

# Fact Sheet: **Kitchens**

Inefficient use of water in kitchen operations is usually a result of equipment design or behavioural patterns. The main types of water-using equipment found in kitchens are dishwashers, sinks, pre-wash spray rinse units, ice-making machines and garbage disposal units.

## **Best practice**

The water efficiency of your kitchen can be measured in litres per food cover (or restaurant patron). Best practice is currently 35 litres per food cover.

## **General**

General water-using habits in the kitchen should reflect an attitude of conservation. Try to understand where water is being used and measure this if possible.

## **Potential water-saving opportunities**

### **Behavioural change**

- Food preparation
  - › Do not thaw vegetables and other frozen foods under a running tap. Defrost frozen goods in a refrigerator, or microwave oven. This can save up to 6,000 litres of water per day or 2.2 million litres per year.
  - › Wash fruit and vegetables in a filled basin rather than under running water.
- Food service
  - › Have waiters serve water from jugs to prevent half empty bottles or carafes of water being discarded.
  - › Turn off any continuous flow used to wash drain trays of post-mix drink machines. Clean trays as needed.

### **Maintenance**

- Check for worn gaskets in sinks.
- Check for dripping taps or obvious leaks.

## **Dishwashers**

### **Best practice**

The following table shows typical costs of water-efficient dishwashing units in commercial kitchens. If your kitchen has a domestic dishwasher refer to [www.waterrating.gov.au](http://www.waterrating.gov.au) for further information on water-efficient domestic dishwashers.

Dishwasher type	Approximate purchase cost (\$)	Litres per cycle
Under bench	3,700	2.5
Rack conveyor	5,500	3

Typical dishwasher types include:

- Under counter – best suited for small establishments of about 60 people, e.g. office buildings, nursing homes. These are similar to domestic dishwashers.
- Door type – the most widely used commercial dishwashing machine, manufactured to service 50 - 200 people. Used in schools, hospitals, restaurants.
- Rack conveyor – uses a motor-driven conveyor belt to move a rack loaded with dishes through a large tank with separate wash and rinse compartments. Most widely used in hotels, large restaurants and universities servicing more than 200 people.
- Flight type – similar to a rack conveyor except that dishes are loaded directly onto the belt. Used in the largest institutional, commercial and industrial facilities.

## **Potential water-saving opportunities**

### **Behavioural change**

- Train your staff to operate the dishwasher correctly.
- Adhere to the manufacturer's recommended equipment flow rate.
- Hand scrape or pre-soak dishes and utensils before loading the dishwasher rather than rinsing.
- Only run dishwashers if they are full.
- Ensure water pressure and flows to dishwasher use the minimum setting required.
- Turn off dishwasher when not in use. This will also save energy.

### **Equipment modification**

- Recycle final rinse water for next initial rinse.
- Install spray rinsers for pot washing and reduce flow of spray rinsers for pre-wash.
- Install flow control to the rinse line (where applicable).
- Keep flow rates as close as possible to manufacturer specifications.
- Install an autotimer or electronic sensor to allow water flow only when dishes are present or running through the system.
- Install door switches for convenient on/off access.
- Check voltage of booster heater to make sure it is optimum for the machine.
- Use steam doors to prevent loss of water from evaporation.

## Equipment replacement

Water-related cost savings of 30 per cent or greater can be achieved with newer, more efficient dishwashers. Typical replacement costs are detailed in the table on the previous page.

- Check volume of service from the dishwasher and estimate your facility's needs. A better option may be a larger machine that has a lower water flow rate per rack.
- Replace scrapping trough systems with a conveyor system that does not require water to carry waste from the base of the dishwasher to the disposal unit.

## Maintenance

- Ensure regular servicing of dishwashers.
- Check gaskets for signs of wear.

## Sinks and taps

Taps can waste large amounts of water because they are the most heavily used water source in the kitchen.

### Best practice

Tapware for kitchen sinks with a 6-star rating has a flow rate of 4.2 litres a minute. The following table shows the water and cost savings achieved by reducing existing sink and basin flows to best practice.

	Best Practice	Existing use/ common practice	Potential water savings per fixture	
	L/min	L/min	kL/year	\$/year
Sinks	4.2	25	63	83.30
Basins	4.2	12	23.4	30.95

These savings are based solely on water saved and do not take into consideration the energy savings resulting from heating less water. Based on Western Water charges of \$1.3220 per 1kL drinking water for non-residential customers. If you have a trade waste agreement, savings may be greater.

## Potential water-saving opportunities

### Behavioural change

- Turn taps off when not in use.
- Encourage users or employees to inform maintenance personnel if they notice leaks.
- Ensure all staff know the correct procedure for food preparation (washing or defrosting).

### Equipment modification

- Adjust flow valve or fit flow control regulators to reduce water flow to the lowest practicable flow rate.

