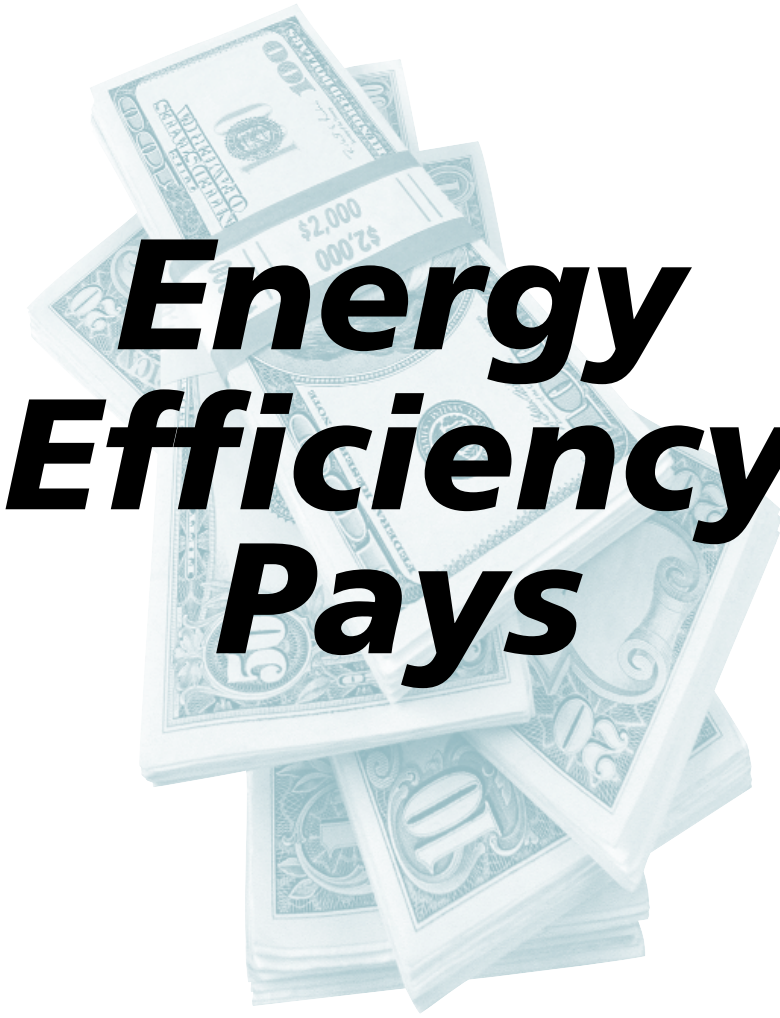

Energy Efficiency Pays

A Guide for the Small Business Owner

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Welcome to
Energy Efficiency Pays

By reading this guide, you are on your way to saving energy and valuable dollars for your small business. Many of the energy savers in this booklet are proven no-cost or low-cost, energy saving techniques that you can do yourself. And, they will save you money — hundreds or even thousands of dollars — year after year.

We understand how important your time is to your small business, so we developed this guide with that in mind. It is intentionally short and easy to read, but packed with useful information. By reading this guide, you will learn:

- **Who benefits from energy efficiency** (hint: just about everyone)
- **Why energy efficiency is smart business**
- **How to take advantage of new energy-saving techniques and products**
- **How to calculate simple payback for your energy investments**
- **What kind of money-saving projects you can do yourself**
- **When to hire an expert, and tips for doing so**
- **Where to start saving energy to increase your profits**

This booklet begins with an introduction to energy efficiency and a list of sure, simple energy savers. If you have limited time, you

may want to focus your attention on these. The rest of the guide is divided into five main sections:

- **Lighting**
- **Office Equipment**
- **Heating, Ventilating, and Air Conditioning (HVAC)**
- **Refrigeration**
- **Hot Water Use and Efficiency**

These can be read in any order, based on your small business needs. Each begins with a few "easy ways to save" to help you conserve energy and dollars quickly. By selecting methods that suit your particular needs, you will be able to control and reduce your energy use and costs, making energy efficiency pay for your small business.

You can refer to this guide over and over for money-saving ideas. Start reading now for ideas to use right away, and then review it again when you are ready to:

- **Buy energy-efficient products, from light bulbs to office machines to water heaters.**
- **Create a new budget, so you can plan for energy-related expenses.**
- **Hire an HVAC contractor, to understand what to look for and how to work together.**
- **Remodel your facility, so you can plan upgrades to more energy-efficient technologies.**

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Introduction to Energy Efficiency

If you're like most small business operators, you know a lot more about running your business than the details of water heaters and lighting systems. You do know that you want to keep your utility bills low. Whatever you spend on energy — for lights, heat, air conditioning, refrigeration, water use, and electricity to power office equipment — cutting your costs boosts your bottom line. And this guide will help you find energy savings that make sense for your business.

Managing your energy use will likely lead to increased profitability, which makes energy efficiency smart business. And while you're spending less money, you will be helping the environment by preventing pollution. These are the direct benefits of energy efficiency. There are indirect benefits as well:

- **Enhanced employee productivity thanks to improved comfort and lighting levels**
- **Reduced operations and maintenance expenses**
- **Protection from energy inflation**
- **Increased customer comfort and satisfaction**
- **Improved look of your products, which could increase sales**
- **Increased asset value of your facility**
- **Enhanced image for your business as an environmentally responsible partner in your community — a possible competitive differentiator**

Energy-related technologies have been advancing at an amazing pace in recent years, which means upgrades can reduce energy

use by up to 30 percent in some cases. Below are the places with the most opportunities.

- Lighting
- Office equipment
- Heating, ventilating, and air-conditioning (HVAC) equipment and maintenance
- Refrigeration
- Hot water

If you are concerned that upgrades will be out of reach financially, don't worry. Many projects are low-cost or no cost, do-it-yourself jobs and basic maintenance. For more involved jobs, there are many traditional and non-traditional financial resources available to you. Whatever the costs, you need to evaluate them and to understand how soon you can expect a return on your investment. The simplest evaluation tool is called simple payback, which is the number of years it takes to recover the cost of the energy upgrade from the energy savings (or costs avoided).

To calculate simple payback, divide the installed cost of the improvement by the annual energy savings. The result is the payback period in years. Here's an example: If you replace 20 100-watt incandescent bulbs with 27-watt compact fluorescent bulbs, it will cost $400 and save $980 a year and pay for itself in less than five months, assuming constant use.

$$\frac{400}{980} = 0.4, \text{ and } 0.4 \text{ years} < 5 \text{ months}$$

Any project with a simple payback of 1.5 years (18 months) or less is an excellent opportunity and should be implemented immediately. In fact, any simple payback of less than four years is a worthwhile investment.

For projects that you can't do yourself or with in-house staff, make use of some existing resources for guidance and support.

- **Take advantage of services offered by local utility companies and government agencies.** Many of the nation's utility companies offer free or subsidized commercial energy audits to identify energy-efficiency opportunities. Some also offer energy-efficiency incentives and rebates. And they may have an affordable loan program to help fund larger projects. For more information, check with your state energy office, which can be located by visiting: www.naseo.org/members/states.htm.

