design (LCCID)

Designed as a general life-cycle costing tool, LCCID compares and evaluates the economic feasibility of different building types, sources of energy, and cost issues such as maintenance and repairs. A company can download this tool at

www.wbdg.org/tools/lccid.php.

For additional help in determining how much return a company can expect when it

invests in energy-efficient improvements, please call Marietta Power and Water at (770) 794-5183. Remember, investments in energy performance can have a favorable impact on profits, earnings per share, and ultimately, shareholder value. ✨

City Lights

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City Lights

Marietta Power and Water
675 N. Marietta Pkwy.
Marietta, GA 30060-1528
Attn: Elsie Neal
or e-mail pjonsson@marietta.ga.gov
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Save Your Assets by Protecting Computers and Other Electronics From Electrical Disturbances

Safeguarding your company's computer equipment and electronics from electrical disturbances can save you an enormous amount of downtime, lost productivity, insurance hassles, and other related headaches.

Surges usually occur when a high-power appliance in the area shuts down

Disturbances that can damage or destroy equipment include:

Spikes – These instantaneous jumps in voltage levels can cause catastrophic damage to computer hardware in only 1/120 of a second. Spikes usually result from nearby lightning strikes or downed power lines.

Surges – Surges place tremendous stress on delicate electronic components, which will wear them out over time. They can also contribute to data errors, dim or bright lights, and shrinking display screens. Surges usually occur when a high-power appliance in the area shuts down, and sometimes because of short circuits or undersized electrical circuits.

Blackout – A complete power outage will cause you to lose every bit of computer data you created since you last saved your documents. Blackouts can result from excessive demands on the power grid, lightning storms, ice on power lines, equipment failure, or any accident that knocks down a power line.

Sag (or Brownout) – The dramatic drops in voltage levels that most people call brownouts can cause keyboards to freeze,

lights to go dim or unusually bright, shrinking display screens, system crashes, and massive data loss. They also reduce the lifespan of essential equipment. Sags can result from short circuits, undersized electrical circuitry, or when utility companies deliberately decrease voltage levels to cope with peak load times (usually during summer heat waves). Brownouts can also occur when heavy equipment comes on line.

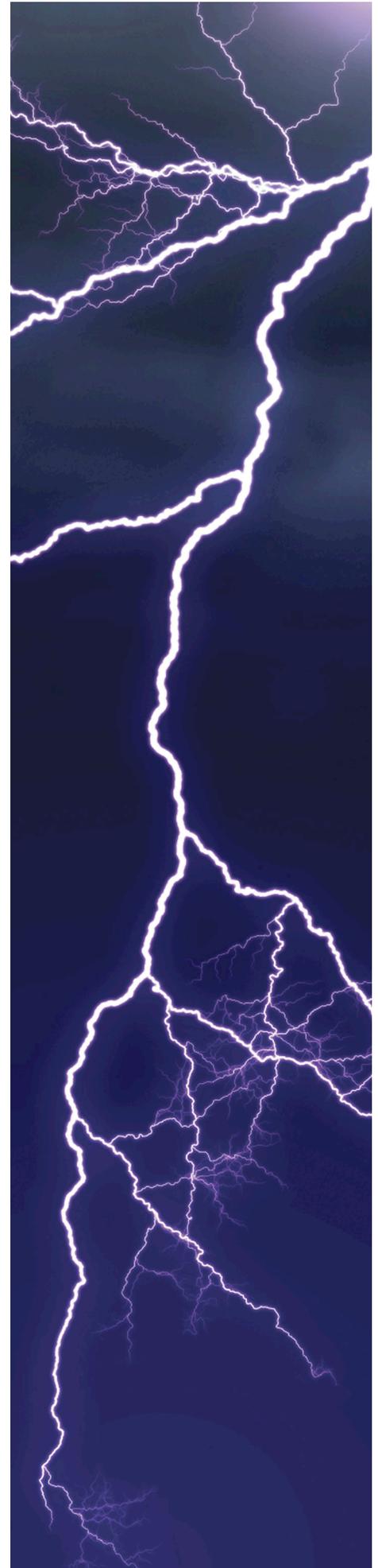
Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI) – EMIs and RFIs don't harm equipment, but they can introduce glitches and errors into data and programs. They result from disruptions in the smooth (sine wave) of the electrical current flowing from the power company. Causes of these disruptions include lightning, load switching, generators, transmitters, transformers, and industrial equipment.

So how do you avoid the costly consequences of these occurrences?

Choose UPS – Install an uninterrupted power supply (UPS) that uses batteries to provide consistent levels of power during sags and blackouts.

Suppress and Divert – Surge suppressors and diverters “take it for the team” when spikes or surges occur. Their components burn out to prevent sudden voltage increases from causing more extensive damage to your enterprise. Or they channel electricity directly into the ground line and away from sensitive electronics. Please consult Marietta Power to ensure proper placement of suppressors and diverters.

For advice or more information on protecting mission-critical equipment from electrical disturbances, please call Marietta Power at (770) 794-5183. ✎



Effective Curtailment Strategies Reduce Electricity Bills continued from page 1

turn off lights in unoccupied areas.

Office Equipment and Appliances –

Turn off computers, monitors, printers, and all electric equipment when it is not in use. (If possible, unplug electronics as well – many continue to use electricity when plugged in but switched off.) Activate Energy Star power-down features wherever they're available. Turn off or unplug drinking water fountains that use electricity to chill water. Have employees keep personal appliances such as radios, coffee pots, and especially portable heaters turned off during peak usage periods. Shut down unnecessary users of electricity such as pumps for decorative fountains or purely ornamental lighting.

Air Conditioning – Shut down cooling in nonessential spaces and allow temperatures elsewhere to rise as high as 78 degrees Fahrenheit. Turn off cooling or heating

systems before the workday ends, but not early enough to allow the temperature to become uncomfortable before employees leave for the day. Take steps to keep ventilation grilles and fan coil units unblocked by boxes, books, flowers, debris, or other obstructions. Allow chilled water temperature to rise above normal settings during peak periods. Set air-handling units to turn off at peak periods and use outside air flow to maintain indoor air quality.

In addition, consider long-term solutions such as:

- Installing motion sensors and separate lighting circuits that enable you to turn off unneeded lights. Some facilities have installed circuitry that provide separate controls for public areas and workspaces.
- Converting your roof to a white or silver surface that reflects heat.
- Installing an Energy Management and

Control System that allows your company to shed and monitor loads from one central location.

- Reengineering water-pumping operations to enable you to use a smaller pump to complete pumping tasks over a longer period of time.
- Installing variable speed drives to reduce overall motor operating load.
- Conducting airflow audits and evaluations if your compressed air load exceeds 150 horsepower. Such examinations can help you reduce compressed air requirements by as much as 50 percent.
- Recharging forklift batteries with chargers that take longer, but use less energy.

For additional strategies on reducing power consumption, reducing electricity costs, and developing effective curtailment strategies, please contact Marietta Power and Water at (770) 794-5183. ✨

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Marietta Power and Water
675 N. Marietta Pkwy.
Marietta, GA 30060-1528

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