



**Australian Government**  
**Climate Change Authority**

# RENEWABLE ENERGY TARGET REVIEW

Issues Paper

AUGUST 2012



Published by the Climate Change Authority

[www.climatechangeauthority.gov.au](http://www.climatechangeauthority.gov.au)

© Commonwealth of Australia 2012

This work is licensed under the Creative Commons Attribution 3.0 Australia Licence. To view a copy of this license, visit <http://creativecommons.org/licenses/by/3.0/au>

The Climate Change Authority asserts the right to be recognised as author of the original material in the following manner:



© Commonwealth of Australia (Climate Change Authority) 2012.

#### IMPORTANT NOTICE – PLEASE READ

This document is produced for general information only and does not represent a statement of the policy of the Commonwealth of Australia. The Commonwealth of Australia and all persons acting for the Commonwealth preparing this report accept no liability for the accuracy of or inferences from the material contained in this publication, or for any action as a result of any person's or group's interpretations, deductions, conclusions or actions in relying on this material.

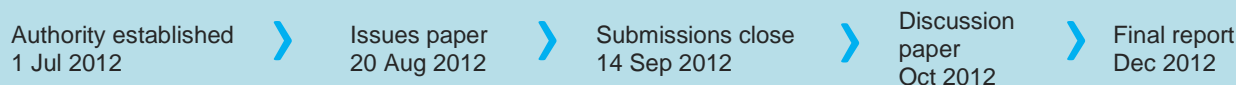
# ISSUES PAPER

The Climate Change Authority has released this issues paper to assist individuals and organisations to prepare submissions to the Renewable Energy Target review. It outlines:

- the scope of the review;
- the Authority's procedures;
- matters on which the Authority is seeking comment and information; and
- how to make a submission.

This issues paper identifies matters that the Authority considers most pertinent to the review, but comments on any other issues that participants consider relevant will be welcome.

## Key dates



## How to make a submission

Details on how to lodge your submission can be found at:  
[www.climatechangeauthority.gov.au/submissions](http://www.climatechangeauthority.gov.au/submissions).

Submissions, which must include a cover sheet (available on the Authority's web site), can be lodged:

### via email

[submissions@climatechangeauthority.gov.au](mailto:submissions@climatechangeauthority.gov.au)

### via post

Submissions  
Climate Change Authority  
GPO Box 1944  
Melbourne VIC 3001

## Contacts

For further information about the Renewable Energy Target review or making a submission, contact the Climate Change Authority on freecall 1800 475 869 or via email at [enquiries@climatechangeauthority.gov.au](mailto:enquiries@climatechangeauthority.gov.au).

## Web site

[www.climatechangeauthority.gov.au](http://www.climatechangeauthority.gov.au)

# CONTENTS

<b>1. INTRODUCTION .....</b>	<b>6</b>
1.1. The Climate Change Authority .....	6
1.2. Renewable Energy Target review .....	6
Legislative requirements and scope of the review .....	6
Process .....	7
<b>2. RENEWABLE ENERGY IN AUSTRALIA .....</b>	<b>9</b>
2.1. Australia's renewable energy resources .....	9
2.2. Renewables in Australia's electricity mix .....	9
<b>3. RENEWABLE ENERGY TARGET: OVERVIEW .....</b>	<b>12</b>
3.1. The Renewable Energy Target scheme .....	12
The Clean Energy Regulator .....	12
The Renewable Energy Certificate (REC) Registry .....	13
3.2. History of the RET .....	13
The 2001 Mandatory Renewable Energy Target .....	13
The 2003 Tambling Review .....	13
State and territory renewable energy target schemes .....	13
The 2009 expanded Renewable Energy Target .....	13
The RET today .....	14
3.3. Renewable energy policies in other countries .....	14
<b>4. THE RENEWABLE ENERGY TARGET IN CONTEXT .....</b>	<b>16</b>
4.1. Carbon Pricing Mechanism .....	16
4.2. Research and development support .....	18
4.3. Energy efficiency schemes and regulations .....	18
Phase out of electric water heaters .....	18
4.4. Clean Energy Finance Corporation .....	19
4.5. Feed-in tariffs .....	19
4.6. Planning regulations .....	19
<b>5. LARGE-SCALE RENEWABLE ENERGY TARGET .....</b>	<b>20</b>
5.1. The large-scale target .....	21
Target trajectory .....	22
The 20 per cent by 2020 commitment .....	22
Clean Energy Finance Corporation-funded projects .....	25
5.2. Liability framework and surrender .....	26
Liable entities .....	26
Calculating individual liability .....	26
Surrender and shortfall charge .....	27
5.3. Exemptions .....	27
Emissions-intensive, trade-exposed activities .....	28
Self-generator exemption .....	28
5.4. The large-scale eligibility framework .....	29