- **Talk with your contractor.** Ask your HVAC technician for tips on minimizing energy and maintenance costs with your particular system during a scheduled maintenance visit — it's like getting a miniature free energy audit. Your contractor should be able to lead you to other locally available energy-efficiency programs and services.

- **Use your local small business development center.** For information on financial or technical assistance, call a nearby small business development center or visit www.asbdc-us.org for a complete list. ASBDC is dedicated to the continuous improvement of America's small businesses.

- **Partner with the ENERGY STAR® for Small Business program.** It's free to become a partner of ENERGY STAR, which provides you access to unbiased information on energy-efficient technologies and services, as well as the upgrade process. For more information, call 1-888-STAR-YES (1-888-782-7937) or visit www.energystar.gov/smallbiz.

- **Make use of the Department of Energy's Rebuild America program.** This network of community partnerships may be able to help your small business save money by saving energy. Rebuild America partners have access to energy-efficient products, services, and financing options. For more information, call 1-800-DOE-3732 or visit www.rebuild.gov.

There are many other organizations and agencies, as well as online and printed resources, many of which are listed in the appendices of this document. You can make energy efficiency pay for your small business — and this guide will help get you there.

Simple, Sure Energy Savers

Below are a series of reliable, low-risk, high-return actions that offer simple ways to save money and energy. If you don't do anything else to make energy efficiency pay in your small business, at least try a few of these sure, simple energy savers.

- **Turn off lights and equipment when they are not in use.**

- **Adjust lighting to your actual needs and use free daylight to your advantage.** Natural light costs nothing and may allow you to turn off or dim your lights during the day.

- **Control direct sunlight through windows.** In warm weather, limit sun shining through glass on eastern exposures in the morning and those facing west in the afternoon. In colder climates, southern exposures can add heat during the day, but should be covered at night.

- **Replace incandescent light bulbs with compact fluorescent lamps* (CFLs) wherever appropriate.** Compact fluorescent lamps cost about 75 percent less to operate, and last about 10 times longer. (*Lamp is a generic term used for light bulb, fluorescent tube, or other light source.)

- **Install LED (light-emitting diode) exit signs.** You may be able to replace current incandescent bulbs with simple "screw-in"

replacements that cost $15 to $40 and will last more than 10 years. If not, a new LED exit sign costs about $100 and will save 90 percent over incandescent bulbs' operating costs.

- **Plug or fill any cracks or leaks with weatherstripping and caulking.** Look for cracks around windows, doors, utility switches/outlets, and any other holes between the inside and outside when you undertake this cheap, "do-it-yourself" job.

- **Change your air filters (or clean if reusable) at least every three months, monthly during peak heating and cooling times.** Each dirty filter typically wastes up to $5 a month, overworking your equipment and resulting in dirtier indoor air.

- **Use ceiling fans to increase air movement and comfort levels while saving money year-round.** Fans can delay or reduce the need for air conditioning: a temperature setting of 3 to 5 degrees higher feels as comfortable with fans as the lower setting feels without fans. Each degree of higher temperature saves about 3 percent on cooling costs. Remember to reverse ceiling fans in winter to pull warmer air down.

DID YOU KNOW...

EPA's ENERGY STAR partners that have installed typical energy-efficiency upgrades have reduced their buildings' energy costs by an average of about 30 percent.

- **"Tune-up" your heating, ventilating, and air-conditioning (HVAC) system twice a year using a semi-annual maintenance contract.** The cost for this service varies by local HVAC contractor, but it's likely to save you more than it costs. It automatically ensures "pre-season" system check-ups before each cooling and heating season.

- **Install "occupancy sensors" where appropriate to automatically turn off lights when people leave an area and back on when someone returns.** Just be sure to install them where the sensors can "see" someone approaching an unlit area.

SUCCESS STORY

***KIDDIE U.**, a 15,400 square-foot daycare and learning facility in Orlando, Florida, has the lowest energy costs per square foot of any comparable facility in the state. Presiden Joseph Mannella's new facility includes high-efficiency air-conditioning, programmable thermostats, compact fluorescent lamps, T-8 fluorescent lamps with electronic ballasts, occupancy sensors, and improved insulation. He pays $1,500 per month for combined water and energy costs, about 40 percent less than his previous building. The Energy Conservation Assistance Program at the University of Central Florida Small Business Development Center provided technical support for Kiddie U's efficiency upgrades. The center also assisted Mannella in obtaining a $75,000 Florida Energy Loan to help finance the energy upgrades, which have improved the overall comfort of the facility.*

- **Install a programmable thermostat to automate your HVAC system.** This solid-state, electronic device optimizes HVAC operation around the clock, based on your needs. A "smart thermostat" costs $50 to $200, but can cut your HVAC expenses up to 30 percent.

- **Buy ENERGY STAR-labeled office equipment and other products when needed, and activate the "stand-by mode" function.** This automatic "sleep mode" for office equipment saves energy and money when the equipment is not in use and awakens automatically when needed again. For more information, visit www.energystar.gov/smallbiz and click into the "Products" area.

ENERGY STAR for Small Business maintains a list of simple, sure energy savers on its Web site at this address: www.energystar.gov/smallbiz.

Lighting: A Smart Place to Start Saving

Many lighting changes are easy to make, and cost little or nothing. That may be why nearly 75 percent of all small business energy upgrades are related to lighting. Making changes to the way you light your business should be one of the first places you look for potential energy savings.

Easy Ways to Save

- **Turn off lights when they're not needed.** Lights should be off whenever an area is unoccupied, such as when people go to lunch or a meeting.
- **Take advantage of natural light.** Turn off some or all of the lights near windows during daylight hours.
- **Install more efficient sources of light.** Compact fluorescent lamps and halogen lamps are more efficient than traditional incandescent light bulbs.
- **Try task (or spot) lighting.** By focusing extra light just where you need it, you may reduce the need for overhead lighting while decreasing glare and eyestrain.
- **Keep lights clean as dust and buildup can reduce their life expectancy and light output.**

DID YOU KNOW...

Any time you don't need fluorescent lights on for more than 5 to 10 minutes, you save more money by turning them off than by leaving them on.

Lighting Upgrades

This section will help you identify lighting fixtures and controls that can be replaced to add profits to your bottom line quickly. Many ideas pay for themselves in less than one year.

Types of Lighting

INCANDESCENT LAMPS* **Thought of as standard light bulbs, incandescent lamps are inefficient and short-lived and should be replaced with more energy-efficient light sources. Only 5 percent of the electricity consumed by incandescent lamps is actually turned into useful light.**

HALOGEN LAMPS **Twice as efficient as incandescent lamps, halogens have longer lives and offer a pleasing sparkle that highlights merchandise, especially jewelry, effectively.**

COMPACT FLUORESCENT LAMPS **Four times as efficient as incandescents, compact fluorescent lamps last 10 times as long and work in most traditional screw-in light fixtures.**

TUBULAR FLUORESCENT **A staple for office lighting nationwide, tube fluorescents are four to five times more efficient than incandescents and can last 8 to 20 times longer.**

METAL HALIDE **These lamps give off a crisp white light and work well in high-ceiling areas and for some retail spot lighting. They are about as efficient as fluorescent lamps, but cost a little more.**

HIGH-PRESSURE SODIUM **The yellow light you see in parking lots or mounted on exterior building walls comes from high-pressure sodium lamps. About 5 to 6 times as efficient as incandescent lamps, these are the most efficient of commonly used lighting types.**

*Lamp is a generic term used for light bulb, fluorescent tube, or other light source.

