

The Future of Renewable Energy Electricity (REE) in Australia

Greg Buckman, PhD student

**Fenner School of Environment and Society
Australian National University, Canberra**

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REE types with current potential for major expansion

REE with current potential:

Solar (PV, solar thermal, solar hot water);

Biomass (farm waste, purpose-grown, landfill);

Wind (onshore, offshore); and

Geothermal (hydro thermal, Hot Rocks).

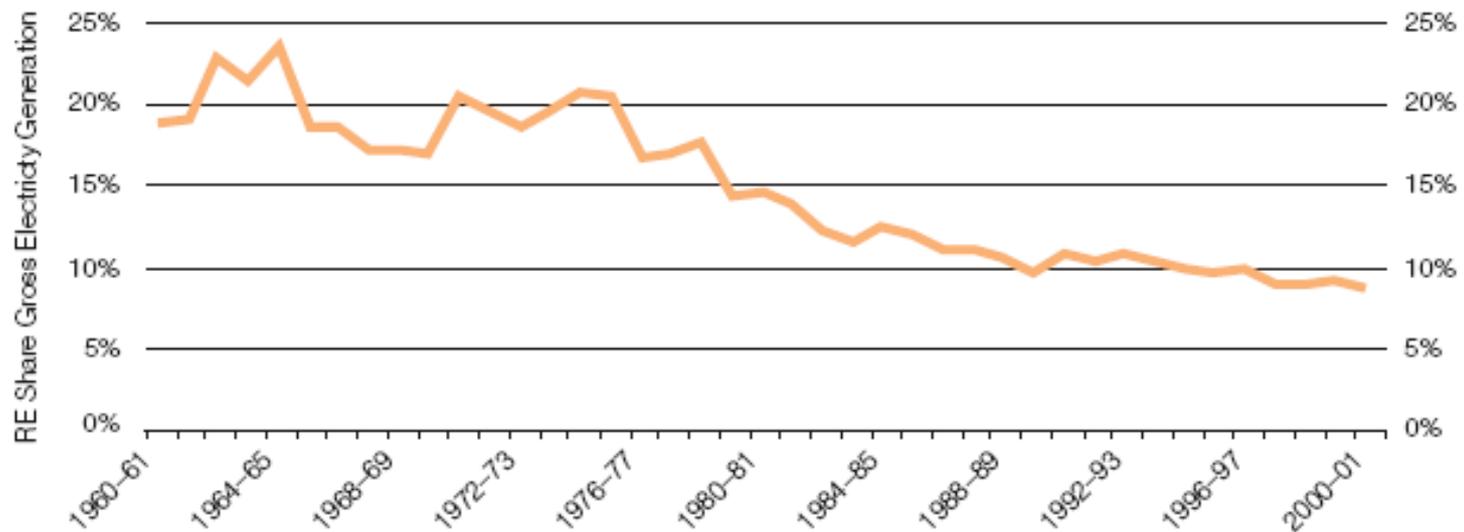
REE without current potential:

Hydro (small, large) (no capacity for expansion); and

Ocean (wave, subsurface) (still in R&D phase).

Australia's share of REE is falling

Figure 7—Relative renewable energy share of electricity generation (1960–2001)¹⁰



Source: Review of Renewable Energy Act 2003

The three major 'demand-pull' mechanisms in Australia to lift REE share of electricity

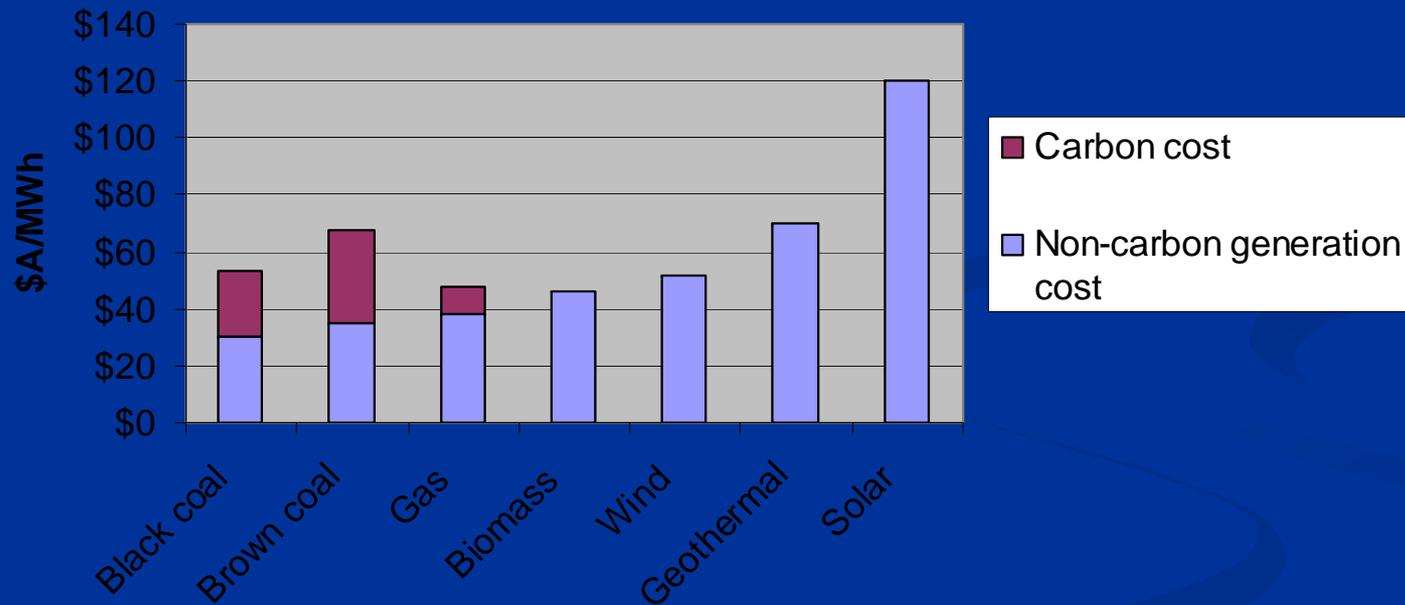
- **Emissions trading (from 2010).** Adds a carbon price to all energy types;
- **State/territory based feed-in tariffs.** Set special tariffs for specific types of REE;
- **Mandatory Renewable Energy Target (MRET from 2001) (Renewable Energy Target (RET) from 2010).** Sets special quantity for total REE (i.e. type-neutral).

