Australia’s 20% Renewable Electricity Target: Objectives and outcomes

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The stated objective

Description of the REC market

Issues for discussion

The Objective

“ The expanded Renewable Energy Target is designed to ensure 20 per cent of Australia's electricity comes from renewable sources by 2020.”

Senator Penny Wong, 2 November 2009
But, what does 20% mean?

In the Government’s modelling, it has been assumed that 20% renewable electricity generation will amount to 60,000,000 MWh in 2020.

The implementation of this policy objective through the RET assumes:

- 15,000,000 MWh of electricity from ‘old’ (pre-1997) renewable generators
- 45,000,000 MWh from ‘new’ (post-1997) renewable electricity plants by 2020

Overview of the RET

**Demand**
- Mandatory annual REC surrender requirement from 2001 to 2030 (aggregate demand of 766.7 million RECs).
- Obligation placed on electricity retailers and large users, but EITE exemptions apply.
- Green Power is the second most important source of demand and in 2008 was around 2,000 GWh.
- RECs are also purchased to voluntarily offset emissions or for major politically-sensitive projects (e.g. desalination plants).

**Supply**
- REC creation from “Old Generators” (pre-1997) (Hydro, Biomass – Bagasse, Landfill Power Generators, Sewage methane).
- REC creation from “New Generators” (post-1997) (Biomass, geothermal, hydro, solar PV, large scale solar thermal, solar water heaters and heat pumps, tidal, wave, wind, coal mine gas).
- REC based on actual generation except for SWH and PV.
- Deeming for SWH and PV.
- Penalty if target not achieved ($65/REC) before tax (around $93/REC tax-effective).
- Banking, limited inter-annual borrowing.
REC Demand 2001 to 2008

REC Supply 2001 to 2009 (YTD)
REC Balance 2001 to 2009 (YTD)

Sources of RECs 2001 to 2009 (YTD)
RECs by source 2009 (YTD)

- Solar Water Heater: 6.0m (11.7%)
- Wind: 3.2m (27.6%)
- Biomass: 1.3m (10.2%)
- Solar PV: 1.2m (9.5%)
- Hydro: 0.7m (6.8%)

Total RECs: 11.6m

REC Spot Prices 2006 to 2009

- Top: $54
- Bottom: $13

September Quarter 2006 to November 2009

Source: Next Generation and AFMA
Issues for discussion

1. Future demand growth: the 60,000,000 MWh target
2. The assumption of 15,000,000 MWh from old generation
3. Policy objectives: Renewable electricity versus renewable energy versus industry development
4. Impact of solar water heaters on REC supply
5. Impact of other support mechanisms on the REC market
6. Impact of Green Power and voluntary REC surrender on the mandatory market
7. Investment certainty
8. Demand-side concentration
9. REC exemptions and impact on remaining electricity users

Issue 1: The 60 GWh target

• To implement its 20% by 2020 undertaking, Government needed to forecast electricity production by 2020 (its forecast is that electricity production in 2020 will be 300 TWh – compared to around 200 TWh in 2009)

• Unless the Government has perfect foresight, its forecast will be wrong.

• Does it matter? If so, what should be done about this?
  – Nothing; or
  – Change the annual RET target once it becomes clear the forecast was too high/low to make sure renewable electricity in 2020 is 20%?
Issue 2: 15,000,000 MWh of renewable generation from baseline (old generation) may be optimistic

Persistent low rainfall is resulting in a large decline in REC creation and a number of plants producing below baseline levels

Does it matter that the baseline generation may be significantly over-estimated, thereby reducing the likelihood of achieving the stated 20% by 2020 objective?

Issue 3. The objective of the RET is not clear …….1/2

If the RET is a GHG abatement scheme…
There is no place for PV REC multiplier
Deeming is questionable:
RECs from coal mine gas or waste generation are OK;
RECs from many other possible sources of GHG abatement (energy efficiency; other forms of fossil electricity displacement) should be possible.

