



Small & Medium Manufacturers Guide to Energy Management

June 2013

Get Started

Finding energy savings starts by making energy management a priority. Sustaining those savings and driving further reductions requires building energy management into your company's culture. ENERGY STAR can help you get started regardless of the size of your company.

The guidebook is designed to help you:

- [Understand the basics of successful energy management;](#)
- [Scale energy management to your company;](#)
- [Begin finding savings;](#)
- [Locate resources and assistance programs to offset costs;](#)
- [Communicate to employees and customers](#)

"We have had a fantastic experience as an ENERGY STAR partner and the benefits have been substantial - including financial gain as well as the good feeling that comes from doing something that benefits the planet. The ENERGY STAR partnership is an incredible example of an investment in sustainability that boosts the bottom line. We can't imagine a company in today's economy that wouldn't benefit from reduced costs and the EPA's technical assistance in incorporating energy into their strategy."

- Trista Claxton, Fetter Printing Company

1. Understand the Basics of Successful Energy Management

Why do some companies save more than others? One reason is how they approach energy management.

Companies that follow a few basic principles achieve greater savings.

If you are serious about reducing energy use, you can apply these principles and save!

Make energy a priority

Start saving energy by making it a priority for **everyone** in the company.

Assign responsibility

Someone has to be responsible for energy. Initially, this might be a designated energy champion. Over time, responsibility can be expanded to a team of people.

Set a goal

Goals create clear objectives for energy management activities. Need help? Take the [ENERGY STAR Challenge for Industry](#) and reduce your energy intensity by 10%.



Look beyond first cost

With energy efficiency, you get what you pay for. Recognize that energy-efficient equipment and products may cost more upfront but will save more money and energy in the long run.

Get with the program

Energy management is more than doing just a few energy projects. It is a commitment to manage energy as an on-going function of your business. Successful energy management sustains savings and integrates projects with:

- Understanding energy use
- Operations and maintenance
- Behavioral changes
- Tracking and benchmarking energy use
- Communicating to employees

While all of this might seem like a lot, it's really just a matter of scale.

2. Scale Energy Management to Your Company

There's an energy management program that's just right for your company. It's all about sizing the key actions to create a program that works for you.

The [ENERGY STAR Guidelines for Energy Management](#) outline the steps for building an energy program.

Review the Guidelines and then decide how to apply them to your organization.

Evaluate your energy management practices using the [Energy Management Assessment Matrix for Small Companies](#) in the appendix of this guidebook.

Examples of Applying the Guidelines to Small and Medium Companies

ENERGY STAR Guideline Steps	Actions for Small and Medium Manufacturers	Additional ENERGY STAR Resources
Step 1 Commit to Continuous Improvement	<ul style="list-style-type: none"> Appoint a number of key people to form the energy team. Create and post an Energy Policy in the break room. 	Teaming Up to Save Energy Join ENERGY STAR
Step 2 Assess Performance	<ul style="list-style-type: none"> Gather energy bills and compare the past two year's energy use. Inventory large energy using equipment and systems. Request a load profile from your utility. Examine how your rates are structured Identify an energy metric to track (e.g. total energy or Btu/pound of production). Use the ENERGY STAR Energy Tracking Tool to track progress. 	Energy Tracking Plan ENERGY STAR Energy Tracking Tool
Step 3 Set Goals	<ul style="list-style-type: none"> Create a goal to motivate action. Establish corporate/plant baseline(s) and a process for tracking energy use over time. Use the ENERGY STAR Energy Tracking Tool to track progress Consider taking the ENERGY STAR Challenge for Industry 	ENERGY STAR Energy Tracking Tool ENERGY STAR Challenge for Industry