The first thing you need to know is that incandescent lamps are extremely inefficient and should be replaced with either compact fluorescent lamps or halogen lamps. The only place to keep an incandescent bulb is in a low-use area, such as a closet. Also note that "energy saver" incandescent lamps aren't much more efficient than regular incandescents. They save money only by delivering less light, which isn't an ideal solution.

Replace Incandescent Lamps with Compact Fluorescent Lamps

Designed to replace incandescent lamps in traditional screw-in light fixtures, CFLs are 4 times more efficient and may last 10 times longer than incandescents, and you can replace them yourself. Just note the different wattage levels in the chart below. Also, compact fluorescent lamp quality can vary, so check the ENERGY STAR Web site (www.energystar.gov/smallbiz) for brands and models that meet ENERGY STAR's performance specifications.

DID YOU KNOW...

Incandescent bulbs consume 75 percent more electricity than compact fluorescent bulbs.

CURRENT INCANDESCENT	REPLACEMENT COMPACT FLUORESCENT
25 watts	5 watts
40 watts	7 watts
60 watts	13 watts
75 watts	22 watts
100 watts	27 watts

Replace Incandescent Lamps with Halogen Lamps

Lasting two to four times longer than a standard light bulb, halogen lamps are also twice as efficient. They also offer better color, efficiency, and reflection. Many users can replace 150-watt floodlights with 35- or 60-watt halogen lamps and still get brighter, more focused light with better color rendition. Halogens are popular for spot lighting, especially in jewelry and upscale retail stores, because they add a sparkle to products.

The most popular halogen lamps cost about $7 (compared to $1 for incandescent lamps), but they last much longer and save

about $25 in energy costs over their lifetime. Retrofitting fixtures to accept halogen lamps typically pay for themselves in less than three years in energy savings alone if fixtures are used at least two hours a day for screw-in retrofits or eight hours a day for fixture replacement.

A final note about halogens: Their high operating temperatures may pose a fire hazard in some applications, but this is typically with halogen torchiere lamps, not all halogen light bulbs. Ask for professional advice when you first buy and install halogen lamps.

Upgrade to Light-Emitting Diode (LED) Exit Signs

Typical exit signs lit with 15-watt incandescent bulbs cost about $30 a year to operate and need replacement lamps every year. Light-emitting diode exit signs cost about $5 a year to operate and can last 25 years without a lamp replacement.

DID YOU KNOW...

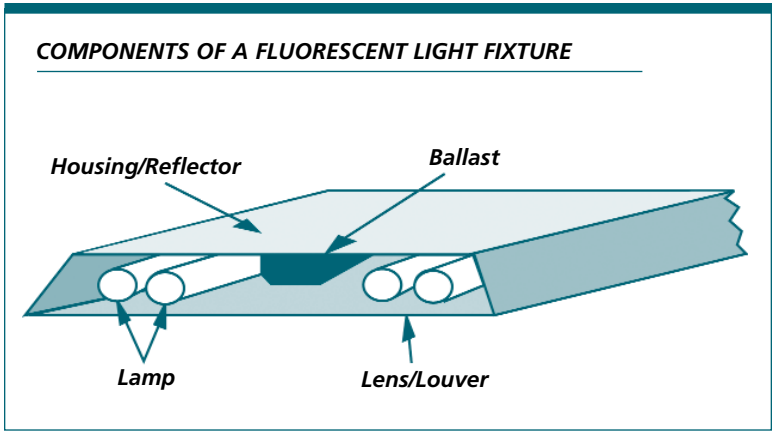
There's no reason to wait until old lights wear out to replace them. With some new technologies, such as T-8 fluorescent lights and light-emitting diode (LED) exit signs, you can start saving money on energy and maintenance costs right away.

LEDs are common in electronic devices such as clock radios. You can buy do-it-yourself upgrade kits for your existing incandescent exit signs for $15 to $75. Or you can buy new LED exit fixtures and install them yourself for less than $100. (Upgrades don't require any wiring, so they are easier to install.) LED exit signs use 95 percent less energy than incandescent exit signs and last 10 to 20 times longer.

Upgrade Fluorescent Lamps

Even within the generally efficient category of fluorescent lighting, you can reduce your energy use by more than 66 percent by changing from the worst to the best type of fluorescent tubes.

Many "standard" fluorescent tubes are four-foot-long, 40-watt T-12s. It may pay to upgrade to the higher efficiency, 32-watt T-8



fixtures. (The number after the T represents eighths of an inch: a T-12 has a 1.5-inch diameter; a T-8, one inch). The T-8s improve energy efficiency by about 10 percent. Their electronic ballasts (devices that provide the proper voltage and current to fluorescent lamps) use 30 percent less energy than old magnetic ballasts used by T-12s.

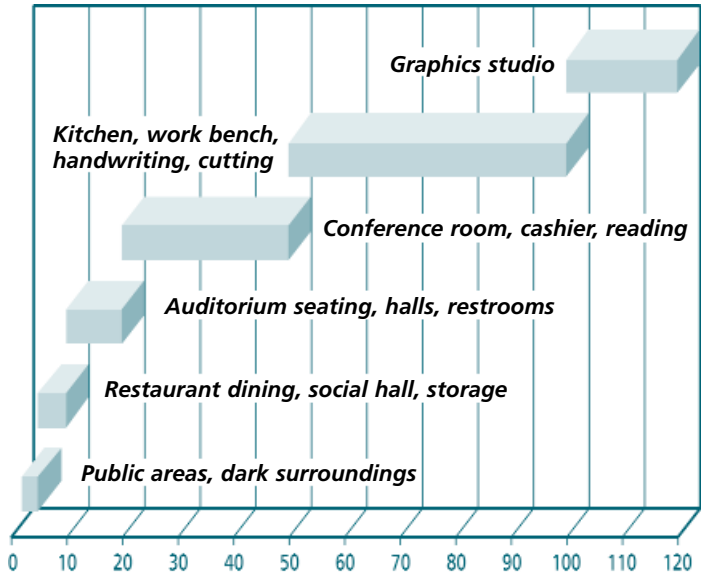
Converting a fluorescent light fixture to a T-8 costs $50 to $100 per fixture, so you may wonder if it's worth the trouble. The answer depends on your local electricity costs and how often you use the lights. Generally, if you use them more than 60 hours a week, the answer is "yes" or at least "yes it's worth finding out more information." A local lighting contractor or your utility company can often do a free lighting analysis to help you decide.

