



## Energy Management Basics for Small and Medium sized Manufacturers

These steps are based on lessons learned from ENERGY STAR partners who used them, developed long-term energy management strategies and are now seeing energy and cost savings.

### 1) Assess the energy use of your plants and set a savings goal.

#### Why?

Managing energy use is difficult if you are not measuring it. By measuring and tracking, you can evaluate the energy use of your plant(s) and determine a reasonable energy savings goal. This is the first step of an effective energy savings program.

#### How:

- Assess the current energy performance of your plant(s). If possible, use a comparative reference point from an energy performance rating system.
  - For warehouse and office space energy performance, use the EPA's [national energy performance rating system](#). This free, online tool provides a score for many types of buildings on a simple 1-to-100 scale.
- Set appropriate goals for your facilities. EPA encourages you to set a simple 10 percent savings goal to start.

### 2) Improve common plant systems.

#### Why?

The Department of Energy (DOE) estimates that common plant systems use about 80 percent of all industrial energy. DOE estimates it is possible to reduce energy use in these systems by 10-20 percent. Common plant systems to focus on include:

- Motors & Pumps
- Compressed air
- Steam generation
- Process heating

#### How:

Take these general steps to uncover opportunities.

- Evaluate operating practices for waste, unnecessary use, or misuse.
- Operate systems as they were designed and commissioned.
- Maintain the systems to reduce losses. Increase insulation where possible. Keep all systems in good working order.
- Size systems for your needs and adjust them as needs change.
- Recover heat from systems, where possible.
- **A few specific opportunities include:**
  - **Motors**
  - Talk to your vendors and ask about energy efficient products when making equipment purchases
  - **Compressed Air**
  - Eliminate leaks, inappropriate uses, and verify/reduce system pressure

- **Steam**
- Maintain steam traps, eliminate leaks, insulate and tune up boilers regularly

For further information, see [DOE's Industrial Technologies Program](#) .

### 3) Turn off what is not needed.

#### Why?

A common problem reported by many ENERGY STAR partners is that equipment remains on and running during non-production periods. This results in wasted energy. For many, this practice can be easily adjusted.

#### How:

Conduct plant walk-throughs when the plant is down for maintenance or for night, vacation, or holiday closures. Study what is running during these times and determine what can be shut off. All energy-using applications (lighting, motors, etc.) should be considered for possible shutdown. This information forms the basis for a shut-down list. Meet with plant managers to review walk-through findings. Establish shut-down procedures that can be implemented by everyone in the plant. Return periodically to inspect plant adherence to shutdown procedures.

### 4) Get employees involved.

#### Why?

Employee behavior impacts energy use. Employees influence the amount of power required to run equipment, light spaces, etc. However, when informed about the need to save energy and how to do it, generally, employees want to help. Promoting energy awareness among employees can provide quick, positive returns for a small, upfront cost.

#### How:

- Hold a special staff meeting to review some basic energy saving behaviors as listed below.
- Educate employees on facility energy use and costs. Use the customizable, free [ENERGY STAR Employee Outreach](#) posters to get the message out.
- Solicit ideas for energy reduction projects from employees. Often, the people who operate a plant and its equipment have ideas on how to improve its performance.
- Make employees aware of their responsibilities to manage energy, such as:
  - Turning equipment off when not in use
  - Keeping plant, warehouse or refrigerator doors closed to avoid loss of cooled or tempered air
  - Avoiding improper use of equipment, such as using compressed-air blow down
- Use Monitor Power Management techniques to make sure computer monitors and computers are placed into sleep mode or turned off after periods of inactivity. EPA provides full technical guidance on [computer power management](#) for businesses.
- Encourage procurement personnel and employees to purchase [ENERGY STAR Products](#) where applicable.

### 5) Check the lights.

#### Why?

In some industries, lighting can use a substantial amount of energy. Look carefully at current lighting systems for efficiency, levels, and controls. Consider upgrading equipment. Perform regular maintenance and make sure lights are turned off when not in use. It is often cost effective with today's technology to replace older lighting systems and save 30 percent or more on lighting expenses. More efficient lighting produces less heat which reduces the need for air conditioning.

#### How:

- Turn off lights when not in use. Review when and why lights are currently left on to see if there are opportunities to turn them off.
- Maximize the use of task lighting.
- Examine the opportunity for occupancy sensors. Wall mounted occupancy sensors that replace conventional light switches are available at low cost.
- Evaluate lighting levels.

- Replace older fluorescent lighting with T8s and consider using fluorescent lighting in high bay applications. Replace incandescent bulbs with compact fluorescent bulbs.
- Implement a regular light maintenance schedule to replace all bulbs at one time when they are at an estimated 70 percent of their life. This reduces lighting maintenance costs by more than 25 percent, allows for greater bulk purchasing discounts, and ensures more even light levels.
- Make sure that outdoor lighting is not being used during daylight hours.
- Indoor lighting for security can be accomplished with as few as one out of every ten lighting fixtures. Occupancy sensors (motion sensors) that turn on all lights within an area can provide necessary light for cleaning crews, reduce daytime lighting while occupants are at lunch or meetings, and help security staff notice unexpected movement in select areas. Integrating sensors and the right amount of lighting into an overall security plan offers a better solution than lighting all indoor fixtures during nights and weekends.
- Use natural daylight, where possible.
- If you need more help, ENERGY STAR [energy service and product providers](#) are available to work with you.

### **Energy Reduction Checklist**

Use this [SMM Energy Use Checklist](#)

### **Taking the Next Steps**

- Develop a long-term energy management strategy with the help of EPA's [ENERGY STAR Guidelines for Energy Management](#).
- Make a commitment to continuous improvement of energy performance. Consider becoming an [ENERGY STAR partner](#) to take advantage of partner resources and networking with other manufacturers working to save energy just as you are doing.