Inland power stations are huge water users:

- Half the energy in coal fired in a power station just evaporates water, lost to the air.
- A quarter of the energy in natural gas fired in a CCGT power station ends up similarly.
- Australia’s power stations consume of the order of 250,000 Megalitres of water p.a., enough to supply Adelaide or Perth.
Why dry cooling?

Is evaporative cooling appropriate?
- Australia is the driest continent
- Legislation can protect water supplies to power stations in droughts, but--
- Who wins if this exacerbates water-rationing, and farmers can’t irrigate?

*How many votes do power generators control?*
Why dry cooling?

- Options are increasing--cost premiums are falling.
- Dry cooling can greatly speed up the planning approvals process.
- Maintenance costs much reduced: clean power station environment, no cooling water treatment plant, no blowdown disposal.
Power station cooling options
1: evaporative cooling

Source: EGI

Hunwick Consultants
Bayswater Power Station (4 x 660 MW), New South Wales, featuring natural-draft evaporative cooling towers

Hunwick Consultants
Power station cooling options
2: Air-cooled condenser

Source: EGI
Kendall Power Station, South Africa, shown under construction in 1986: still the world’s largest dry cooled power station.
Power station cooling options 3: Heller system: mechanical-draft tower
Power station cooling options 4:
Heller system: natural-draft tower

Source: EGI
Bursa power station Turkey, 1,400 MW CCGT, Heller cooling towers featured: 135 m tall, radiator panels form lower skirt
Inside one of the Bursa cooling towers: water distribution piping, "peak" evaporative coolers for trim cooling in hot weather shown.
An assembled cooling delta undergoing pressure testing, Gebze-Adapazari Power Station, Turkey
Demineralised water circulation headers, and connections to and from cooling deltas (shown during construction)
Main circulating water pump/turbine sets; cooling deltas for another tower in background, Gebze-Adapazari PS, Turkey
Matra Power Station, Hungary, showing 30+ years old Heller cooling towers (the larger two contain wet scrubbers—not absence of plumes)
Matra Power Station, Hungary. Wet FGD scrubber installed within a Heller dry cooling tower
Air-cooled radiators used as auxiliary coolers (these can be deluged with water for extra cooling in hot weather).
Small mechanical-draft dry-deluged cooling tower at a district heating plant (used to reject heat nor required during warmer months)
Radiator panels for dry-deluged cooling, epoxy coated for additional protection against chemicals in deluging water.