Eligible renewable energy sources .....	29
Waste coal mine gas.....	30
5.5. LRET administration .....	31
Registration.....	31
Accreditation of renewable energy power stations .....	31
<b>6. SMALL-SCALE RENEWABLE ENERGY SCHEME .....</b>	<b>32</b>
6.1. Small-scale target .....	33
6.2. Small-scale liability framework and surrender .....	34
6.3. Small-scale eligibility framework .....	35
Addition of new technologies to the SRES .....	36
Displacement technologies .....	36
Deeming.....	36
Solar Credits .....	37
6.4. The STC Clearing House.....	38
6.5. Small-scale administration .....	40
Registration.....	40
Technology standards.....	40
Installation requirements.....	40
Compliance .....	40
<b>7. THE RET AND ELECTRICITY MARKETS.....</b>	<b>42</b>
7.1. Cost of certificates .....	42
7.2. Impact on the wholesale market prices.....	43
7.3. Impact on electricity network security .....	43
<b>8. DIVERSITY OF RENEWABLE ENERGY ACCESS.....</b>	<b>44</b>
<b>9. REVIEW FREQUENCY.....</b>	<b>46</b>
<b>10. GLOSSARY.....</b>	<b>47</b>
<b>11. LIST OF QUESTIONS.....</b>	<b>50</b>
Large-scale Renewable Energy Target .....	50
Small-scale Renewable Energy Scheme.....	50
Diversity of renewable energy access .....	51
Review frequency .....	51
<b>12. LETTER FROM THE MINISTER FOR CLIMATE CHANGE AND ENERGY EFFICIENCY TO THE CHAIR OF THE CLIMATE CHANGE AUTHORITY.....</b>	<b>52</b>

# 1. INTRODUCTION

## 1.1. The Climate Change Authority

The Climate Change Authority was established on 1 July 2012 as an independent advisory body on climate change. The Authority is to conduct climate change research, as well as periodic reviews on a range of climate change matters, including carbon pollution caps, progress towards meeting national emissions reduction targets, the Carbon Pricing Mechanism, the Renewable Energy Target and the Carbon Farming Initiative.

The Authority's constitution, functions and guiding principles are set out in the *Climate Change Authority Act 2011* (Cth). This Act states that in conducting a review the Authority must have regard to the principle that any measure to respond to climate change should:

- be economically efficient;
- be environmentally effective;
- be equitable;
- be in the public interest;
- take account of the impact on households, business, workers and communities;
- support the development of an effective global response to climate change;
- be consistent with Australia's foreign policy and trade objectives; and
- any additional principles the Authority considers relevant.

In conducting its reviews, the Authority will be guided by these principles.

The Authority is required to conduct public consultation for all its reviews, including this review of the Renewable Energy Target (RET review). Stakeholders will have the opportunity to input to the RET review. This issues paper is designed as a first step to assist individuals and organisations contribute to the review.

## 1.2. Renewable Energy Target review

### Legislative requirements and scope of the review

The first review of the Authority is of the *Renewable Energy (Electricity) Act 2000* (Cth) (*REE Act*) and is due by 31 December 2012. The review is legislatively mandated by the *REE Act*, see box 1.1 for the legislative provisions.