If the RET is an industry development scheme…
PV multiplier is OK (and other multipliers to achieve other industry development objectives e.g. solar thermal / geothermal are possible);
Deeming is ok

If the RET is a renewable electricity scheme…
No place for RECs from SWH, coal mine gas or landfill gas generation
Deeming is questionable

If the RET a renewable energy development scheme …
No place for RECs from coal mine gas or landfill gas generation, but otherwise little change needed.
Issue 3. The objective of the RET is not clear …….2/2

- The lack of clarity on the RET objectives makes it difficult to resolve competing claims. If the RET is a GHG abatement scheme then why does it matter if:
  - SWH crowds out renewable electricity generation;
  - Coal mine gas electricity generation earns RECs;
  - Currently commercial technologies crowd out prospective future technologies (e.g. wind crowds out geothermal or solar thermal)?

- If the RET is a renewable energy target (rather than renewable electricity target) then why does it matter if SWH crowds out renewable electricity generators?

The RET started out as a renewable electricity industry scheme, but now has multiple objectives. Stresses are showing. Clarity of objectives is needed to resolve competing claims.

Issue 4. SWH may crowd-out other electricity generators

SWH heater RECs created per year have grown more than 40 times between 2001 and 2009.

If RECs from SWH don’t grow above expected 2009 levels they will still account for 20% of all compliance RECs to 2030.

If RECs from SWH continue to grow at 10% per annum, they will account for 75% of all compliance RECs to 2030.

Is it a problem if solar water heaters take a large share of RECs, leaving less for renewable electricity generators?
Issue 5: Other support mechanisms will significantly affect the REC market

Government Grants
- Solar Flagship
- State Large Scale Solar Grants
- Geothermal grants
- Solar Water Heater rebates – Federal and State

PV Feed-In-Tariffs

Non-REC support mechanisms will have a big effect on the supply-side of the REC market

Transmission connection facilitation for wind, geothermal and solar thermal

The effect of other support mechanisms is to create comparative advantages for some technologies which affects their ability to win RECs. Is this a problem?

Issue 6: Green Power and voluntary offsetting can significantly affect the compliance market

- Voluntary and GreenPower demand is currently around 2 million p.a. and has grown at 47% per annum since 2004. Continued GreenPower growth and REC creation from major desalination demands has potentially to result in continued significant growth.

- RECs that are voluntarily surrendered create additional demand with a consequential price impact on the compliance market: effectively REC prices will be higher because of voluntary demand

Does it matter that voluntary action will drive-up REC prices in the compliance market?
Issue 7: REC price certainty

• The RET is a contrived, policy-driven market. Both demand and supply will be affected by Government decisions (not just on RET but also on other renewables policies).

• Investors in capital-intensive renewable electricity generators want to hedge REC price uncertainty over long periods (15 years).

• Market participants will discount future REC prices to take account of policy uncertainty

• Other ways to deliver subsidies that may reduce policy uncertainty are possible.

Does it matter that long term investors will discount future REC prices to account for policy uncertainty? Should other mechanisms be considered?

Issue 8: Buy-side concentration

• The electricity retail market is highly concentrated with a few major vertically-integrated retailers serving the bulk of demand.

• Retail market concentration confers significant power on retailers as REC buyers in the compliance market. Although voluntary REC demand is growing, it is significantly smaller than the compliance market.

• Buy-side concentration, combined with the vertical integration of generator-retailers will have a significant impact on the supply-side: independent renewable electricity developers are at a competitive disadvantage to the vertically-integrated retailers.

• The buy-side of the REC market could be made more competitive by placing the compliance obligation on energy users, not retailers.

Does buy-side concentration matter? Would it be better to place the compliance obligation on end users rather than retailers?
Issue 9: REC exemptions and impact on remaining users

• Emission intensive trade exposed industries (EITE) face reduced REC exposure on the electricity consumed in their operations (based on EITE exemptions). This relief applies to around 1/3rd of electricity consumed.

• The resulting shortfall is to be recovered from the remaining 2/3rds of electricity consumers. This can be expected to result in significantly higher prices for these consumers.

How should price impacts be taken into account in considering future changes to the RET?

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