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# The Renewable Energy Target: a quick guide

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This quick guide provides a brief background to the Commonwealth's renewable energy target (RET)–what it is, what it costs, how it operates, and whether it is achieving its aims.

## *What is the Renewable Energy Target?*

The Renewable Energy Target is a Commonwealth Government scheme to increase the proportion of electricity generated in Australia from renewable sources, to reduce the emissions of greenhouse gases from electricity generation and to promote the development of a renewable energy industry in Australia. The 'target' of the scheme is to generate an additional 20 per cent of electricity from renewable sources by 2020, compared with 1997 levels. (Originally, the target was an additional two per cent by 2010.) The 'Renewable Energy Target' also refers to the legislated scheme that provides the mechanism for achieving the target through the creation and trading of renewable energy certificates. This certificate-trading scheme allows generators of renewable energy to earn additional income for the electricity that they generate, above the market price.

## *How does the scheme work?*

To achieve the target, the Commonwealth established a scheme originally known as the mandatory renewable energy target (MRET). This scheme, established by the *Renewable Energy (Electricity) Act 2000* (the Act), creates a demand for electricity generated from renewable sources. Under the scheme, RET-liable entities must purchase a specified percentage of their electricity from renewable sources each year; liable entities under the RET are large purchasers of electricity such as electricity retailers and large industrial users (these should not be confused with liable entities under the carbon price mechanism–entities can be liable under the RET, the CPM or both). The RET is currently split into two separate targets: the large-scale RET (or LRET), for large renewable electricity developments like wind and solar farms, and the small-scale renewable energy scheme (the SRES) for small technology installations like rooftop solar and solar hot water heaters. Liable entities have obligations to purchase renewable energy from both schemes.

To provide certainty, the target is expressed in the Act as a fixed amount of electricity that must be sourced from renewable generators each year; the actual targets are 41,000 gigawatt-hours of electricity (GWh) for the LRET and a notional target of 4,000 GWh for the SRES. Together, these targets were meant to represent 20 per cent of Australia's electricity usage by 2020, but demand for electricity is falling and the 45,000 GWh target is likely to account for substantially more than 20 per cent of Australia's electricity by 2020.

As all electricity that is fed into the grid is indistinguishable (that is, it is not possible to tell if electricity in the grid has been generated from renewable or conventional sources), it is necessary to have an external mechanism to account for the amount of renewable electricity purchased by liable entities. This is done through the trading of renewable energy certificates that demonstrate that renewable energy has been generated. This process differs slightly between the LRET and the SRES.

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### The LRET

Like other generators, large-scale renewable electricity generators feed electricity into the grid, and receive the market price for that electricity (this factsheet explains how the eastern National Electricity Market works). That electricity is then 'grid electricity' and is delivered to customers through electricity networks, along with electricity produced from non-renewable sources. Under the LRET scheme, accredited generators of large-scale renewable electricity are also awarded certificates (large-scale generation certificates, LGCs) by the Clean Energy Regulator (CER) at the rate of one certificate per megawatt-hour of renewable electricity produced. RET-liable entities have an obligation to buy a certain number of these certificates; the revenue that large-scale generators earn from selling these certificates supplements the revenue that they can earn by selling the electricity they generate through the normal electricity market mechanisms.

RET-liable entities must purchase a certain percentage (called the renewable power percentage, RPP) of their electricity from renewable sources each year, and prove this by surrendering the requisite number of LGCs to the CER. The RPP is set each year by the CER, taking into account yearly interim targets set in legislation. In 2014, the RPP is 9.87%, which means that liable entities must surrender enough certificates to cover 9.87% of their electricity purchases, excepting purchases that are partially exempted for electricity used in emissions-intensive, trade exposed (EITE) activities.

Certificates are commonly traded through brokers on spot markets, or through long-term contracts between generators and liable entities. In 2013, the volume-weighted average price for an LGC was $35.24 (per megawatt-hour). Should a liable entity fail to surrender enough certificates to cover their electricity purchases, they must pay a shortfall charge of $65 per megawatt-hour for each certificate not surrendered. This effectively caps the price of an LGC (and hence the LRET).

### The SRES

The SRES is very similar to the LRET. Liable entities have an obligation to purchase small-scale technology certificates (STCs, which are awarded for generation from technologies like rooftop solar, small-scale wind, solar hot water heaters), in the same way as LGCs. The amount of STCs that must be purchased is given by the small-scale technology percentage, which is also determined by the CER, based on the number of STCs likely to be created in the next year. However, there are a number of differences between the SRES and the LRET:

- for small-scale systems, certificates are *deemed*, that is to say that a person that installs complying technology is awarded upfront enough certificates to cover the expected generation of their technology over its lifetime–up to fifteen years. Large-scale systems are awarded LGCs only as they actually generate electricity, whereas small-scale technology is awarded certificates for the energy they are expected to generate in the future. As STCs are provided upfront, this makes it possible for householders to assign their STCs to the company that installs their small scale system, in return for a lower upfront installation cost
- STCs can be traded either through a secondary market, or via the STC Clearing House. STCs sold through the Clearing House are sold for $40, which is effectively a price cap. STCs are also sold on the open market at a discount to this. The STC Clearing House makes it easier for individuals to sell their STCs, compared to negotiating a contract with a liable entity or certificate trader. LGCs are effectively only sold on contract or spot markets
- whilst the target for the LRET is legislated and relatively predictable, the SRES target is notional and varies from year to year. For example, in 2013 the small-scale technology percentage (STP) was 19.70%, for 2014 it will be 10.48%. This is because the STP is based on the number of certificates which are expected to be created in the next year, whereas the RPP (for LGCs) rises predictably each year towards the legislated target.