The legislative provisions covering the review are broad. The Authority has interpreted the scope of its review as covering:

- the Large-scale Renewable Energy Target, including the target trajectory, the target level and its relationship to the Clean Energy Finance Corporation;
- the structure of the Small-scale Renewable Energy Scheme, including how its annual target is set;
- the liability framework, exemptions and shortfall charge of both the large-scale and small-scale schemes;
- the eligibility framework for both schemes and the diversity of renewable energy;
- the impact of the RET on the electricity market in terms of costs, prices and energy security; and
- the frequency and scope of future review under the *REE Act*.

There is a range of other policy issues that also affect the climate for renewable energy investment. The Authority will take these matters into account as part of the context for its review, but does not intend to make recommendations on:

- other government policies, such as the Carbon Pricing Mechanism, planning regulations, energy efficiency schemes and feed-in tariffs;
- the investment mandate and design of the Clean Energy Finance Corporation; and
- rules and regulations regarding electricity markets, including network connection arrangements.

## Box 1.1 Legislative foundations of the RET review

Section 162 of the *REE Act* mandates reviews every two years and defines the scope of these reviews:

162 (1) The Climate Change Authority must conduct reviews of the following:

- (a) the operation of this Act and the scheme constituted by this Act;
- (b) the operation of the regulations;
- (c) the operation of the *Renewable Energy (Electricity) (Large-scale Generation Shortfall Charge) Act 2000*;
- (d) the operation of the *Renewable Energy (Electricity) (Small-scale Technology Shortfall Charge) Act 2010*; and
- (e) the diversity of renewable energy access to the scheme constituted by this Act, to be considered with reference to a cost benefit analysis of the environmental and economic impact of that access.

Section 162(11) of the Act states that ‘a recommendation may not be inconsistent with the objects of the Act’. The objects of the Act are set out in section 3 as:

- to encourage the additional generation of electricity from renewable sources;
- to reduce emissions of greenhouse gases in the electricity sector; and
- to ensure the renewable energy sources are ecologically sustainable.

The Minister for Climate Change and Energy Efficiency wrote to the Chair of the Authority on 13 July 2012 in respect of the RET review; the letter is attached at section 12. This letter provides background relevant to the RET review. It also notes that the Council of Australian Governments is prioritising a review of climate programs to consider whether they are complementary to a carbon price. The letter notes that the Authority’s report of the RET review will be used as an input to the Council’s work.

The Authority must provide a report of the RET review to the Minister by 31 December 2012 and then publish the report on its website as soon as practicable. The Minister must table the report in Parliament within 15 sitting days of receiving it and respond to any recommendations within six months.

## Process

As part of its consultation process, the Authority will release two papers to assist interested parties contribute to the review: this issues paper and a discussion paper. The issues paper explains the scheme and requests feedback from stakeholders on particular questions. The discussion paper will set out the Authority’s draft recommendations on key issues for discussion, prior to the completion of the final report.

The review timeline is:

Date	Event
1 July 2012	Authority established
20 August 2012	Issues paper released
14 September 2012	Issues paper submissions due
October 2012	Discussion paper released
December 2012	Final report released

A glossary of terms, abbreviations and acronyms is at Section 10.

## 2. RENEWABLE ENERGY IN AUSTRALIA

### 2.1. Australia's renewable energy resources

Australia has a significant range of renewable energy resources, including:

- wind resources, particularly across south western, southern and south-eastern coastlines and coastal ranges;
- extensive solar, ocean waves and tidal energy resources;
- large potential geothermal energy resource – particularly in the centre of the continent;
- biomass – including bagasse, a fibrous waste produced in sugar milling, which is prominent amongst a range of biomass-based wastes; and
- limited hydro resources – most of which have already been developed through the Snowy Hydro and Tasmanian hydro schemes.