Before throwing away any old fluorescent lamps or ballasts, check state and local regulations for proper disposal methods because lamps could contain mercury and pre-1979 ballasts may contain PCBs.

Remove Lamps

If you're looking for a no-cost way to save money on overhead lighting, consider removing some of your fluorescent lamps. Offices originally designed for pen-and-paper work offer many opportunities because people working at computers often prefer less light and glare.

RECOMMENDED LIGHT LEVELS FOR SELECTED ACTIVITIES



Recommended Overall Ambient Light Levels (in footcandles)

- Experiment to see if removing lamps makes sense in your facility.
- Remove lamps only in pairs: try using only two lamps in a four-lamp fluorescent fixture.
- Find out the preferences of people working on computers — they may prefer less light for increased contrast on their monitors.
- Reduce fluorescent lighting in hallways and corridors, which are often over lit.
- Remove other unnecessary lamps where lighting levels exceed needs.

While employee preferences play a large role in optimizing light levels, the above chart, created by the Illuminating Engineering Society, provides recommended levels for various activities.

Install Occupancy Sensors

As a business owner or manager, you may be more likely to remember to turn off lights when you're not using them, but employees may not think much about it. Occupancy sensors detect people in a room and automatically turn lights on and off.

These sensors cost between $25 and $80 and are an excellent choice for spaces that may be unoccupied for portions of time during the day. The more hours the lights are off, the greater the energy savings. Consider installing occupancy sensors in private offices, conference rooms, restrooms, and storage areas.

Increase Sales and Productivity with Better Lighting

New energy-efficient lighting can do more than just reduce your utility bills. It can also add value by:

- **Improving employee comfort and performance.** Energy-efficient lighting generates less heat and renders more pleasant color. It also helps prevent people from getting headaches by

ENERGY-SAVINGS POTENTIAL WITH OCCUPANCY SENSORS

Application	Energy Savings
Offices (private)	**25–50%**
Offices (open spaces)	**20–25%**
Rest rooms	**30–75%**
Corridors	**30–40%**
Storage areas	**45–65%**
Meeting rooms	**45–65%**
Conference rooms	**45–65%**
Warehouses	**50–75%**

Note: Figures listed represent maximum energy-savings potential under optimum circumstances. Figures are based on manufacturer estimates. Actual savings may vary.

Source: California Energy Commission/U.S. Department of Energy/Electric Power Research Institute

reducing the amount of flicker from lights. Your employees will work better when their work environment is more comfortable.

- **Improving sales.** Better color rendition through lighting means that your merchandise will look more appealing. And, improved lighting will make customers feel more comfortable. They may choose to stay longer in your store, which could lead to increased sales.

SUCCESS STORY

***FRED COCHRAN**, owner of Interiors by Casual Creations in Mary Esther, Florida, noticed that much of the furniture in his showroom looked dull and colorless, so he began investigating new lighting technologies to try to improve its appearance. He quickly learned that a new lighting system would not only improve the look of his furniture, but also reduce his energy consumption and save him money. He enlisted the help of his local Small Business Development Center (SBDC) to help him transform his 22,000-square-foot facility into a real "show" room. With the help of the SBDC, Cochran replaced 175 4-lamp fluorescent fixtures with 2-lamp fixtures using energy-efficient T-10, hi-lumen lamps. He cut his lighting bill in half, and the bright showroom brought many positive comments from customers. The improved lighting also invigorated the sales staff and raised productivity levels and morale. Cochran cut his annual energy bill by more than $5,000, a simple payback of just over one year for his $6,500 investment.*

Office Equipment: The Fastest Growing Use of Energy

In recent years, the foundation of the American economy has changed from manufacturing industries to service- and information-based businesses. This change has caused an exponential increase in office equipment and associated energy use. Today, office equipment ranks as the fastest growing use of energy in the business world — and a good place to look for savings.

DID YOU KNOW...

Energy-efficient office equipment lowers utility bills because of reduced air-conditioning as well as the lower energy cost of the equipment itself.

Easy Ways to Save

- **Turn equipment off whenever possible.** Make sure machines get turned off whenever your facility is unoccupied or when machines will not be used for a considerable amount of time.
- **Enable energy-saving software.** If your machines are equipped with energy-saving software, be sure to turn it on.
- **Clean, tune, and adjust equipment.** Maintaining your equipment will extend its life and keep it running more efficiently.

Use Computers, Monitors, and Printers Efficiently

One of the simplest ways to save energy with office equipment is to turn machines off when they're not needed. Many machines run when they are rarely used, or they are left on when an area is

unoccupied. Encourage people to turn off machines overnight and on weekends. And think about turning off machines during work hours if they won't be used for a long time. Of course, if your warm-up or start-up procedures are time-consuming or complex, it's best to keep the machines running.

DID YOU KNOW...

Flat screen LCD computer monitors use significantly less energy than traditional tube monitors, notebook computers use much less energy than desktop computers, and inkjet printers use less energy than laser printers.

You can keep printers running when necessary and still save energy by networking several users to one printer. Not only will you benefit from lower energy costs, but also you can lower your capital expenses by buying fewer printers.

For monitors, it definitely pays to turn them off when not in use for extended periods of time (or set the "energy saver" mode to turn them off). This reduces your energy costs and preserves the phosphorus substance that screen savers are designed to save.

When purchasing new office equipment, always buy ENERGY STAR-labeled equipment and make sure the energy saving feature is enabled. Many major manufacturers have joined the program, but be sure to specify ENERGY STAR-labeled products or look for the logo on display models. A few facts about ENERGY STAR-labeled machines:

- Computers and monitors automatically power down to 30 watts when not in use.
- Printers can cut printing-related electricity use by more than 65 percent.
- Printers power down to 10 to 100 watts (depending on the printer), producing less heat, reducing air-conditioning costs, and contributing to a more comfortable work space.
- Double-sided printing capabilities can reduce paper costs by $30 a month and cut file storage space in half.

TYPICAL SAVINGS IF YOU BUY ENERGY STAR-LABELED OFFICE EQUIPMENT

Equipment	Annual ENERGY STAR-labeled office equipment cost savings	Percentage of total operating cost
Computer	**$19**	**49%**
Fax machine	**$13**	**52%**
Printer	**$39**	**65%**
Copier (medium)	**$57**	**57%**
Copier (large)	**$130**	**58%**

For more information on ENERGY STAR-labeled office equipment, visit www.energystar.gov/smallbiz and click into the "Products" area.

Make the Most of Your Copier

Copiers are the most energy-intensive piece of office equipment, and approximately 7 million of them are in homes and businesses across the United States. They use a lot of energy just sitting idle for long periods of time. Here are a few ideas for getting the most out of your machine:

- Use the double-sided and 1- to 2-sided copy options.
- Run copies in batches to decrease the time your copier spends in and out of the high-powered mode.
- Turn it off when not in use for a while.
- Buy the smallest size copier to suit your needs.
- Buy an ENERGY STAR-labeled copier. It will turn off automatically when inactive, cutting your annual copy-related electricity costs by more than 60 percent.

DID YOU KNOW...

