



Australian Government
National Water Commission

Capacity of the NWI to account for water, energy and climate trade-offs

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WECC trade-offs

- + Electricity generators use a considerable and increasing amount of water
 - + 1.4% of total Australian consumption in 2004-05, up 10% since 2000-01
- + Water supply becoming increasingly energy intensive
 - + desalination expected to contribute between 15-35% of supply
- + Supply of water can impact security and reliability of power generation and vice versa
- + Given drought and climate change, electricity generators concerned about securing water supply, participation in water planning and water trade



WECC trade-offs

- + Impact of new policy developments, e.g. CPRS
- + Perverse policy outcomes possible, e.g. impact of reducing water consumption on carbon dioxide emissions
 - + *Dry cooling reduces water consumption for a supercritical coal-fired power plant from 2.0 ML per GWh to 0.08 ML per GWh sent-out electricity – a reduction of 96%. However emission of carbon dioxide increases by 5% from 758 tonnes per GWh to 806 tonnes per GWh¹*
 - + *Adding carbon capture storage to a water cooled CCGT power station increases water usage by 18% from 0.85 ML per GWh to 1.0 ML per GWh of sent-out electricity. However emissions of CO₂ are reduced by 94%.¹*

¹NWC Waterlines 'Water and the electricity generation industry: implications of use'



How can water policy help?

- + Context for WECC-trade offs is similar to other water dependent sectors
 - + drought and climate change impacting water supply
 - + increasing demand and competition for available water
 - + risk to water dependent systems and outputs
- + In terms of a water policy response, not starting with a blank slate
 - + under the NWI, reforms underway to improve the security, efficiency and sustainability of water management and use
 - + particularly relevant are reforms to water planning, water access entitlements, water markets and trade, and water pricing



NWI elements for addressing trade-offs

- + Water planning
 - + Open, transparent consultation process to reveal values and needs
 - + Informed by best available science and socio-economic analysis
- + Water access entitlements
 - + Exclusive, tradable, enforceable and recorded on public registers
 - + Enhance security and certainty for all users
- + Water markets and trade
 - + Enable water to move to its highest value use
 - + Creates the opportunity for users to access scarce water supplies
- + Water pricing
 - + Economically efficient and sustainable use of water and infrastructure
 - + Signals changes in energy, water and carbon markets across sectors



Where to next

- + Significant scope under the NWI to deal with trade-offs
- + Subject to successful implementation of these reforms
- + Specific measures could include
 - + *greater engagement with the electricity industry in water planning processes*
 - + *ensuring all use included in the consumptive pool and based on clearly specified NWI water access entitlements*
 - + *development of new water entitlement products (e.g. recycled waste water)*
 - + *further reforms to expand water markets and trade*
- + Greater consideration needs to be given to the impact of countervailing or perverse policy outcomes