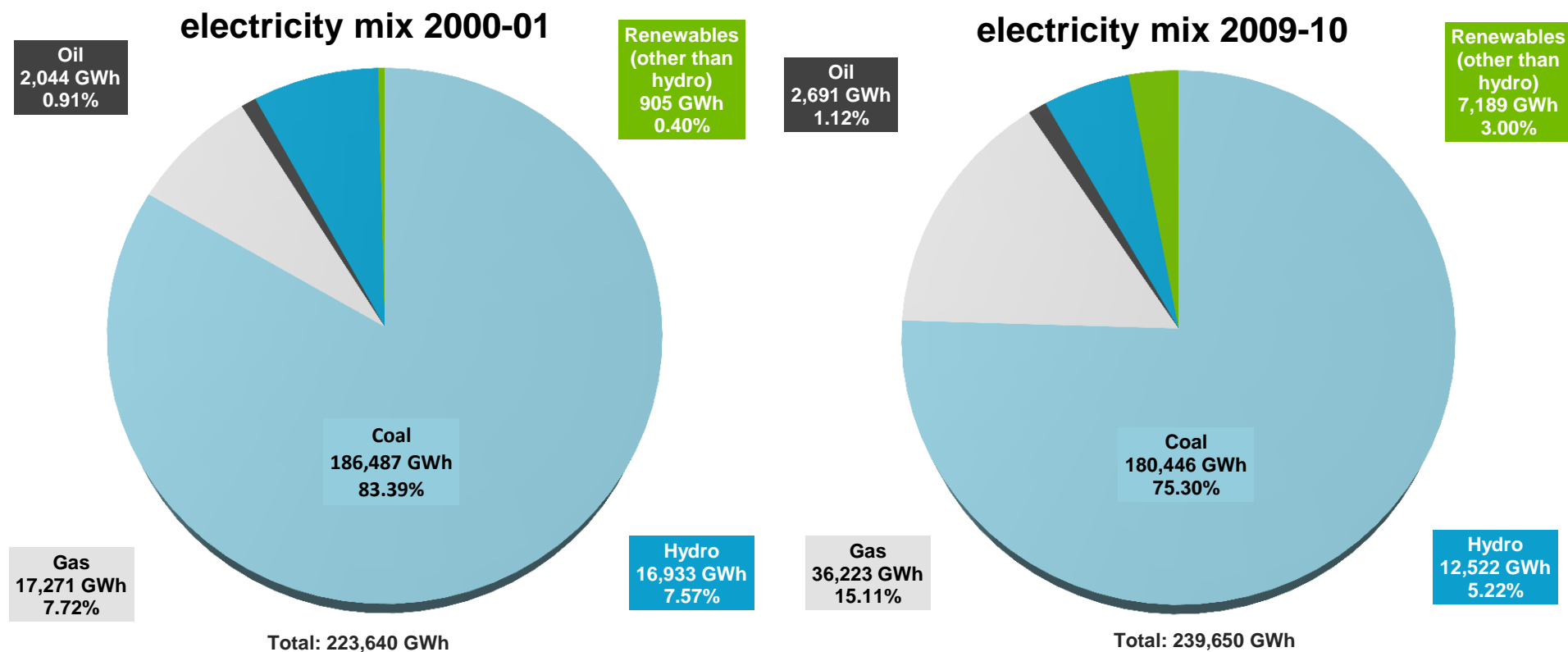
### 2.2. Renewables in Australia's electricity mix

Electricity generation from renewable energy sources represented around 8 per cent (19,711 gigawatt hours (GWh)) of Australia's electricity production in 2009-10.<sup>1</sup> Renewable energy generation has grown in absolute terms over this period (increasing to 19,711 GWh in 2009-10 from 17,838 GWh in 2000-01), although growth in, for example wind power, has been offset to some extent by decreased generation from hydro due to low rainfall in recent years (refer figure 2.1).

---

<sup>1</sup> Australian Government, Australian Bureau of Agricultural and Resource Economics and Sciences, Energy Update 2011, p 9.