<p>Step 4 Create Action Plan</p>	<ul style="list-style-type: none"> • Identify no-cost actions to reduce energy use, e.g. turn off unnecessary equipment, fix compressed air leaks, etc. • Identify projects requiring capital, e.g. upgrade lighting, replace old motors, etc. • Take advantage of free or low-cost plant energy assessments from universities, the local utility, or state or local governments. • Write down your plan and share it. 	<p>SMM Energy Guide</p> <p>Industrial Energy Management Information Center</p>
<p>Step 5 Implement Action Plan</p>	<ul style="list-style-type: none"> • Challenge employees to find ways to save energy at work and at home. • Conduct an energy assessment. • Assign responsibility for carrying out energy projects. • Consider performance contracting to finance energy upgrades. 	<p>Communication Resources</p>
<p>Step 6 Evaluate Progress</p>	<ul style="list-style-type: none"> • Compare progress against baselines. • Evaluate action plan and identify new areas for next year. 	<p>ENERGY STAR Energy Tracking Tool</p>
<p>Step 7 Recognize Achievements</p>	<ul style="list-style-type: none"> • Create an annual award to recognize employees and facilities that achieve significant savings. • Achieve the ENERGY STAR Challenge for Industry. 	<p>ENERGY STAR Challenge for Industry</p>

3. Begin Finding Energy Savings

Is capital tight? Better operating practices and equipment tune-ups help many manufacturers achieve significant energy savings -- at little cost.

Learn where to find energy savings now by reading our easy-to-use guide to identify energy saving opportunities that can be made in your plant.

[Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants](#)

Need some quick tips? Use our animated tour of energy savings in a manufacturing plant. Share this with your employees to get them thinking about energy savings, too!

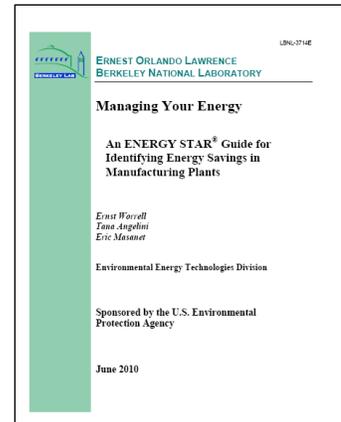
Tour the ENERGY STAR [animated manufacturing plant](#) and find ways to save energy!

Get started on finding savings

Use the checklists below to begin to identify energy savings in your plant.

Lighting

Lighting is a significant energy use and cost for most manufacturers, and an area with many opportunities for savings.



✓	Lighting Focus Area	Action Items
	Are unoccupied areas lit?	See Section 4.1 in <i>Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</i>
	Are lights left on during non-work hours?	
	Are parts of the facility over-lit?	
	Is older, inefficient technology in use?	
	Are exit lights using old technology?	
	Can daylighting be used?	

Heating, Ventilation and Air Condition (HVAC) Systems

HVAC systems can be a significant energy load for small manufacturing plants. Its important to keep these systems operating efficiently.

✓	HVAC Focus Area	Action Items
	Are temperature set points turned back during non-production hours?	See Section 4.2 in <i>Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</i>
	Are temperature set points at the right level?	
	Is duct work leaking?	
	Is the building well insulated?	
	Are HVAC systems programmed correctly and operating according to manufacturer's instructions?	
	Are coils cleaned regularly?	
	Are air filters changed appropriately and regularly?	
	Is older, inefficient technology being used?	

Motor Systems

Motors, widely used in manufacturing, are found in process equipment, HVAC systems, air compressors, and other systems.

✓	Motor Focus Area	Action Items
	Are motors properly sized?	See Section 4.3 in <i>Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</i>
	Are motors maintained?	
	Can adjustable or variable speed drives be installed?	
	Can older, less efficient motors be replaced?	
	Do you have a motor management program?	

Compressed Air

Did you know that compressed air is **the most expensive** plant utility? Make sure your not wasting air!

✓	Compressed Air Focus Areas	Action Items
	Are hoses and lines regularly checked and repaired for leaks?	See Section 4.4 in <i>Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</i>
	Is the system properly maintained?	
	Is compressed air used only for critical uses?	
	Is the system over-pressurized or over-sized?	
	Can pressure be stabilized or reduced?	
	Are too many air compressors running to meet the load?	
	Is compressor performance monitored regularly?	

Steam Systems

Assessments of industrial steam systems find, on average, 10% to 15% annual energy savings.

✓	Steam System Focus Areas	Action Items
	Are controls in use to monitor oxygen levels, flue gas leaks, and air intake?	See Section 4.6 in <i>Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</i>
	Are the boiler and distribution system properly sized?	
	Are distribution systems properly insulated?	
	Are steam traps regularly checked for failure and replaced?	
	Is steam condensate re-used?	
	Is heat recovered from flue gas to preheat boiler feed water?	
	Are older, less efficient boilers in use?	