If everyone used the double-sided feature of ENERGY STAR-labeled copiers, we could save one million tons of paper — enough to go around the world 1,400 times.

WHAT YOU WILL SAVE

	Energy Savings (kWh/yr)	Cost Savings per Year at Different Electric Rates ($/kWh)			Percent Savings
		$0.06	$0.08	$0.10	
SAVE NOW					
Turn 24-hour equipment off at night so it runs only 9 hours per day.					
Savings per computer	675	$41	$54	$68	61%
Savings per large copier	6,600	$396	$528	$660	56%
SAVE LATER					
Replace older 24-hour equipment with new ENERGY STAR-labeled equipment that is used 9 hours per day.					
Savings per computer	795	$48	$64	$80	72%
Savings per large copier	8,910	$535	$713	$891	75%

Heating, Ventilating, and Air Conditioning: The Biggest Energy User

Heating, ventilating, and air-conditioning (HVAC) systems account for 39 percent of the electric energy used in U.S. commercial buildings, which means your business can realize significant savings by improving the efficiency of your systems.

Easy Ways to Save

- **Turn heating and air-conditioning systems down or off when not in use.** If your facility is unoccupied at certain times (such as nights or weekends), lower the heat or raise the air conditioning to save energy costs. Or consider turning the system off altogether — just be sure to leave ample time for heating or cooling before employees return.
- **Use the "auto" setting rather than the "on" setting.** A fan in the "on" mode runs non-stop, 24 hours a day; in "auto" the fan cycles only when supplying heat or air conditioning.
- **Use more efficient temperature settings.** In the winter, try gradually lowering the thermostat by a total of 3 to 5 degrees; slowly raise it by the same amount in the summer. Experiment to see which settings are still comfortable for employees and visitors.
- **Replace air filters regularly.** Clean air filters keep a system performing at its most energy-efficient peak, while keeping the air cleaner. Change filters (or clean replaceable ones) at least quarterly, once a month in peak heating and cooling months.

- **Plug or fill any cracks or leaks with weatherstripping and caulking.** Look for cracks around windows, doors, utility switches/outlets, and any other gaps between inside and outside.
- **Consider ceiling fans.** Air conditioners don't need to work as hard (or at temperatures so low) when a fan helps to increase the comfort level by circulating the cool air. In winter, ceiling fans can be reversed to pull warm air down, allowing lower heating temperatures.
- **Open the windows.** If your building has windows that open, try cooling your space down the old fashioned way. In the spring and fall, open windows bring cool air in and let warm air out.

Smart System Settings

Do you ever see employees wearing sweaters in the summer? You can save lots of energy just by being smart with your heating and cooling temperature settings.

Change the Temperature Gradually

During winter months, keeping the temperature a little cooler can really pay. Gradually reduce the temperature (about 1 degree per week) so people have time to adjust and you can gauge the comfort level. Often people won't even notice the change.

DID YOU KNOW...

Each degree of a higher temperature setting can save about 3 percent on cooling costs.

In the warmer months, try increasing the temperature a little bit. Even at a warmer temperature, the air will be a welcome contrast for people coming in from outside. And, employees who are fairly inactive, such as those sitting at a computer or standing behind a cash register, might welcome the change.

Turn the System Down or Off When Unoccupied

Don't pay for energy that no one uses. You may be using energy to heat, cool, or freshen the air when nobody is there to benefit. If your building is unoccupied at certain times, your HVAC system should be turned down or off. Despite what you may have

heard about never turning an HVAC system off, it can save money to let a building cool down or heat up when unoccupied and to restore comfortable temperatures by the time business resumes. This strategy of lowering temperature settings during unoccupied hours in the winter and raising settings during the summer is called "setback." Energy savings from setback can range from as little as 10 percent to as much as 30 percent.

It takes time for a system to recover after a weekend of being in setback or turned off completely, so be sure that on Monday mornings the system starts up before people show up for work. ENERGY STAR-labeled thermostats often have a feature called "optimal start" that enables the thermostat to automatically figure out when to turn the system on in order for it to be at a comfortable temperature by the time people show up for work.

DID YOU KNOW...

The Consortium for Energy Efficiency reports that up to 50 percent more energy could be saved with proper installation, sizing, and maintenance of commercial central air conditioners and heat pumps.

Consider Locking Your Thermostat

Finally, being able to control thermostat settings is crucial if you are going to save energy dollars. If your experience has been that employees, clients, or customers change the thermostat settings, you may want to consider covering and locking them. But first, talk to people about why they change the settings you have chosen. Perhaps they are too warm or too cold to work in comfort. If the temperature seems reasonable, but changes still occur, then locking the system makes sense.

Get Help From An Expert

Check the Accuracy of Your Thermostat

Ask your HVAC technician to check the accuracy of your thermostats during a scheduled maintenance visit. Obviously, if a thermostat setting of 75 degrees is cooling the air to a real temperature of 72 degrees, your system is running more than it should — and costing you valuable energy dollars. If the thermostat is not accurate, have the technician recalibrate or replace it.

Install a Programmable Thermostat

Although turning off or setting back your HVAC system is simple enough to do manually, an automatic control is much more efficient and reliable. Electronic, programmable thermostats — which allow you to program a desired setpoint and cutoff times for a week — are available for $50 to $200. Most models include manual override features, so if someone needs to work when the facility is closed, the person can work in comfort without having to reprogram the system.

Be sure the technician installs your thermostat in a location where the temperature is representative of the entire area the system serves — not next to an air conditioning vent or the coffee pot. If you have a heat pump, be sure to buy a heat-pump-programmable thermostat.

Programmable thermostats are effective, especially with individual unit air conditioners and heaters. However, if your facility uses larger, central systems such as boilers and chillers, you may consider an energy management system (EMS) instead. Operated with a computer, software, and sensors, an EMS provides unified control of HVAC functions to maximize energy efficiency and comfort conditions. It can also control lights and equipment throughout your facility. An EMS can reduce energy costs by up to 20 percent, with a simple payback period of two to four years. Let a knowledgeable HVAC expert help you decide if an EMS is right for your facility.

Have Your Economizer Checked, Repaired, or Upgraded

An economizer is an arrangement of dampers, linkages, actuators, and controls that allow the use of outdoor air to achieve free cooling without using the compressor, which is more expensive to run. When combined with a programmable thermostat, the potential energy savings is significant.

Many commercial HVAC systems already have economizers, but most of them are disconnected or in poor repair. Because economizers can lead to substantial energy savings in some climates (from 15 percent to 45 percent depending on the location), make

sure that any contractor you hire is committed to keeping yours in good working order.

Most economizer breakdowns occur as the result of the sensors that measure the temperature and humidity parameters used to determine the position of dampers. For more than a decade, solid-state sensors that rarely fail have been available. Ensure that your contractor is familiar with the more rugged and accurate sensors. Don't let a contractor convince you it isn't worth repairing your economizers because he is not familiar with their benefits. Look for contractors that can provide you with a computer-generated estimate of energy savings along with their repair estimate.

