

Energy Smart Tips for Restaurants

FROM THE ILLINOIS SMART ENERGY DESIGN ASSISTANCE CENTER



A Fresh Menu of Gourmet Energy Savings for Blue Plate Prices

Restaurants often produce more than great food and excellent service – they also produce high energy bills. In the United States, restaurants spend an average of \$3.77 per square foot (ft²) on electricity and \$1.57 per ft² on natural gas annually. As energy costs rise, the need for efficiency moves to the front burner.

Typically 3-5% of a restaurant's total operating costs are spent on energy. Since a restaurant's profit margin is usually small (only 3-9% of total revenue), little changes can mean a lot. Reducing energy costs by 20% is an achievable goal, adding to the money you keep without compromising service, quality, style or comfort.

For restaurants in Illinois, cooking, refrigeration and lighting are prime targets for energy savings. Together, these areas represent approximately 68% of total energy costs.

Many energy efficiency measures can be implemented with little or no investment. In fact, wise use of kitchen equipment alone can save an estimated 7% of its consumption. Simple behaviour changes, such as turning off sections of griddles and broilers during slow periods or eliminating long oven preheats, can save hundreds of dollars every year.

Other energy improvements requiring an initial financial investment often yield savings that can pay for themselves and, in many cases, can reduce maintenance

costs, increase comfort, and improve the appearance of your restaurant.

Regardless of whether you rent or own your building, there are a number of energy saving measures that you can do in the short term, as well as many longer-term measures that can be outstanding investments for your business.

By investing in the efficient use of energy in your restaurant, you're reducing your operating costs, buffering your business from future energy cost increases, lowering your environmental impact and increasing your long-term profitability. Conservation measures also enhance the aesthetics of your restaurant, improve comfort, improve the health of your staff and reduce your maintenance costs.

If you need assistance in finding qualified contractors or suppliers, the Smart Energy Design Assistance Program team at the Smart Energy Design Assistance Center can help. Our database of pre-qualified service providers includes reputable professionals in a variety of fields, including energy auditors, financing providers, dealers, and installers of geothermal heat pumps, high efficiency HVAC, efficient lighting, solar, and more. Download a copy for free at [SEDAC's web site](http://SEDAC.org) under the header "Service Providers."

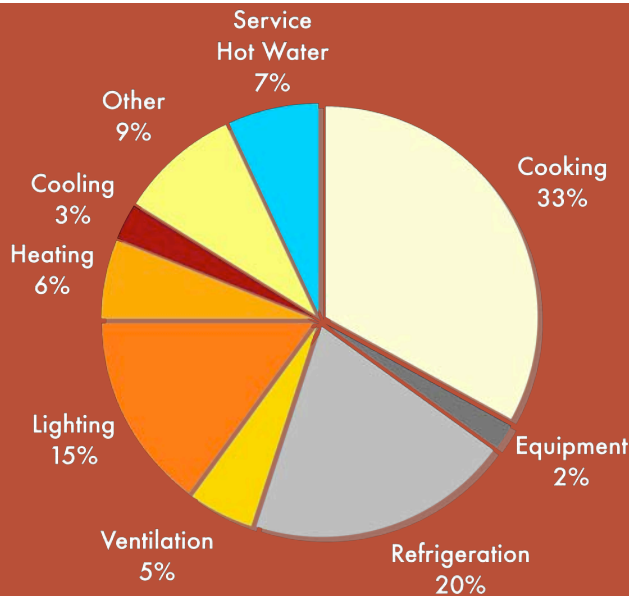
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Illinois' Energy Efficiency
Information Clearinghouse

Energy à la Mode

For Illinois restaurants, cooking, refrigeration and lighting are prime targets for energy savings.

