COMMERCIAL WATER EFFICIENCY

Commercial Ice Machines

FACT SHEET

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

The process of freezing ice requires that heat must be removed. Commercial ice machines use either air or water to remove the heat. Water-cooled machines can use 10 times more water than an air-cooled model. A water-cooled ice machine that has a maximum harvest rate of 800 pounds of ice per day can consume between 500 to 1,200 gallons per day just for the cooling water (depending on demand). Water and sewer costs to operate a water-cooled model are significantly greater than air-cooled models.

Water Efficiency Opportunities

Replace water-cooled machines with air cooled. Select an Energy Star-labeled air-cooled ice machine. Be aware that most are self-contained and will discharge waste heat into the working space increasing the heat load. Such models may not be compatible with small spaces such as storage rooms or closets. This issue can be solved by installing a remote cooling unit outside or in an area where the waste heat will not impact the working space. Energy Star rated models are also, on average, 11 to 20% more energy efficient than standard models depending on the type of ice produced. Newer air-cooled machines that are Energy Star rated may even use less energy than older water-cooled models. The Portland Water Bureau offers a rebate for replacing water-cooled ice machines with an Energy Star-labeled air-cooled machine.

Regularly maintain your water-cooled ice machine. Water-cooled ice machines use a significant amount of water for cooling. A program of regular maintenance is an important way to catch leaks and make sure the ice machine is working efficiently. Check for a failed or failing water-control valve, which can double the amount of water consumed. One indicator of a malfunctioning water-control valve is a constant stream of cold discharge water.

Reuse of water-cooled machine discharge. Consider plumbing the cooling water discharge to an existing cooling tower loop, boiler make-up or other equipment. Finding a secondary use for this clean water saves water.

Ice machine rebate currently available!
www.portlandoregon.gov/water/rebate

Consider flake or nugget ice. There are many types of ice available but the primary types are cube, nugget and flake. Nugget and flake style ice require less water to produce than cube ice, but melt faster than cube ice.

Adjust purge control setting. The purge control discharges a set amount of water down the drain to avoid the build-up of minerals within the machine. While some newer machines automatically adjust the frequency of the purge based on actual water conditions, many are designed with settings for low, medium and high purge frequency. Portland's water contains few minerals and therefore purge controls can usually be set to low. Most machines come from the factory set at medium. Savings of up to 40 gallons per day is possible by reducing the purge water to the minimum needed.

Install a heat exchanger. Residual chilled water is normally sent down the drain from the purge cycle, but can be used to precool fresh makeup water prior to operating the ice maker's refrigeration system. This reduces the time the unit takes to freeze the water and helps the condenser run for a shorter period.

If you have questions or would like additional technical assistance, call or email the Water Efficiency Program at:
503.823.4527 or **conserve@portlandoregon.gov**

You can also visit our web page at:
www.portlandoregon.gov/water/conservation