- Use aerators for tap flow controllers on existing taps. Aerators screw onto the tap head and add air to the water flow. Water flow is reduced and washing effectiveness is maintained.

Aerators can reduce flow by up to 50 per cent.

- Install flow regulators in the hot and cold water feed lines to the tap. Flow regulators can be used where aerators are not suitable.
- Install pedal operated tap controllers to ensure valves are closed when not in use.
- Update the tap system to include:
  - › Automatic shut off – when the handle is released the valve shuts off.
  - › Metered shut off – when a lever is depressed the tap delivers a water flow for a pre-set time, then shuts off.
  - › Trigger sprays.
- Consider sensor-activated taps where water flows only in the presence of hands or some other object. This will eliminate taps left running and also improve hygiene.

### Equipment replacement

- Replace the tap with one that has at least a 4-star rating. Quarter turn taps with ceramic seats give greater flow control and are less prone to leakage.
- Install spring-loaded taps that shut off immediately after use.

### Maintenance

- Check taps for leaks on a regular basis.
- Encourage users or employees to inform maintenance personnel if they notice a leak.
- Place stickers above taps, with the contact details of maintenance personnel written on them. Western Water can provide you with these stickers.

## Pre-rinse systems

Pre-rinse systems are used for rinsing cooking utensils, pots and pans, for soaking dishes and cleaning. They are designed with automatic shut-off valves at the hose head to supply water only when needed.

### Best practice

There are now 6-star rated pre-rinse sprayers available. The new water efficient systems use just four litres of water per minute, which is around 50% less than traditional products.

Automatic systems typically use between 11 and 22 litres of water per minute.

## Potential water-saving opportunities

### Equipment modifications

For automatic systems, consider installing low-flow, high-pressure spray heads or a flow reduction valve.

### Equipment replacement

Replace automatic rinse units with manually operated units, which are the most water efficient form of pre-rinse system. Ensure equipment is rated 4-star or higher.

### Maintenance

- Check valves and seals on a regular basis.
- Check for worn spray heads and replace where necessary.

## Ice-making machines

Ice-making machines consume water during cleaning cycles as well as during ice making. The type of condenser in an ice-making machine will have the greatest effect on water use. There are two types of refrigeration condensers available: air cooled (uses more electricity) and water cooled (uses more water).

Water-cooled ice-making machines use up to 10 times as much water as air-cooled machines, typically using 600 litres of water a day for cooling. This is more than half of the water that is used by the machine.

### Best practice

High efficiency ice makers should not exceed 12 litres of water per 10 kilograms of ice produced. More information is available at:  
[www.energyrating.gov.au/library/pubs/200410-mepsicemakers.pdf](http://www.energyrating.gov.au/library/pubs/200410-mepsicemakers.pdf)

## Potential water-saving opportunities

### Equipment modifications

- Adjust the machine to dispense only the amount of ice that is required.
- Consider buying ice from commercial suppliers.
- Some ice-making machines are cooled via 'once through' cooling water. Consider a closed circuit cooling system.

### Equipment replacement

Replace a water-cooled ice-making machine with an air-cooled machine.

### Maintenance

- Check seals on a regular basis.

## Garbage disposal units

These units chop food scraps and dispose of them by flushing into the sewer. Although not using high amounts of water, they add to the pollutants in sewers and reduce wastewater quality.

Garbage disposal units use up to 30 litres of water a day.

## Potential water-saving opportunities

### Equipment replacement

Use strainers or traps that employ a mesh screen to collect food waste for later disposal. Many companies provide a service of collecting food wastes to make compost for garden fertiliser. Investigate this opportunity for your facility.

## Asian style restaurants

Asian-style restaurants typically use 2 to 4 times more water than other styles of kitchens. Commercial wok stoves and steamers use about 75 per cent of total water in an Asian-style kitchen. Water is used for:

- Cooling – wok stove burners generate high levels of heat, so cooling water runs across the cooktop to absorb this heat. This process uses three to four litres of water per minute.
- Cleaning – the wok must be rinsed between the preparation of each dish. Furthermore, a small amount of water is used for cleaning the cooktop.
- Steaming - Traditional Asian-style steamers can use up to 5,500 litres per day for cooling, cleaning and topping up water.

Wok cooling and cleaning can use up to 6,500 litres of water per day.

## Potential water-saving opportunities

### Equipment replacement

- Sydney Water has developed a wok stove that eliminates the need for cooling water and prevents water waste. Please consider a waterless wok when replacing your wok stoves.
- Replace commercial steamers with alternative water efficient equipment, as improvements in design have resulted in significant water savings.

### Maintenance

- Ensure valves can be turned off when the stoves are not in use.
- Check that there are no leaks in any water-using equipment.



Information for this fact sheet has been adapted from the City West Water "Water Conservation Solutions Handbook"

## Further information

Western Water

1300 650 425

[www.westernwater.com.au](http://www.westernwater.com.au)