Over the last few years, economizer-sensor technology has advanced, allowing substantial savings to be achieved in winter as well. By adding a CO_2 sensor as an input so that the system actually knows approximately how many people are in your facility and by extension, how much ventilation is required. When a

SUCCESS STORY

***CENTERPLEX**, a Seattle-based ENERGY STAR for Small Business partner, is a 26,500-square-foot commercial office with 43 tenant firms and 100 occupants. The owner, Jonathan Pool, cut his electric bill in half by installing 10 programmable thermostats, energy-efficient lights, and window improvements. These energy-efficient upgrades have netted a savings of $23,000 per year, with a simple payback period of only 18 months. And Pool says his energy conservation has had a spillover effect on his tenants: "When you rent space to others, the practices you engage in attract compatible people. Conservation attracts people who support conservation. They generate less waste and are easier on both each other and the physical plant." While his overhead went down, his profit went up.*

building has low occupancy during the winter, the economizer closes dampers to the absolute minimum, preventing the introduction of cold air that must then be heated. This technology is called Demand Control Ventilation. Ask potential contractors if they are familiar the technology and ask them to give you an energy-savings estimate from one of several scientifically sound software tools available to them.

Benchmark Your Building

Free from ENERGY STAR, this service enables you to quickly and easily determine how efficiently your building is operating compared to others like it in your climatic zone. Your 1 to 100 benchmarking score tells you how much potential you have for lowering your bills. A score under 75 should be viewed as a high-priority opportunity to improve your bottom line.

Benchmarking currently is available for commercial office buildings, K-12 schools, grocery stores, hospitals, and hotels. The service also is under development for convenience stores, healthcare facilities and warehouses. Visit www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager for more information. If you need help, look for a contractor who is already familiar with this online service or willing to learn how to complete the process for you.

Have Your HVAC System Tuned Up Twice a Year

Whatever type of HVAC system you have, maintenance is a critical factor in its longevity. Regular maintenance is an often-overlooked key to saving money on your heating and air conditioning costs. The easiest approach is to have a semi-annual service maintenance agreement (SMA) with a licensed HVAC contractor.

The cost varies by system. The maintenance should include:

- Checking the system's connections
- Adjusting temperature and humidity setpoints
- Inspecting and oiling fan motors
- Checking for proper airflow at the unit and each zone
- Checking for proper control settings and safety shut-down functions

- Inspecting and repairing duct leaks and insulation gaps
- Inspecting and repairing economizer operation and recommending upgrade options depending on your weather zone.
- Inspecting and cleaning dirty heat transfer coils in heat pumps, air conditioners, and chillers and straightening any bent coils
- Testing and repairing any leaks in the refrigerant lines and checking for proper refrigerant charge using charts specific to your system's make and model
- Based on your input, adjusting programmable thermostats and time clocks so that heating and air runs only when your building is normally occupied

DID YOU KNOW...

Semi-annual maintenance checks are just as important for your HVAC system as changing the oil in your car every 3,000 miles.

Maintenance-level service can vary significantly. Here are some key differences to look for that will help you determine if you're buying minimum grade service or comprehensive support:

MINIMUM GRADE	PREMIUM COMPREHENSIVE
Inspect	Inspect and replace
Replace filters	Replace filters and clean coils
Check refrigerant pressure	Check pressure and calculate efficiency; ensure proper economizer operation

New tools are now available to HVAC contractors that enable them to measure and document your system's efficiency compared to ideal operation when the system was first installed. The tools also accurately diagnose problems if the system is not running optimally and validate that repairs have been completed correctly. This means the contactor can more closely manage field technicians, and you can trust that you got the services you requested.

Much like automobile mechanics use fool-proof, computer-based systems to tune your car, contractors who have adopted advanced portable diagnostics are able to determine exactly what needs to

be done to done to optimize your comfort, indoor air quality, equipment life, and safety while also reducing your operating expenses. Better yet, they are able to focus their attention on the rooftop units that really need attention and not waste time or money on those that are running properly and efficiently.

Hire a Quality Contractor

When selecting a contractor to supply a service maintenance agreement or any other service, compare the warranties and maintenance agreements of various companies. Are parts and labor both included? Just parts? Just labor? The cheapest price is rarely the best buy. If a maintenance visit costs the contractor more than he is charging you for the service, you likely will have more frequent and costly breakdowns over time. Here are several tips for selecting an HVAC contractor:

- Ask for recent references and call them to determine if customers were pleased with the contractor's work.
- Ensure that the contractor has a valid license if one is required to perform service in your area.
- Request a written price quote and information on service maintenance agreements.
- Ask for computer-generated energy-savings estimates for economizer upgrades, setback implementation or EMS installations.
- Verify that the contractor complies with state and local codes and regulations and carries proper business and workers' compensation insurance.
- Ensure that the contractor will use only environmentally safe products when servicing your facility.
- Select contractors who are affiliated with national programs to ensure that your job will be done according to the latest energy-efficiency technologies. Affiliations could include Energy Star (www.energystar.gov/smallbiz), Rebuild America (www.rebuild.gov), and the National Main Street Network (www.mainst.org).
- Give extra points to contractors who belong to their own industry associations, such as the Air Conditioning Contractors of America. This not only gives them access to training

and information, but also adds a degree of accountability for them and confidence for you.
- Give even more points to contractors who participate in associations for business owners, such as restaurants, commercial building owners, facilities managers, schools, shopping center, and other "end-user" associations. This adds even more accountability to the contractor and reduces your risk.
- Look for firms that ask good questions about your building and how you use it. Contractors should also listen carefully and follow a process that starts with a thorough diagnosis, followed by a detailed proposal with complete disclosure.

When you are working with a contractor, you should look for a couple of other qualifications to make sure you have hired the right contractor for your small business. Contractors should:

- Provide fast, reliable service while at your location.
- Demonstrate skill and knowledge to service your current equipment, and, if necessary, to design and install the right system for your entire facility.
- Document what they have done, in writing or electronically.

For additional information, read EPA's *Putting Energy Into Profits* guide, including a chapter on selecting a contractor. A downloadable version of this document is available from the Energy Star Web site at: www.energystar.gov/smallbiz. The Air Conditioning Contractors of America Web site, www.acca.org, also has information on finding a quality contractor. And, you don't need to live in California to benefit from the California Energy Commission's energy efficiency handbook called *How to Hire an Energy Services Company*. You can also find three helpful articles, written specifically to help businesses select contractors and published by *Energy & Environmental Management* magazine at www.buildingsexperts.com/links.asp.

Refrigeration: Critical Savings in a Competitive Market

Refrigeration equipment is one of the highest energy users in the supermarket, convenience store, deli, and restaurant business. Reducing your refrigeration costs can give your small business a competitive edge in a very competitive market.

Easy Ways to Save

- **Keep the doors shut.** Repeated temperature changes damage your food quality and cost you money.
- **Check the temperature settings.** If your settings are lower than necessary, you are probably wasting money.
- **Properly load your refrigerator.** A refrigerator that's too full disrupts the air flow needed to cool items properly. On the other hand, a refrigerator without much in it wastes energy, too. If you have partially filled units, consolidate and turn off unneeded refrigerators.
- **Properly distribute refrigeration units.** Don't put the soda display case next to a hot dog warmer or in direct sunlight. Extra heat makes your refrigerator work harder to keep temperatures cool.