**Figure 2.1: Australian electricity mix, 2000-01 and 2009-10**



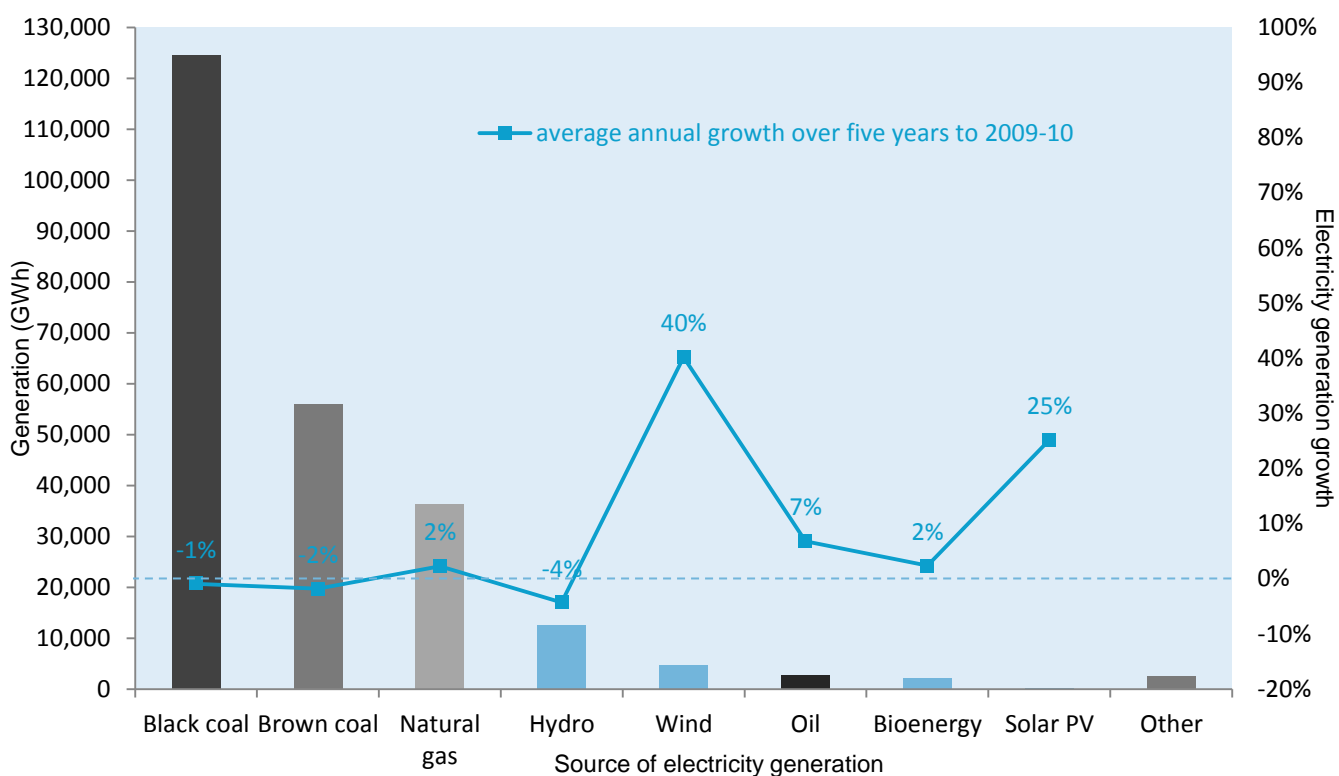
Note: Most of Australia's hydro generation was established before 1997 and is not included in the RET. Hydro generation was relatively lower in 2009-10 due to decreased rainfall.

Source: Australian Government, Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Energy Statistics*.

In particular, electricity generation from wind and solar photovoltaic (PV) increased significantly from low bases, with average annual growth over the last five years of 40.2 per cent and 25.2 per cent respectively - see figure 2.2.

The relatively low proportion of renewable generation in Australia's electricity mix is attributable to a number of factors, particularly the historical difference between the costs of renewable technologies and fossil fuel generation.

