

Energy Efficiency - Specialized Applications

This tip sheet is part of a series of pollution prevention tip sheets focusing on different business sectors. Several business sectors have very specialized energy usage and equipment. The following information primarily targets restaurants, hotels, supermarkets, and ice rinks, of which Anchorage boasts many.

Refrigeration and Freezing

Refrigeration and freezing may be specialized energy uses but they can use lots of energy for some businesses. For restaurants, they can account for 15% of its energy use. For supermarkets, they can account for as much as 50%.



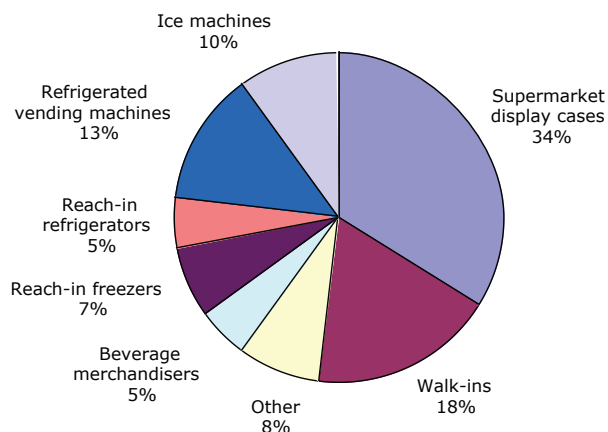
ENERGY STAR-labeled, commercial, solid-door refrigerators and freezers are more energy efficient than traditional models because they are designed with components such as ECM evaporator and condenser fan motors, hot gas anti-sweat heaters, or high-efficiency compressors, which will significantly reduce energy consumption and utility bills.

Compared to standard models, ENERGY STAR-labeled commercial solid-door refrigerators and freezers can lead to energy savings of as much as 45% with a 1.3 year payback. Purchasers can expect to save \$140 annually per refrigerator and \$100 per freezer.

Replacing all existing commercial solid door refrigerators and freezers in the U.S. with ENERGY STAR-labeled models would result in savings of almost \$250 million per year, or roughly 25% of the energy consumed by models currently on the market — the equivalent of eliminating the emissions from 475,000 cars.

If you can't replace your current refrigeration equipment, be sure to properly maintain it. Check seals and gaskets, clean coils, and check the compressor regularly. And don't forget user behavior! There's nothing more inefficient than a freezer or refrigerator that's been left wide open. Be sure to keep the door closed and know what you're going after before you open them.

Commercial Refrigeration Energy Use



Vending

Another specialized use of energy in businesses is the vending machine. ENERGY STAR-qualified new and rebuilt refrigerated beverage vending machines can save building and business owners more than 1,700 kWh/year, or \$150 annually on utility bills. These machines are 50% more efficient than standard models, incorporating more efficient compressors, fan motors and lighting systems.

Another option for reducing the energy used by vending machines without buying a new machine is to install a plug-in device that powers down the unit when the area is vacant and monitors the temperature to ensure product is always cold without running the cooling system as often.

Cooking

Food service establishments have numerous options for upgrading to new energy efficient equipment in the kitchen. Currently, there are ENERGY STAR requirements and ratings for fryers, steam cookers, and hot food holding cabinets. These products range from 25% to 60% more efficient than non-ENERGY STAR models. ENERGY STAR qualified equipment have:



- * Shorter cook times,
- * Higher production rates,
- * Improved insulation, and
- * High-efficiency compressors.

The hoods over cooking ranges also use energy and can be made substantially more efficient with demand ventilation where the fan motors respond to cooking activity.

Washing & Drying

In the U.S., there are approximately 2-3 million commercial washers, which are replaced at a rate of about 10 percent per year. Approximately 42,000 of these replaced washers are sold to laundromats. Although laundromats represent less than 20 percent of the market, washers in these locations are in use much more frequently on a daily basis than home or other commercial washers, increasing their energy and water use load.



Most washers identified as energy efficient are horizontal-axis. Horizontal-axis clothes washers save energy because they use less water. The horizontal-axis drum tumbles the clothes through a pool of water.

Recent technological innovations have resulted in vertical-axis washers that can achieve similar energy-efficiency levels. These high-efficiency washers use up to 18 gallons less water per load and remove more moisture from the clothes with a high-speed spin cycle. As a result, energy costs can be reduced as much as 50 percent. And manufacturers say high-efficiency machines can be expected to get clothes cleaner and are gentler to fabrics.

Another technology that's perfect for Alaska is the ozone laundry system. Ozone as part of your laundry system allows the use of colder water, reducing energy costs, and reduces the need for chemicals, while reducing wear and tear on the equipment and the items being washed. For details about ozone laundry systems, see several specific tip sheets at www.greenstarinc.org/tipsheets.php.

Ice Rinks

Ice rinks may easily outnumber swimming pools in Alaska but they are no less energy intensive. A typical hockey ice rink uses almost 75,000 gallons of water per season. The initial surface uses 10,000 gallons per inch of ice and each resurfacing uses an additional 75 gallons. And all of this water must be processed for purity, then frozen!

Improving water quality using one of several demineralization methods, such as reverse osmosis or deionization, can increase energy efficiency.

Through reverse osmosis, 95% of minerals, salts and other impurities are removed, allowing the ice pad to operate about 4°F warmer. Every 1°F rise of the ice pad temperature yields an estimated 6% savings in cooling costs, according to "On Ice," an ice arena industry newsletter.

Elevators

Elevators consume significant amounts of energy in tall building applications -- typically 4-10% of the building's energy use. Hydraulic elevators tend to increase in cost roughly in proportion to the number of stops, so they use less energy in low-rise and mid-rise buildings.

New technologies include "machine-room-less" systems, dispatching systems, and energy-efficient drive sheaves. KONE's EcoSpace elevator is an example of a "machine-room-less" system. The unique system is energy efficient, space saving, and operates oil free. The system is up to 60% more energy efficient compared to conventional hydraulic elevators.

Otis' newest system, the Gen2, uses an in-hoistway motor and sheave system. The smaller footprint is made possible in part by the use of smaller, more flexible cables. Rather than the traditional braided steel cables found on many electrically powered lifts, the Gen2 system uses a band of ultra-thin cables encapsulated in a polyurethane sheath.

RESOURCES

ABS Alaskan
www.absak.com

Automated Laundry Systems
www.autolaundrysystems.com

Consortium of Energy Efficiency
www.cee1.org (commercial kitchens)

ENERGY STAR
www.energystar.gov
(search "restaurant" or go to Products)

Food Service Technology Center
www.fishnick.com (food service technology)

VendingMiser / CoolerMiser / SnackMiser
www.usatech.com/energy_management/energyvm.php



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