DID YOU KNOW...

A new ENERGY STAR-labeled 50-cubic-foot commercial refrigerator uses about 2,500 kilowatt-hours per year and costs about $205 a year to run — a 30 percent savings over a standard commercial refrigerator.

AIR TEMPERATURES FOR DISPLAY REFRIGERATORS*

(in degrees Fahrenheit)

Fixture Type	Minimum Temperature	Maximum Temperature
Dairy	34	38
Produce, packaged	35	38
Meat, unwrapped	36	38
Meat, wrapped	24	26
Frozen food	**	–13 to –5
Ice cream	**	–24 to –13

* Display refrigerators are not designed to cool the product, only to maintain product temperature. Air temperatures listed are for the maintenance of the product.

** Minimum temperatures for frozen foods and ice cream are not critical except for energy conservation. The maximum temperature is important to preserve product quality.

- **Ventilate refrigerators properly.** A 1-inch gap on the sides and a 4-inch gap at the back are recommended to give the refrigerator's condenser and fan access to a steady flow of air.
- **Clean the cooling coils.** Dirt build-up impairs heat transfer and lowers refrigeration efficiency and capacity.
- **Check the door seals.** Tight seals keep out warm air. Use this rule of thumb: If you can easily slide a dollar bill into the seal, have it adjusted.

If you have large refrigeration units, consider installing variable controls on evaporator fans. Evaporator controls are primarily used in walk-in refrigerators, which typically have fans that run continuously while the compressor cycles on and off. Evaporator controls use monitoring devices to determine when the compressor is not running, and then reduce the voltage to the evaporator fans during the compressor off cycle. Use of these controls can

produce energy savings of up to 25 percent. Not all refrigeration equipment can be adapted in this way, nor are these controls suitable for all food products.

SUCCESS STORY

***RICK STEIN** owns and operates the Inn at Wiccoppee, a well-known restaurant in the Hudson River area of Hopewell Junction, N.Y. By simply reducing his frozen food inventory and combining it into two freezers (dowr from five), Stein saves almost $800 a year — money that goes straight to his bottom line.*

Hot Water Use and Efficiency: Make Every Drop Count

Virtually every small business uses hot water, if only for employee hand washing. Businesses like restaurants, hotels, nursing homes, and athletic facilities that use hot water for laundry and dishwashing often spend 25 percent of their total energy bill on hot water. No matter how much hot water you use, it pays to cut back on unnecessary water and energy use.

Easy Ways to Save

- **Reduce the amount of water used.** Aside from turning off running water, you can install water-conserving showerheads in showers and aerators in bathroom and kitchen sinks. Showerheads range from $10 to $15, while aerators cost only a couple dollars. Both are easy to install.
- **Reduce the temperature of the hot water.** Thermostats on water heaters are often set much higher than necessary. Laundry and dishwashing usually require specific water temperatures (often set by local codes), but temperatures shouldn't be set higher than required. And a small office with an electric water heater that warms water for hand washing can save $10 per year if reduced from 130 degrees to 120 degrees.
- **Turn off your water heater when not in use.** The easiest way to do this consistently is to buy a seven-day thermo-

DID YOU KNOW...

The hotter the water temperature, the quicker you lose energy through the pipes and water heater tank walls.

stat. It costs about $30 and turns off your electric water heater when it's not needed (such as nights and weekends) and turns it back on an hour or two before your business resumes. You can save anywhere from $10 to $50 a year with a water heater timer.

- **Fix leaking faucets, toilets, showerheads, and pipes.** These do-it-yourself repairs can be done quickly and easily and at virtually no cost. Do an occasional walk-through of your space to spot any leaks.
- **Insulate your tank.** To reduce heat losses in your hot water system, make sure the hot water tank and the pipes connected to it are insulated.
- **Maintain existing systems.** Maximize your savings by performing periodic maintenance on existing equipment following your manufacturer's instructions.

DID YOU KNOW...

Repairing a seal that leaks a drop of water every five seconds can save money and hundreds of gallons of water per year. And if it is a hot water leak, you can save even more.

For additional information on smart water heating, contact Water Wiser, the Water Efficiency Clearinghouse at 1-800-926-7337; www.waterwiser.org.

TYPICAL RECOMMENDED HOT WATER TEMPERATURES

(in degrees Fahrenheit)

Process	Temperature
Hand washing	105
Showers	110
Laundry*	160
Dishwasher rinse**	180-195

* Check code requirements
**Many dishwashers have booster heaters. Check with the manufacturer to determine minimum temperature requirements.

Source: American Society of Heating, Refrigerating, and Air-Conditioning Engineers

If you use a lot of hot water (more than 100 gallons a day) and don't have gas service available, consider replacing your regular electric water heater with a heat pump water heater. It could cut your costs in half, and, if you can put the unit in a hot spot like a kitchen, it will provide free cooling as a bonus. Visit www.eere.energy.gov/femp/prodtech/commheat.html for more information.

SUCCESS STORY

***AN OFFICE MANAGER** of a 2,000-square-foot office building discovered a leak in the pipes from a 40-gallon electric water heater. While repairing the leak, she decided to insta an insulated blanket wrap around the water heater to prevent additional loss. The total cost of her improvements was $40. By setting the water heater thermostat to 120 degrees, the office manager saved $35 per year. After the one-year payback, she puts that extra money toward profits year after year.*

APPENDIX A:

Energy-Related Agencies and Organizations

Air Conditioning Contractors of America (ACCA): (703) 575-4477; www.acca.org

American Council of Engineering Companies (ACEC): (202) 347-7474; www.acec.org

American Public Power Association (APPA): (202)-467-2900; www.appanet.org

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE): 1-800-527-4723 or (404) 636-8400; www.ashrae.org

American Society of Mechanical Engineers (ASME): 1-800-THE-ASME; www.asme.org

American Solar Energy Society (ASES): (303) 443-3130; www.ases.org

Association of Energy Engineers (AEE): (770) 447-5083; www.aeecenter.org

The Association of Energy Service Professionals (AESP): (561) 575-2334; www.aesp.org

Association of Small Business Development Centers (ASBDC): (703) 764-9850; www.asbdc-us.org

EPRI (formerly the Electric Power Research Institute): 1-800-313-3774 or (650) 855-2000; www.epri.com

ENERGY STAR for Small Business Hotline: 1-888-STAR-YES (1-888-782-7937); www.energystar.gov/smallbiz

Energy User News: (847) 291-5224; www.energyusernews.com

Illuminating Engineering Society of North America: (212) 248-5000; www.iesna.org

Lighting Research Center: (518) 687-7100; www.lrc.rpi.edu

National Association of Energy Service Companies (NAESCO): (202) 822-0950; www.naesco.org

National Association of State Energy Officials: (703) 299-8800; www.naseo.org

National Trust Main Street Center: (202) 588-6219; www.mainst.org

National Society of Professional Engineers (NSPE): (703) 684-2800; www.nspe.org

Office of Energy Efficiency and Renewable Energy (EERE): 1-800-DOE-3732; www.eere.energy.gov

Rebuild America: 1-800-DOE-3732; www.rebuild.gov

Renewable Energy Policy Project (REPP): (202) 293-2898; www.repp.org

Water Wiser, the Water Efficiency Clearinghouse: 1-800-926-7337; www.waterwiser.org

APPENDIX B:

Energy-Related Printed Resources

ENERGY STAR has a number of energy-efficiency publications and brochures:

Putting Energy Into Profits: ENERGY STAR® Guide for Small Business, a 100-plus page book covering an array of energy-efficiency topics.