**Figure 2.2: Australian electricity production, by fuel, 2009-10**



Note: The amount of solar PV is 278 GWh.

Source: Australian Government, Australian Bureau of Agricultural and Resource Economics and Sciences, *Energy Update 2011*, 2011, p 9.

## 3. RENEWABLE ENERGY TARGET: OVERVIEW

The Commonwealth Government is committed to ensuring ‘the equivalent of at least 20 per cent of Australia’s electricity supply comes from renewable resources by 2020’.<sup>2</sup> This commitment is being pursued through the renewable energy target scheme (RET scheme), see Box 3.1 for a short summary of the RET legislation.

### Box 3.1: Summary of the RET legislation

- *Renewable Energy (Electricity) Act 2000* (Cth)  
Establishes the large-scale and small-scale schemes, including the liability framework, means of creating certificates and administrative arrangements.
- *Renewable Energy (Electricity) (Small-scale Technology Shortfall Charge) Act 2010* (Cth)  
Imposes the small-scale technology shortfall charge at a rate of \$65 per MWh.
- *Renewable Energy (Electricity) (Large-scale Generation Shortfall Charge) Act 2000* (Cth)  
Imposes the large-scale generation shortfall charge at a rate of \$65 per MWh.
- *Renewable Energy (Electricity) Regulations 2001* (Cth)  
Sets out further detail regarding the operation and administration of the large-scale and small-scale schemes.

### 3.1. The Renewable Energy Target scheme

The RET scheme creates demand for additional renewable energy by placing a legal obligation on entities that purchase wholesale electricity (mainly electricity retailers) to surrender a certain number of renewable energy certificates to the Clean Energy Regulator each year. Each certificate represents one megawatt-hour (MWh) of additional renewable energy for compliance purposes.<sup>3</sup> Certificates are generated by accredited renewable energy power stations (eg, wind farms) and eligible small-scale renewable technology systems (eg, solar PV). The sale of certificates supports additional renewable energy deployment. Certificates are tradeable and may be banked. Banking means that certificates issued in one year may be surrendered to meet an obligation in a later year.

Since 1 January 2011, the RET has operated as two schemes – the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). The LRET supports large-scale renewable energy projects, such as wind farms and commercial solar, by helping to bridge the cost between renewable and fossil-fuel generation. The SRES assists households, small business and community groups with the upfront cost of installing small-scale renewable technology systems.

#### The Clean Energy Regulator

The RET scheme is administered by the Clean Energy Regulator (formerly the Office of the Renewable Energy Regulator).

<sup>2</sup> Explanatory Memorandum, *Renewable Energy (Electricity) Bill 2010*. Note the ‘equivalent’ language is designed to capture displacement technologies – such as solar water heaters and heat pumps, which are included in the RET scheme but do not generate electricity.

<sup>3</sup> Note that Solar Credits multiplier means that each small-scale technology certificate does not necessarily equal to 1MWh of generation.

The Clean Energy Regulator is an independent statutory authority established by the *Clean Energy Regulator Act 2011* (Cth). The Clean Energy Regulator is responsible for administering the RET. This includes maintaining the Registry, issuing certificates, managing the surrender of certificates, administering the liability provisions and ensuring compliance with the scheme.

## The Renewable Energy Certificate (REC) Registry

Certificate creation, trade and surrender is managed through the Renewable Energy Certificates (REC) Registry. The Registry is an internet-based registry system that:

- facilitates the creation, registration, transfer and surrender of certificates;
- tracks the ownership of certificates;
- provides access to the Small-scale Technology Certificates Clearing House; and
- maintains the public registers required by the *REE Act*, such as the Register of Large-scale Generation Certificates.