Main working hypotheses

- In the short-to-medium term REE is unlikely to be stimulated much by emissions trading in Australia or by state/territory feed-in tariffs: most stimulation will be from MRET/RET; and
- Type-neutral REE mechanisms like MRET/RET are good for stimulating moderate amounts of REE, but won't stimulate a wide enough range of REE, especially solar, for deep cuts in electricity greenhouse emissions: type-specific mechanisms are needed for this.

Early carbon price will be too low to stimulate much REE

Renewable and fossil fuel Australian 2009 generation costs with \$A25/tCO₂ carbon cost

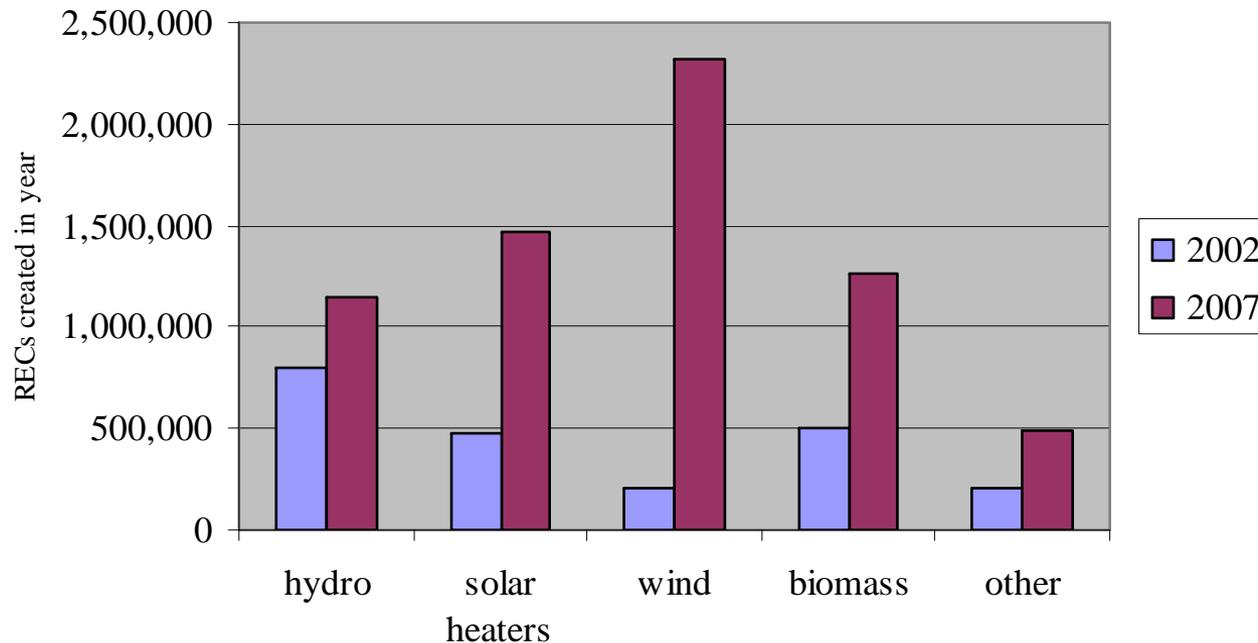


State/territory feed-in tariffs (FITs) so far announced will mostly have modest REE impact

- Victoria, South Australia and Queensland have announced net FITs @ 44c to 60c/kWh (about 1.2 to 1.5x normal tariff) for household or household and commercial only;
- New South Wales, Western Australia, Northern Territory and Tasmania still formulating their FITs; and
- ACT has gross FIT @ 3.8x normal tariff 75% of which applies to large generators.