The utility cost breakout graph shown to the right was generated using the most recent data from analyses performed by SEDAC for commercial kitchens and food service establishments throughout Illinois



Get Comfortable & Profitable

If you're designing a new kitchen or retrofitting an older one, be sure to use ENERGY STAR rated, high efficiency heating, ventilating and cooling (HVAC) equipment. You might also:

Build A Fan Base

Ceiling fans save energy year-round. In the summer, people feel more comfortable at a higher temperature because of the breeze created. This allows you to set the temperature a little warmer to save on cooling costs. Fans should be operated in the downward flow direction for summer comfort.

In the winter, ceiling fans move the warm air that floats up to the ceiling down the walls and to the occupants, making people more comfortable with less heat, saving you energy.

Turn It Down

An energy management system or programmable thermostat can reduce space temperatures during unoccupied periods, offering you greater control of your climate and reduced energy consumption. Savings in both the heating and cooling setback modes can be substantial. For example, a 1°F change in a thermostat setting for eight hours per day results in a 1% reduction in annual energy consumption.

Myth: Busted

Contrary to some opinions, it is not more expensive to restore the desired temperature to a building that was allowed to cool down or heat up when unoccupied.

Prevent Problems

Big payoffs can come from maintenance and repairs of HVAC systems. Regular preventive maintenance helps to avoid costly repairs and offers energy savings.

- ✓ **Change air filters regularly:** Grease and dust will clog a filter, restrict air flow and reduce the efficiency of your system
- ✓ **Check your economizer:** If this vent is stuck in the open position, your bills will go up. If stuck shut, you're losing potential savings.
- ✓ **Clean condenser coils:** Check condenser coils quarterly for debris, which can restrict airflow and decrease its efficiency.
- ✓ **Tune up your furnace:** The burner on a gas-fired furnace or boiler should be tuned up annually for optimal performance, reduced energy use and ensured safe operation of the unit.

Keep Your Cool

Refrigeration is a big wedge of the energy pie that deserves special attention. Several energy saving opportunities to discuss with your refrigeration technician include:

- ✓ **Insulation** – Be sure you have enough, that it's in good shape and that the seams are sealed. Don't forget to insulate the walk-in freezer floor, too.
- ✓ **Doors** - Inspect door gaskets for integrity. A strip curtain or swinging door can help keep the cold in where it belongs.
- ✓ **Maintenance** – Stick with a regular service schedule that includes review of temperature settings, refrigerant change, and component wear.
- ✓ **Lighting** – Cold temperature CFLs on timers or motion sensors ensure you get adequate and efficient light, but only when needed.
- ✓ **Economizing** – Use cold filtered outside air for cooling the walk-in during appropriate winter conditions.
- ✓ **Efficient Fan Motors** – Choose high efficiency motors for your evaporator and condenser fans.
- ✓ **Evaporator Fan Controls** – Controllers are available that cycle the interior evaporator fans so that they only run when needed.
- ✓ **Compressors** – Verify your appropriate sizing and consider a compressor rack to adjust capacity to loads.
- ✓ **Floating Head Pressure Controls** – These controls vary the operating pressure of the compressor as needed based on outdoor temperature conditions.
- ✓ **Defrost Controls** – These controls activate a defrost cycle only when needed.
- ✓ **Ambient sub-cooling** – Additional heat exchangers can let the outside air do more of the cooling of liquid refrigerant.

Bulbs & Lamps: Key Ingredients For Lower Bills

You could save hundreds of dollars per year with a turn of your wrist. Here's how:

1. Using incandescent lamps?

Trade them out for compact fluorescents. Advancements in these energy-saving wonders have made them dimmable and available in a variety of light colors to suit your desired look. You can save up to 75% per year for each lamp, plus the cost savings you'll get from their ultra-long life expectancy.

