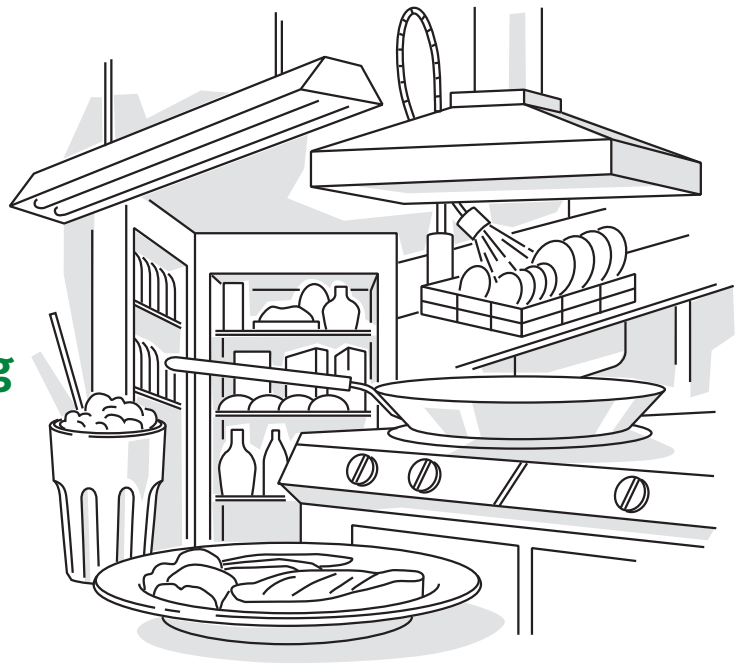


Reduce Energy Use in Commercial Kitchens

- Food Preparation
- Dishwashing
- Refrigeration
- Lighting
- Ventilation, Heating & Cooling

Commercial kitchens consume more energy per square foot than many other types of businesses. But commercial kitchens also have high potential for energy savings, particularly those serving three meals per day. Some energy-efficiency improvements can be made with little or no investment. Other improvements require a larger initial investment but can pay for themselves quickly. In addition to lowering energy costs, efficiency improvements can enhance the comfort, appearance, and ambience of your restaurant or kitchen. Efficiency Vermont can help you identify the most cost-effective approaches to reducing your operating expenses, and determine if financial incentives are available for your electric energy-efficiency improvements.



Food Preparation

When buying new holding cabinets, steamers, or fryers look for ENERGY STAR® qualified models to reduce your energy costs. Compared to standard models:



- ENERGY STAR qualified hot food holding cabinets are more efficient at maintaining uniform food temperature while using 50–60% less energy.
- ENERGY STAR qualified steam cookers, also known as compartment steamers, are up to 60% more energy-efficient and use 90% less water.
- ENERGY STAR qualified fryers are up to 25% more energy-efficient.

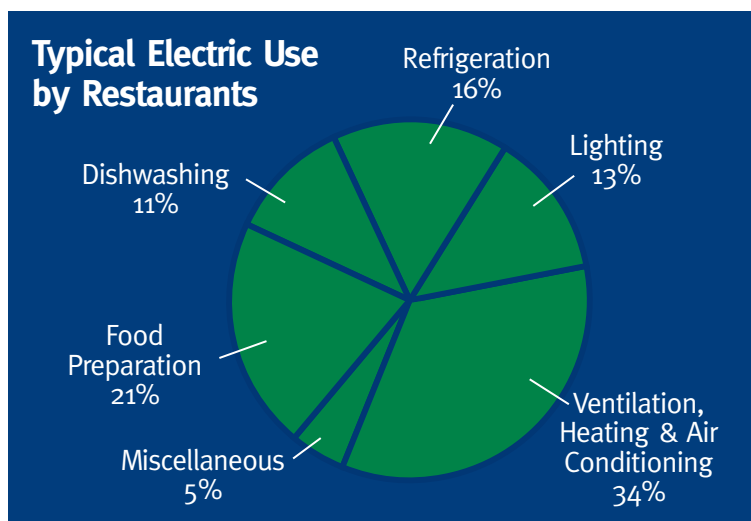
Dishwashing

Energy-saving Tips

- Reduce water and energy costs without reducing the effectiveness of your dishwashing system by installing a performance-verified, low-flow (1.6 gpm), pre-rinse spray valve. Go to www.fishnick.com/saveenergy/sprayvalves for a list of performance-verified spray valves.
- Run full dishwasher loads. The energy cost of running a dishwasher is the same whether it holds one plate or is full.
- Save money by turning off your high temperature dishwasher when it is not in use. This will disengage booster heaters, which typically keep an internal water reservoir at 180°F.

New Dishwashing Machines

When purchasing a new dishwasher, select an energy-efficient model and consider both the amount of rinse water consumed per rack and the total energy used. Efficiency Vermont can help you compare the different models that you are considering.



Refrigeration

Energy-saving Maintenance Tips

- Maximize the effectiveness of your refrigeration equipment by cleaning the condenser and evaporator coils at least once every quarter, particularly if the units are in a dusty location.
- Properly align refrigerator doors and replace worn gaskets.
- Set thermostats on coolers and freezers only as low as required by the Vermont Department of Health.
- Set defrost timers to engage only when needed.

High-efficiency Evaporator Fan Motors

Save 30–70% in fan motor energy by installing brushless DC (also known as ECM) or permanent split capacitor (PSC) fan motors in walk-in coolers or freezers. Retrofitted ECM motors often pay for themselves through energy savings in less than 2.5 years, excluding incentives. ECM and PSC fan motors also give off less heat, reducing the cooling load of refrigeration equipment and saving additional energy.

