



## Evaporative Air Conditioners and Water Use

Evaporative coolers work best in areas of low humidity such as Central Australia.

Keeping cool with a “swampy” uses a lot of water and this fact sheet gives tips on how to achieve the best performance and lowest water use from your air conditioner.

### How Do They Work?

Evaporative coolers operate on the same principle as perspiration on the human body. As air passes over the skin evaporation takes place and a cooling effect is felt.

In a similar way evaporative air coolers use filter pads as the cooling outer skin. A fan draws air through the water-soaked pads, evaporating the water and cooling the air that is then blown into the house.

### How Much Water Do They Use?

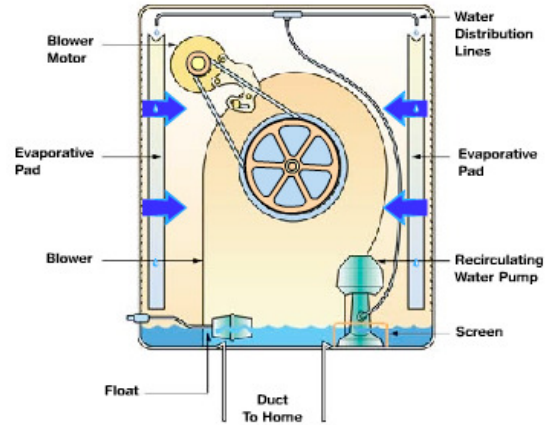
Evaporative air conditioners consume water in two ways: the evaporation of water from the pads which cools the air; and the release/bleeding-off of water to reduce the build up of minerals in the unit.



In peak summer months the units can use up to 20-30 litres per hour to create that lovely cool air. If the unit runs all day up to 840 litres of water can be used by one household!

### Bleed-off Rate

To keep the air conditioner working well in areas with “hard” water, it is necessary to allow the release/bleeding-off of water to reduce the



build up of minerals such as salt or calcium in the unit.

Generally a bleed-off rate of 5-8 litres per hour is recommended. This will slow the rate of calcium build-up in the pads so that they can continue to hold enough water for effective cooling.

### Maintenance

Mineral build-up on the evaporative pads from “hard” water will reduce the effectiveness of the air conditioner by reducing the surface area available to hold water. Full annual servicing is recommended. Look under “Air Conditioning” in the phone book. For those with maintenance skills, easy “Do-it-yourself” instructions can be found on the internet, such as the following link: [http://www.ehow.com/how\\_4813349\\_service-evaporative-cooler.html](http://www.ehow.com/how_4813349_service-evaporative-cooler.html)

### Getting the Best Value From Your Air Conditioner

- Air flow is important for evaporative air conditioners to work well – direct the cool air through the house by leaving

small openings at doors and window to pull the air through.

- Close the vents on rooms that don't get used to increase the amount of cool air available to the rest of the house.
- Adjust the angle of the vents to feel the maximum air flow on hot days.
- Shade the swampy on the outside and it won't have to work as hard to cool the air.
- Pump rainwater from a tank to supply the air conditioner – this will reduce calcium build-up enabling reduction of the bleed rate and will reduce maintenance costs overall.

### Evaporative vs. Refrigerative Air Conditioners

While using less water than the evaporative system, refrigerative coolers use a lot of energy to run.

Evaporative air conditioners cost 72% less to operate in comparison to refrigerative systems based on the following study.

#### Air conditioning cost comparison table

Figures are calculated on current Power and Water Tariffs (December 2009).  
[http://www.derm.qld.gov.au/water/regulation/pdf/reports/urban\\_wateruse/evapairconditioning.pdf](http://www.derm.qld.gov.au/water/regulation/pdf/reports/urban_wateruse/evapairconditioning.pdf)

	Refrigerative	Evaporative
Electricity 0.18 c/kWh	\$2941.00	\$618.00
Water 0.8999 c/kL	-	\$243.00
Total cost	\$2941.00	\$861.00

Calculations in the table above include air conditioner operation 24hrs/day for 3 months and 12hrs/day for another 3 months.

Maintenance, repairs and installation costs are not included. Source: [Water Industry Compliance Report, Queensland Evaporative Air-conditioning Water Usage, Natural Resources and Mines, July 2003.](#)

### Tips to Keep Cool

- Use fans whenever possible
- Delay hitting the power switch for as long as possible on a hot day
- Use the perspiration principle and have a cold shower to generate your own “evaporative cooling”
- Re-use the bleed off water:
  - top up the swimming pool or spa
  - divert to the garden but be sure to alternate where the water goes to avoid overloading any one plant or area with calcium and flush through with town or rain water routinely.

#### Further Information:

##### Water Resources Branch

Department of Natural Resources, Environment, the Arts and Sport

##### Alice Springs

1<sup>st</sup> Floor Alice Plaza, Todd Mall, PO Box 1120

Alice Springs NT 0871

Ph: 8951 9209 Fax: 8951 9268

Email: [waterwise.nreta@nt.gov.au](mailto:waterwise.nreta@nt.gov.au)

Web: [www.nt.gov.au/nreta/water](http://www.nt.gov.au/nreta/water)