Introducing Your Company's Newest Profit Center, EPA 430-R-97-004. This is an introduction to the concept that energy upgrades are financial investments just like other business uses of capital.

Business Analysis for Energy-Efficiency Investments, EPA 430-B-97-002. This brochure describes in more detail the business-analysis approach you can use to decide if a particular upgrade or set of upgrades makes sense to invest.

Financing Your Energy-Efficiency Upgrade, EPA 430-B-97-003. This brochure describes the many financial and accounting aspects of upgrade projects in great detail. Use this information to finance your projects with the best impact on your balance sheet, cash flow, taxes, and ultimate return.

Get more information by calling 1-888-STAR-YES (1-888-782-7937) or by visiting the ENERGY STAR Web site at www.energystar.gov/smallbiz.

California Energy Commission has a series of handbooks for energy efficiency, including:

Energy Accounting
How to Hire an Energy Services Company
How to Hire a Construction Manager for your Energy Efficiency Projects

Visit www.energy.ca.gov/reports/efficiency_handbooks/index.html for more information.

APPENDIX C:

Information about the Sponsors of Energy Efficiency Pays

American Public Power Association's Demonstration of Energy-Efficient Developments (DEED) Program

The Demonstration of Energy-Efficient Developments program was established in 1980 by the American Public Power Association (APPA). The purpose of this research, development, and demonstration program is to sponsor and conduct activities related to energy innovation, improving efficiencies, and lowering the cost of providing energy services to the customers of publicly owned electric utilities. The DEED program offers funding for projects that will develop and demonstrate new technologies and techniques. Funding for DEED-sponsored projects comes in the form of grants to DEED member utilities, scholarships to university students studying in energy-related disciplines, and joint projects with APPA committees. APPA is the national service organization for community-owned, not-for profit electric utilities.

APPA/DEED
2301 M Street, NW
Washington, DC 20037
202-467-2900
www.appanet.org

Association of Small Business Development Centers

The Association of Small Business Development Centers (ASBDC) is a partnership program uniting private enterprise, government, higher education and local nonprofit economic development organizations. It is dedicated to the sound development of small business throughout America. The ASBDC provides a vehicle for continuous improvement of the Small Business Development Center program, exchange of information among members regarding objectives, methods, and results in business

management and technical assistance, and advocacy of America's small business community. The mission of the Association of Small Business Development Centers is to represent the collective interest of its members by promoting, informing, supporting, and continuously improving the Small Business Development Centers (SBDC) network, which delivers nationwide educational assistance to strengthen small/medium business management, thereby contributing to the growth of local, state, and national economies. ASBDC is a Strategic Partner of the U.S. Department of Energy's Rebuild America program.

ASBDC
8990 Burke Lake Road, 2nd Floor
Burke, VA 22015
703-764-9850
www.asbdc-us.org

Department of Energy's Rebuild America program

The U.S. Department of Energy's Rebuild America program is a network of community partnerships made up of local and state governments, schools, universities, housing agencies, and private businesses that save money by saving energy. These voluntary partnerships, working with support provided through the DOE, choose the best ways to plan and implement energy-efficiency projects in the commercial, institutional, and multifamily residential buildings controlled by their partners. Partnerships have access to products, services, and peer experiences on buildings, energy, finance, and more. Rebuild America provides support nationally and leads by regional teams. It assigns a program representative to each partnership to help in identifying local resources, financing options, and accessing special services from Rebuild America to aid in completing upgrades, and monitoring the impacts of utility restructuring on investment options. Rebuild America Financial Services aids access to capital by pointing partnerships toward programs offered by states, associations, or private financing organizations that may be able to provide investment capital at the lowest possible rates. The U.S. Depart-

ment of Energy is a co-sponsor with the U.S. Environmental Protection Agency of ENERGY STAR.

Rebuild America
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, DC 20585
1-800-DOE-3732
www.rebuild.gov

ENERGY STAR® for Small Business program

The U.S. Environmental Protection Agency's ENERGY STAR for Small Business program provides access to a range of technical materials and services, including a toll-free hotline at 1-888-STAR-YES (1-888-782-7937) and an award-winning Web site at www.energystar.gov/smallbiz. Both provide free engineering support, including answers to questions, product information, and calculations. You can become an ENERGY STAR partner through the hotline or Web site, and request publications, brochures, and information that you can use to highlight your success story for your customers and employees. There is even an annual national awards program. You may discover that you can do certain projects in-house after reviewing the relevant publications, or you may decide to enlist the help of professionals. Regardless, ENERGY STAR will help you become a smarter buyer thorough ENERGY STAR- labeled products and free, unbiased technical support. ENERGY STAR for Small Business is part of the overarching ENERGY STAR program family, which works with many different facets of the home and workplace. ENERGY STAR for Small Business is a Strategic Partner of the U.S. Department of Energy's Rebuild America program.

ENERGY STAR® for Small Business
1200 Pennsylvania Avenue, NW
6202J
Washington, DC 20460
1-888-STAR-YES (1-888-782-7937)
www.energystar.gov/smallbiz

Air Conditioning Contractors of America

The Air Conditioning Contractors of America (ACCA) is a non-profit trade association that represents the technical, educational, and policy interests of the men and women who design, install, and maintain indoor environments for residential and commercial customers.

ACCA was formed in 1969 through the merger of the Air Conditioning and Refrigeration Contractors of America (established in 1946) and the National Warm Air Heating and Air Conditioning Association (established in 1914). Today, ACCA represents 5,000 small businesses with more than 50 state and local chapters throughout the nation. In addition to contractor members, ACCA has associate members who engage in manufacturing, wholesaling, and distribution of heating, ventilating, air-conditioning and refrigeration equipment, as well as vocational and technical schools and utilities.

ACCA
2800 Shirlington Road, Suite 300
Arlington, VA 22206
703-575-4477
www.acca.org

American Public Power Association's Demonstration of Energy-Efficient Developments (DEED) Program
2301 M Street, NW
Washington, DC 20037
202-467-2900
www.appanet.org

Association of Small Business Development Centers
8990 Burke Lake Road, 2nd Floor
Burke, VA 22015
703-764-9850
www.asbdc-us.org

Rebuild America
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, DC 20585
1-800-DOE-3732
www.rebuild.gov

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703-764-9850

www.asbdc-us.org

Rebuild America

U.S. Department of Energy

1-800-DOE-3732

www.rebuild.gov

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