## *Where did the RET come from and how has it evolved?*

In 1997, the Howard Government released its broad climate change strategy: Safeguarding the Future: Australia's Response to Climate Change. Amongst other measures, the strategy sought to promote renewable energy through a program of 'Mandatory Targets for the Uptake of Renewable Energy in Power Supplies'. In 2000, this was legislated as the Mandatory Renewable Energy Target, which created an obligation for large electricity purchasers to source an additional two per cent (or 9,500 GWh) of their electricity from renewable sources by 2010. See the original Bills Digest for further information.

In 2003, a review of the MRET (the Tambling Report) found that after 2007 the MRET would no longer encourage investment in renewable energy. In light of this, in 2006 Victoria launched its own mandatory Victorian Renewable Energy Target (10 per cent of energy consumed to come from renewable sources by 2010, later

extended to 2016). New South Wales also considered instituting its own scheme at the same time, and other states also considered their own programs.

Before the 2007 federal election, the Australian Labor Party committed to an expanded renewable energy target of 20 per cent by 2020. (The Coalition had committed to a 'Clean Energy Target' of about half this amount of 'low-emissions' power generation). Once elected, the Rudd Government referred the design of an expanded national RET to the Council of Australian Governments, with the intention of absorbing separate state schemes. Legislation for the expanded RET was passed in 2009, as the *Renewable Energy (Electricity) Amendment Act 2009*. This amendment increased the target from 9,500 GWh by 2010 to 45,000 GWh by 2020 and introduced a 'solar credits' multiplier, to provide an additional incentive for the installation of solar photovoltaic systems. The amending legislation also allowed emissions-intensive trade-exposed industries to be partially exempted from their liabilities under the RET. (See the original Bills Digest).

However, the solar credits mechanism, which provided small solar installations with up to five times more certificates that they would otherwise be entitled to, proved problematic. These 'phantom' certificates were tradeable, and soon crowded out the market, reducing incentives for investment in large-scale technologies like wind farms. To remedy this, the RET was split into two separate targets: the LRET, consisting of 41,000 GWh, and the SRES, with a notional, but uncapped, target of 4,000 GWh. The split in the schemes commenced broadly on 28 June 2010. (See the original Bills Digest.)

Under the Act, the RET must be reviewed by the Climate Change Authority every two years; the review must examine the operation of the Act, its associated regulations and the environmental and economic impact of the scheme. The last review was undertaken in 2012; the review concluded that the RET did not require significant changes, and that there was no compelling evidence to alter the quantity or nature of the target. However, the Authority did flag that the uncapped nature of the SRES could prove problematic, and suggested policy measures to alleviate this. The Authority also noted that biennial reviews were damaging to investor confidence, and recommended that the RET should be reviewed every four years instead.

Since being elected in 2013, the Abbott Government has commenced its own review of the RET. The terms of reference for the review are wide-ranging and consider whether the targets are appropriate and cost-effective. However, this is not the review that must be carried out by law, under the current Act. That review must be conducted by the Climate Change Authority, and the Authority has reportedly indicated that its RET review will be complete in late 2014, assuming it is not abolished before then.

### *What does the scheme cost?*

There has been a considerable amount of commentary in the last few months about the impact of the RET on electricity prices, but little data has surfaced to quantify this impact. So what does the RET actually cost? The Australian Electricity Market Commission published a breakdown of the price of electricity components in its *2013 Residential Electricity Price Trends* report, published in December 2013. The cost imposed directly by the RET to the average household (which varies from state to state) is tabulated below, in cents per kilowatt-hour:

**Table 1 –** Direct cost of Renewable Energy Target certificates to average household (in cents per kilowatt-hour) for 2012-13 (actual)

| | | Qld | NSW | ACT | SA | Vic | Tas | WA | NT | National |
|---|---|---|---|---|---|---|---|---|---|---|
| 2012-13 | Cost of RET | 1.39 | 1.39 | 1.39 | 1.39 | 1.39 | 1.00 | 1.39 | 1.08 | 1.38 |
| | Electricity total cost | 23.71 | 27.86 | 20.78 | 31.27 | 27.66 | 28.98 | 25.00 | 23.19 | 27.11 |
| | % of cost due to RET | 5.9% | 5.0% | 6.7% | 4.4% | 5.0% | 3.5% | 5.6% | 4.7% | 5.1% |

Source: Parliamentary Library estimates, compiled from Australian Energy Market Commission data (note that the AEMC has included supply and consumption charges in its cost of electricity estimate).