Manufacturing Processes

Improving operating practices for energy efficiency is an excellent source of no-cost savings opportunities.

✓	Manufacturing Process Focus Area	Action Items
	Can idling equipment, machines or systems be turned off?	See Sections 4.1 - 4.8 in <i>Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</i>
	Can startup and shutdown times for equipment, machines or systems be reduced?	
	Are systems and machinery properly commissioned?	
	Are systems optimized for production?	

Free Software Evaluation Tools

What to evaluate your systems further? The Department of Energy (DOE) offers free software tools to help you evaluate motor, fan, steam and other systems to identify energy savings opportunities.

Visit DOE's [Industrial Facility Tool Suite](#).

Office Equipment

Take advantage of [ENERGY STAR qualified products](#) to help you reduce your energy use. Office equipment, water coolers, computers, vending machines and more all help to reduce the energy load.

4. Locate Resources & Assistance Programs to Offset Costs

Wondering How to Pay for Upgrades to Plant Systems and Equipment?

Larger upgrades and improvements to plant systems and equipment will likely require capital. The good news is these projects often have short payback periods, increase plant productivity, and are generally low risk investments with guaranteed returns.

Some states and utilities offer rebates and financial incentives that offset equipment costs. Current federal tax incentives can also bring down the cost of equipment upgrades.

Tax Incentives

Section 179 Deductions

Section 179 of the Internal Revenue Code allows small businesses to deduct the full purchase cost of qualifying purchased equipment from your gross income. The cost of upgrading to more energy efficient equipment can be deducted by qualifying small businesses under Section 179. The Tax Relief Act of 2010 and The Jobs Act of 2010 were passed last year which updated Section 179.

For more information, see www.section179.org/ and www.irs.gov/

Deduction for energy-efficient commercial buildings

The Energy Policy Act of 2005 established several tax deductions for commercial buildings. These tax deductions were available for systems “placed in service” from January 1, 2006 through December 31, 2010. However, on December 17, 2010, President Obama signed the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010. This law extends the tax credits for energy efficiency into 2011.

State and Local Tax Incentives

Some state and local governments may offer tax credits and deductions for purchases of energy-efficient equipment and upgrading of facilities. Contact your state or local tax authority for more information.

Rebate Programs

Many states and utilities offer money back on specific energy-efficient equipment, products, and even larger projects. Rebate programs vary by state, utility, and program sponsor. They can also change during the course of the year – so check for new rebate programs regularly!

Use the [Database of State Incentives for Renewables and Efficiency](#) to find a program in your area.

Technical Assistance

Low- and no-cost energy assessments and technical assistance programs are available in most parts of the country. These can help your organization create an action plan for energy savings.

Directory of Energy Efficiency Programs

The [ENERGY STAR Directory of Energy Efficiency Programs](#) can help you identify ENERGY STAR partner organizations in your state that sponsor energy efficiency programs.

Plant Energy Assessments

University-based [Industrial Assessment Centers](#) (IACs) are sponsored by the Department of Energy and provide eligible small- and medium-sized manufacturers with no-cost energy assessments.

Find Expert Energy Professional Help

ENERGY STAR maintains a directory of [Industrial service and product providers](#).

5. Communicate to Employees and Customers

Don't underestimate the value of raising employee awareness of energy and the opportunities for saving. Well-informed employees are the first line of defense in an energy management program. Engage them by using these ENERGY STAR resources.



[Communications Toolkit](#)

Take advantage of free, off-the-shelf communication and educational resources to help you share your energy efficiency accomplishments and spread the word about the importance of saving energy.

[Bring Your Green to Work](#)

By making many of the same green choices at work that you make at home, can help you save energy and fight global warming.

[Plant Energy Efficiency Tour](#)

Here is a fun, on-line tool that helps to raise awareness of energy savings opportunities.

[ENERGY STAR Plant Posters](#)

Use these resources to communicate energy efficiency best practices.

[Fast Facts](#)

Provides useful statistics to help understand the important role commercial and industrial buildings play in global climate change.

[Saving Energy At Home](#)

Help your employees find energy saving tips at home through ENERGY STAR.