Economizers and Fan Controls

Save as much as 35% of a walk-in cooler's energy use with outside-air economizers and evaporator fan motor controls. An outside-air economizer uses colder outdoor air to refrigerate walk-in coolers for a third of the year. Since your compressor won't need to run as much, you'll save energy and extend the life of your compressor. Select an economizer package with motor controls that turn off evaporator fans when the compressor is not running.

Energy-efficient Compressors

Save energy and extend the life of your compressor by as much as a third by using discus or scroll compressors. For greater energy savings, place your compressor in a well-ventilated and shaded area outside the building to lower demands on your compressor and air conditioning system.

New Refrigerators, Freezers, and Ice Makers

Choose ENERGY STAR qualified, commercial solid-door refrigerators and freezers to reduce energy use by as much as 20% compared to other new models, and 45% compared to older units.

When purchasing a new ice maker, select a higher-efficiency model. Efficiency levels can vary significantly. Compare ice generation production ratings (kwh/100 lbs) on manufacturer specification sheets. Efficiency guidelines are available at www.cee1.org.

Lighting

General Kitchen and Space Lighting — Linear Fluorescent Lamps and Ballasts

Replace older T12 fluorescent lamps and ballasts with new Super T8 lamps and ballasts to reduce electricity use by as much as 40%. Super T8s provide substantially better quality light than T12s. They also last significantly longer, which will reduce your maintenance costs.

Contact Efficiency Vermont for more information on Super T8 systems and available incentives.

General Lighting — CFLs

Replace conventional incandescent light bulbs with long-lasting compact fluorescent lights (CFLs) and use 60–75% less energy while maintaining the same amount of light. CFLs last 6–10 times longer than incandescents. They also generate less heat, which saves on refrigeration and air conditioning costs.

Spot and Mood Lighting in Restaurants

Use halogen PAR and MR16 infrared lamps instead of regular halogen or incandescent lamps and save 15–25% in energy costs. These lamps also last 50% longer which will reduce maintenance costs.

Additional Lighting Savings

- Use occupancy sensors in rooms that do not have constant use, such as restrooms, coolers, and banquet rooms. Talk to your contractor about the best sensor type for your space.
- Take advantage of available sunlight by installing photocells and dimming ballasts that sense levels of natural light and reduce electric lighting accordingly.
- Wire light switches so that you can turn lights on and off separately in different parts of your building and control light levels within rooms.

Efficiency Vermont thanks the Food Service Technology Center for providing much of the information in this document. Learn more about the organization, review their energy-saving tips, and use an energy-saving analysis tool at their website: www.fishnick.com.

Additional information is also available at www.encyvermont.com, www.energystar.gov and www.cee1.org.

EASY ENERGY-SAVING TIP:

Turn off food preparation equipment when it is not in use.

Develop and follow an equipment start-up and shutdown schedule that ensures equipment is turned on only when it is needed. For example, if you eliminate three hours of idle time per day on your pasta cooker, you can save \$1000 every year in energy costs.

Ventilation, Heating, and Cooling

Kitchen Exhaust Ventilation

Your hood ventilation system and exhaust fan are major energy users because they exhaust indoor air that you have already paid to heat or cool. To minimize this loss, choose the lowest effective fan settings, and turn off exhaust hood fans when none of the appliances beneath them are being used. Install a variable frequency drive and associated controls to reduce overall fan energy use by as much as 70% while increasing heating and cooling savings. These controls reduce noise levels in your kitchen, extend equipment life, and typically pay for themselves in energy savings in 1 to 4 years.

Position appliances under your exhaust hood properly, so that the exhaust fan can remove waste heat, steam, and smoke more effectively. For wall canopy exhaust systems, push your appliances as far back against the wall as possible. Consider adding side panels to your exhaust hood to allow the exhaust fan to be more effective, operate at a lower speed, and save electricity.

Controls

Install controls that ventilate only the occupied areas of your building. These controls may include timers, variable frequency drives, and carbon dioxide sensors that ramp up ventilation fans in response to air quality measurements.

Install programmable thermostats to control your heating and cooling system to meet your particular comfort needs. These units can automatically shut down and turn on HVAC systems at specified times, and can be used to control separate areas that have different heating and cooling needs.

SIMPLE SOLUTIONS

Examples of Free and Low-cost Electric Energy-saving Improvements

	Efficiency Improvement	Sample Annual Electricity and Dollar Savings*
Food Preparation	Select ENERGY STAR qualified models when purchasing new food preparation equipment.	6000–7000 kWh and \$650–800 for steamers that run 2 hours per day
Dishwashing	Install a low flow pre-rinse spray valve.	3000–3500 kWh and \$300–400 per hour of daily spray time with an electric hot water heater; water savings additional
Refrigeration	Set temperature no lower than required health code setting.	1000–1500 kWh and \$110–170 for an R-24 insulated, 1000 ft ³ dairy cooler, with temperature setting increased from 33°F to 38°F
Lighting	Turn off lights in unoccupied areas or install occupancy sensors.	1040 kWh and \$110 for 20 halogen lights (50w each) turned off in banquet room for 4 hours per day, 5 days per week
Ventilation, Heating & Air Conditioning	Push appliances under wall canopy exhaust hood back against the wall.	450–550 kWh and \$50–60 for a 10-foot hood with fan controls pushed back 12" operating 8 hours per day; a/c savings additional

* Annual dollar savings are calculated using an average electricity rate of \$0.11/kWh.

**Contact Efficiency Vermont to see
if you qualify for financial incentives.**

Efficiency Vermont can assist facilities with commercial kitchens to achieve the types of savings highlighted on these pages by providing technical support, design review, economic analysis, financial incentives, and assistance in obtaining financing or in arranging leases. Please call us to discuss your plans for projects.



Toll-free: 1-888-921-5990 • www.encyvermont.com