The AEMC estimates that the RET will be responsible for between 3.6-5.2% of the average household's electricity bill in 2013-14. In comparison, the 2013-14 cost of wholesale electricity (nationally) will be 5.26 c/kWh (which is 18.8% of the retail cost that consumers pay), maintenance and development of electricity networks 14.4 c/kWh (51.5% of the retail cost) and the carbon price 2.53 c/kWh (9.1%). The AEMC estimates that the total cost of the RET will decrease to 0.9 c/kWh (3.1%) in 2014-15 and 0.89c/kWh (3.1%) in 2016-17. However, if the carbon price mechanism is repealed, analysts expect the cost of renewable energy certificates to increase significantly, which would change these predictions.

However, although the cost of certificates increases the retail cost of electricity, the RET also has a slight downward effect on cost. In Australia's National Electricity Market, generators bid to supply grid power at a certain time for a certain cost. The Australian Energy Market Operator then 'dispatches' generation capacity into the market, with the lowest cost generator first, until demand is satisfied. As renewable generators often have near-zero operating costs, they can bid into the market at very low prices and can displace higher-cost peak generation (like gas or oil generators, who would generally bid to at least cover their fuel costs). This has the effect of lowering the overall wholesale electricity price, and is called the merit-order effect.

For the last review of the RET in 2012, SKM MMA modelled the impact of the RET on wholesale electricity prices, and a key finding was that '*in the current over-supplied electricity market environment, the greater the RET target, and the greater the renewable generation, the lower the wholesale market prices*.' MMA estimated that wholesale prices would be 15-25% higher in 2020 in the absence of the RET. However, this reduction in the wholesale price might not be completely passed on to consumers. Both MMA's modelling, and more recent peer-reviewed modelling conducted by the University of New South Wales (UNSW), suggest that once the cost of certificates and the reduction in the wholesale price of electricity are combined, power prices are slightly higher than they would be in the absence of a RET. MMA estimated that the cost to residential consumers was in the order of an extra $15 per year, and UNSW estimated the net cost at around 0.2-0.5c per kilowatt hour, depending on how much of the wholesale price reduction was passed through to consumers. UNSW's modelling shows that emissions-intensive, trade-exposed industries are the big winners from the RET, as they receive the benefit of reduced wholesale electricity prices, but are substantially exempt from paying for it through certificates.

### *Is it working?*

Although it is not possible to attribute results to any one program, figures from the Bureau of Resources and Energy Economics shows that, since the introduction of the RET, all forms of renewable electricity generation have increased, but wind power has increased most (see figure 1). Since 1997 renewable sources, excluding hydro power, have increased from 0.55% of electricity generated in Australia to 3.90% in 2011-12. Hydropower has been variable, mainly due to decreased rainfall during the mid-2000s.

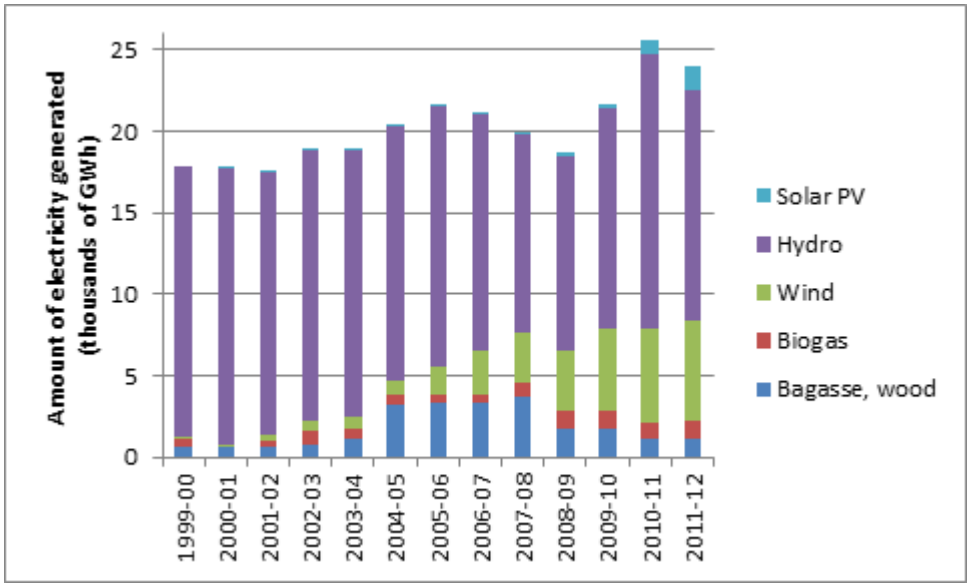


**Figure 1** - Electricity generated by renewable sources 1999-2012 [Source data: Bureau of Resources and Energy Economics, *Australian Energy Statistics 2013,* CC/BY3.0]