2. Using T-8s or T-12s?

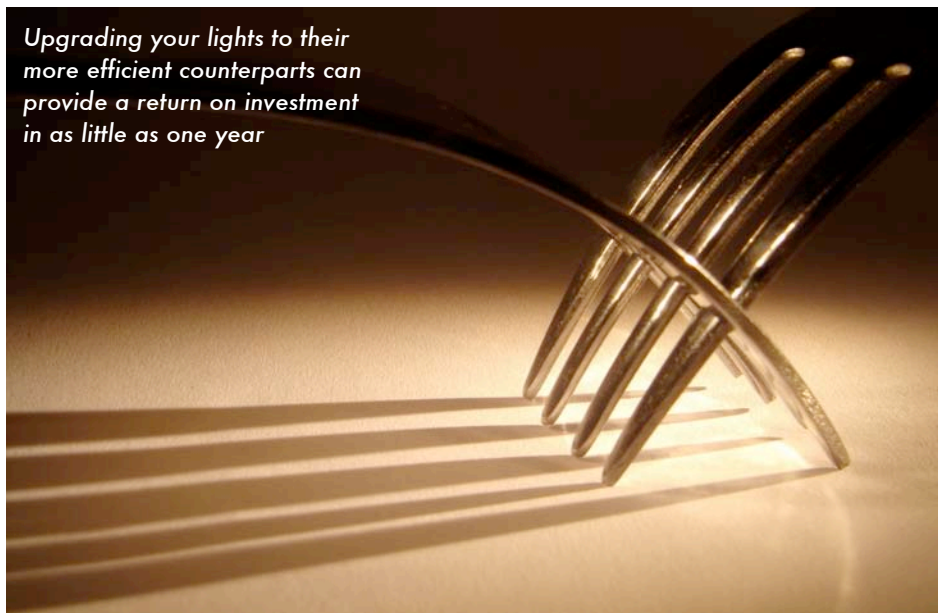
To see what these tubular lamps look like, visit www.SEDAC.org for pictures and details to determine whether you're ripe for an upgrade. If you do have four-lamp T-8 fixtures, you can cut costs by replacing them with three-lamp Super T-8 fixtures with high efficiency ballasts. You'll save up to \$16 per fixture annually, plus a bit more in savings from your reduced air conditioning load. Switching out a T-12 for a T-8 with electronic ballasts can save even more!

Plug Into Savings

Choosing to use energy efficient lighting schemes can be one of the best financial choices you can make for quick returns on investment. If you want the biggest impact at the start, choose to retrofit your most used fixtures first and you can move forward from there. You may even find that you don't need as many lights as you currently operate!

To ensure the efficient operation of your lamps, make sure they're clean; both bulbs and fixtures need to stay dust-free in order to put out the light needed, especially if you employ dimmers.

Upgrading your lights to their more efficient counterparts can provide a return on investment in as little as one year



Lighten Your Load Without Losing Lumens

Does your restaurant have lots of natural light coming into your dining area during the daytime? If so, you can cut costs by installing **dimming controls** to reduce the amount of energy you use. If you're not comfortable leaving the lighting adjustments up to your eyes or those of your staff, you can opt for a daylight dimming control system that automatically lowers the level of light to an appropriate brightness, translating into a lovely dining experience for your customers and lower bills for you!

Another way to cut costs with your lights involves the installation of **occupancy sensors** in your washrooms and storage areas. These easy additions can switch lights off when they're not needed and prevent lights from turning off while the room is occupied. You can also install these in your walk-ins – look for low-temperature models designed specifically for this purpose. The small investment made on occupancy sensors can pay for itself in a very short amount of time.

Your exit signs also offer great opportunities to save energy and money. Replace any incandescent-based signs with **LED (light-emitting diodes) exit signs** to enjoy a return as high as 80% over its counterpart. Outdoor signs, channel letter lighting and fascia bands can also be replaced with LED.

Depending on who owns your parking lot, you may also be able to save big when it comes to how your lot is lit. SEDAC has found that 1000-Watt metal halide **parking lights** can be switched out for 400-Watt metal halide lighting while still maintaining acceptable lighting levels. That translates into a lot of energy saved!