MRET favours narrow REE base of wind, biomass and solar water heaters

Renewable Energy Certificate creation under MRET



Source: Renewable Energy Regulator annual reports, 2003 and 2008

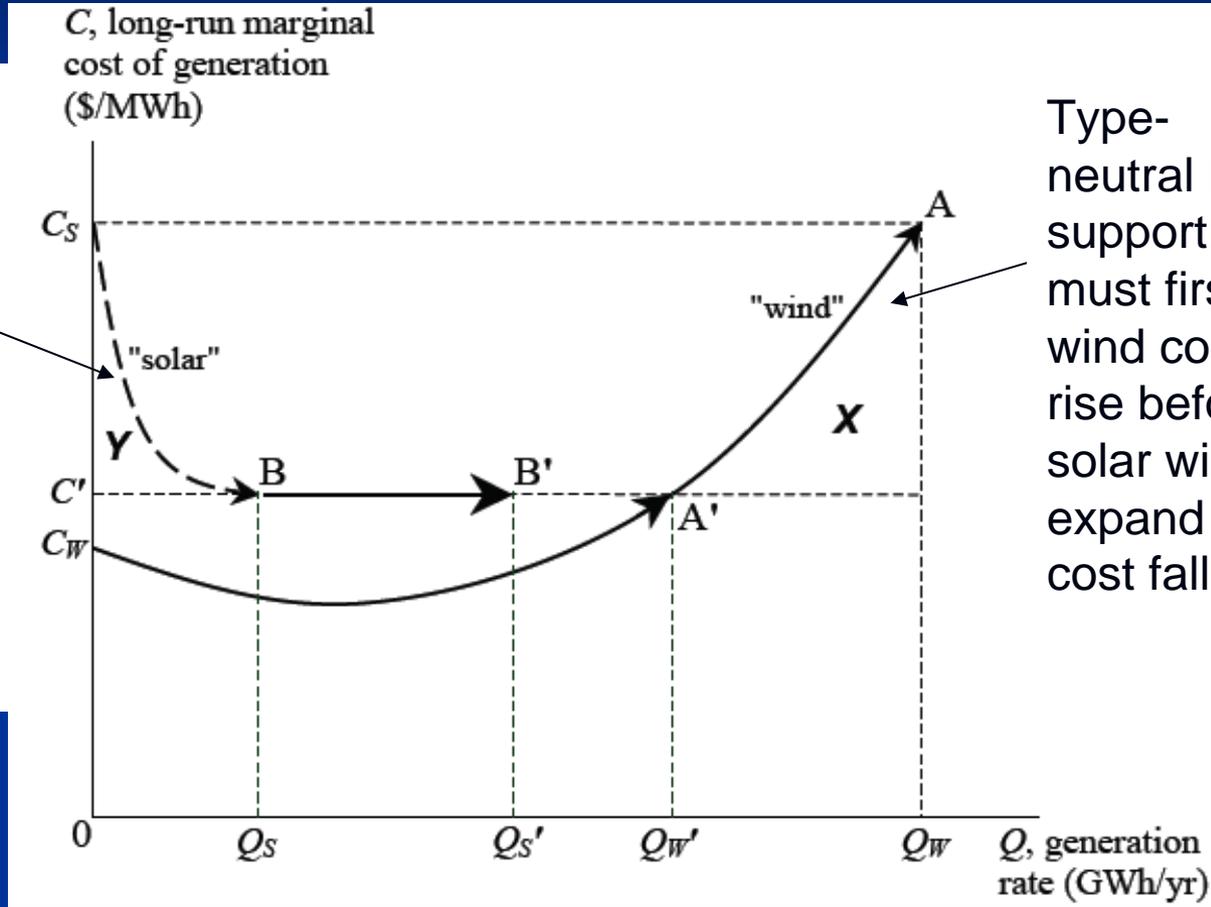
Solar/geothermal have different long-term marginal costs to wind/biomass

<i>REE type</i>	<i>2009 generation cost: \$A/MWh</i>	<i>Long-term supply potential in Australia</i>
Solar thermal	120-150	35km x 35km station could supply all of national electricity consumption
Geo-thermal	70-110	1% of resource could supply 26,000x national energy consumption
Wind	50-70	Could supply up to ~20% of national electricity consumption
Biomass	45-80	Could supply up to ~40% of national electricity consumption



Rationale for supporting one REE type ("solar") more than another ("wind")

Type-specific REE support: policy forces solar to expand & costs to fall *before* wind cost rises



Type-neutral REE support: must first let wind cost rise before solar will expand and cost falls

Some type-specific REE policy mechanisms used so far around the world

- **Separate tradable certificates, and targets**, for more expensive REE types under MRET-style mechanism (US model);
- **Different weights, or ‘bands’**, for more expensive REE types under MRET-style mechanism (UK model); and
- **Use of feed-in tariffs** for more expensive REE types alongside MRET-style mechanism (Italy, Ontario, ACT model).

Further research planned

- Evaluation, and synthesis, of FIT mechanisms used around the world;
- Comparison of effectiveness of MRET-style mechanisms vs FIT mechanisms at increasing REE at least cost;
- Evaluation of the significance of transmission policy in stimulating REE; and
- Interviews with Australian REE stakeholders about their policy priorities.