Finally, the easiest solution is also the most obvious, but sadly is often the biggest energy hog in the restaurant's lighting load. **Turning off lights that aren't being used** offers instant savings with no upfront costs. There may be areas in your restaurant that don't require lighting when the building is occupied by staff only and there are certainly areas that don't need to be lit when no one is there. Simple energy management procedures and closing time checklists for turning off unused lamps (and any other equipment that isn't in use) can make a big difference in no time flat.

Energy Smart Restaurant Resources

With wonderful tools just a mouse-click away, you can save energy as soon as today!

ENERGY STAR Small Business Restaurant Guide

This comprehensive guide includes practical tips to save more of your profits by spending less on energy.

www.energystar.gov/restaurants

ENERGY STAR Food Service Equipment Incentive Finder

Search by zip code or by product for rebates on ENERGY STAR qualified equipment.

www.energystar.gov/CFSrebate_locator

The Green Restaurant Association

Since 1990, the GRA has been helping the restaurant industry on both the national and local levels to achieve environmental sustainability.

www.dinegreen.com

Cook Up Some Energy Smart Savings!

Commercial kitchens, when designed and operated inefficiently, can quickly consume your profits. You can counter these costs with energy efficient equipment and simple changes to your use patterns. Here are just a few conservation measures that SEDAC has suggested:

Reclaim Wasted Heat

A large portion of your hot water requirements may be met through the recovery of heat rejected by your walk-in cooler/freezer's refrigeration system condenser. There are two ways to harness this energy:

1. Install a desuperheater heat recovery on the compressor hot gas discharge, and pipe the heated water to your existing water heater.
2. Re-direct hot refrigerant gas from the compressor to a specialized hot water storage tank with an integral heat exchanger.

Either option can result in savings by using energy you're otherwise wasting.

Exhausting With Efficiency

A kitchen exhaust hood is typically controlled by a manual switch. Energy is wasted when the staff come in, turn on the hood and let it run "full bore" whether there is food being cooked or not. Kitchen hood control systems vary hood exhaust fan speed and makeup fan speed based on the amount of cooking being undertaken. Using an infrared eye that senses the amount of smoke and the temperature at the inlet of the hood, the controller varies fan speed with variable frequency drive (VFD) technology. One controller can control up to three hoods and the associated make-up air unit.

Power To The People

Create a smart energy saving plan and get your staff to participate. Develop simple energy management procedures and checklists, and assign responsibility between shifts and at the end of the day for turning off cooking equipment, exhaust fans, lights, computers, and other office equipment. Encourage everyone to fill up one fridge or freezer completely before using another one. Food wells should stay closed on prep tables, and lids should be kept on stockpots and braising pans to keep the food fresh and bills low. And finally, a clean restaurant is on its way to becoming an energy smart restaurant – flush your broilers, keep all light fixtures and lamps free of dust and grime, clean your fridge's condenser and evaporator coils, and don't forget to defrost your freezer periodically to operate your equipment at maximum efficiency.

ENERGY STAR Equipment

When new appliances are purchased, it's always a smart choice to specify ENERGY STAR qualified products. These super-efficient models can save as much as 50 percent over their conventional counterparts. Soon, ovens and griddles will be added to the lists. Visit www.energystar.gov/cfs for more information on these products and upgrade-specific cost calculators.

More About SEDAC

Who We Are

The Smart Energy Design Assistance Center (SEDAC) was designed to support the Illinois Smart Energy Design Assistance Program, working to increase the efficient and effective use of energy throughout Illinois. SEDAC is sponsored by the Illinois Department of Commerce and Economic Opportunity and is managed by the School of Architecture at the University of Illinois at Urbana-Champaign and the 360 Energy Group.

What We Do

Through the Illinois Smart Energy Design Assistance Program, SEDAC provides advice and analyses enabling facilities in the State of Illinois to increase their profitability through the efficient use of energy resources. These fee-free technical services can identify opportunities for energy savings through intelligent building design and efficient building components and systems.

How To Reach Us

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