## 3.2. History of the RET

### The 2001 Mandatory Renewable Energy Target

The RET was first established by legislation in 2000 as the Mandatory Renewable Energy Target (MRET) with the objective of encouraging additional investment in renewable energy generation. The MRET was a certificate-based scheme based on annual gigawatt hour targets rising to 9500 GWh in 2010 and maintained until 2020. Eligible generation was additional to the existing (approximately) 15,000 GWh of renewable energy generation that pre-dated the scheme (mostly hydro generation). Existing renewable energy power stations were entitled to create certificates for any additional electricity they produced above a baseline.

### The 2003 Tambling Review

The MRET legislation prescribed an independent review of the scheme in 2003. The 2003 'Tambling Review', chaired by Mr Grant Tambling, made thirty recommendations, including that the RET should be expanded and extended to sustain greater investment in renewable energy. The Government maintained the MRET scheme and adopted several of the Review's recommendations, but it did not expand or extend the target. By 2007, there was sufficient capacity in place to meet the legislated targets and no further investment was necessary.

### State and territory renewable energy target schemes

In 2007, the Victorian Government established a renewable energy target (VRET) scheme for Victoria. A number of other states and territories also proposed state-based renewable energy target schemes. These schemes were eventually abolished and subsumed into the new expanded RET, as agreed by the Council of Australian Governments.

### The 2009 expanded Renewable Energy Target

In 2009, the national RET was expanded by nearly five times to include a target of 45,000 GWh in 2020 to support the Commonwealth Government's policy commitment that 'at least 20 per cent of Australia's electricity from renewable sources by 2020'. The target was also extended to 2030. Most of the original design parameters of the MRET were retained. Significant changes included:

- increase of the target to 45,000 GWh in 2020 to be maintained until 2030;

- the Solar Credits mechanism, which applied a ‘multiplier’ to the number of certificates received from certain small-scale generation technologies, including solar PV, wind and micro-hydro systems (see the ‘Solar Credits’ discussion below under ‘6.3 Small-scale eligibility framework’); and
- emissions-intensive trade-exposed activities were provided a partial exemption from liability.

## The RET today

In 2010, the Commonwealth Parliament passed amendments to separate the RET into two parts: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Higher than expected uptake of small-scale systems - provided with extra encouragement through the Solar Credits multiplier and state/territory feed-in tariffs - had created a large number of certificates, depressing prices and discouraging investment in large-scale projects. The division of the RET was designed to address this issue by creating separate incentives for large-scale renewable energy projects (such as wind farms) and small-scale technologies (such as solar PV and solar water heaters), which no longer directly competed with one another under the RET scheme.

The LRET is expected to meet the lion’s share of the target – 41,000 GWh of the original 45,000 GWh 2020 target – and retains many of the design features of the original MRET scheme.

The SRES is an ‘uncapped’ scheme in that its annual targets are based on the number of certificates expected to be created. Liability therefore tracks certificate creation, rather than placing a limit on it. This means the gigawatt hour contribution of the SRES by 2020 is uncertain. The SRES has an implicit target of 4000 GWh of renewable energy generation or displacement of electricity through solar water heaters and heat pumps. At the time of establishment of the SRES, the Government noted that if the SRES looked likely to deliver less than 4000 GWh, ‘the LRET portion of the target will be increased to ensure the 45,000 GWh target is still met in 2020..., but the annual LRET targets will not be reduced if uptake of small-scale technologies is greater than anticipated’.<sup>4</sup>

## 3.3. Renewable energy policies in other countries

Renewable energy is a priority for many governments because of climate change and other environmental goals, as well as energy supply concerns.

The ability to implement policies that support renewable generation is influenced by factors such as geography, the types of industry and businesses that demand electricity, and the availability and cost of fossil fuel and renewable resources. Outside Australia, there are legislated or planned renewable energy targets in over 85 countries, more than half of which are in developing countries. In some countries targets are aspirational. Targets can be met through renewable energy certificate schemes or various other policy instruments such as feed-in tariffs. Table 3.1 summarises the renewable energy policies implemented by a number of other key countries.

---

<sup>4</sup> Australian Government, ‘Enhancing the Renewable Energy Target Discussion Paper’ March 2010

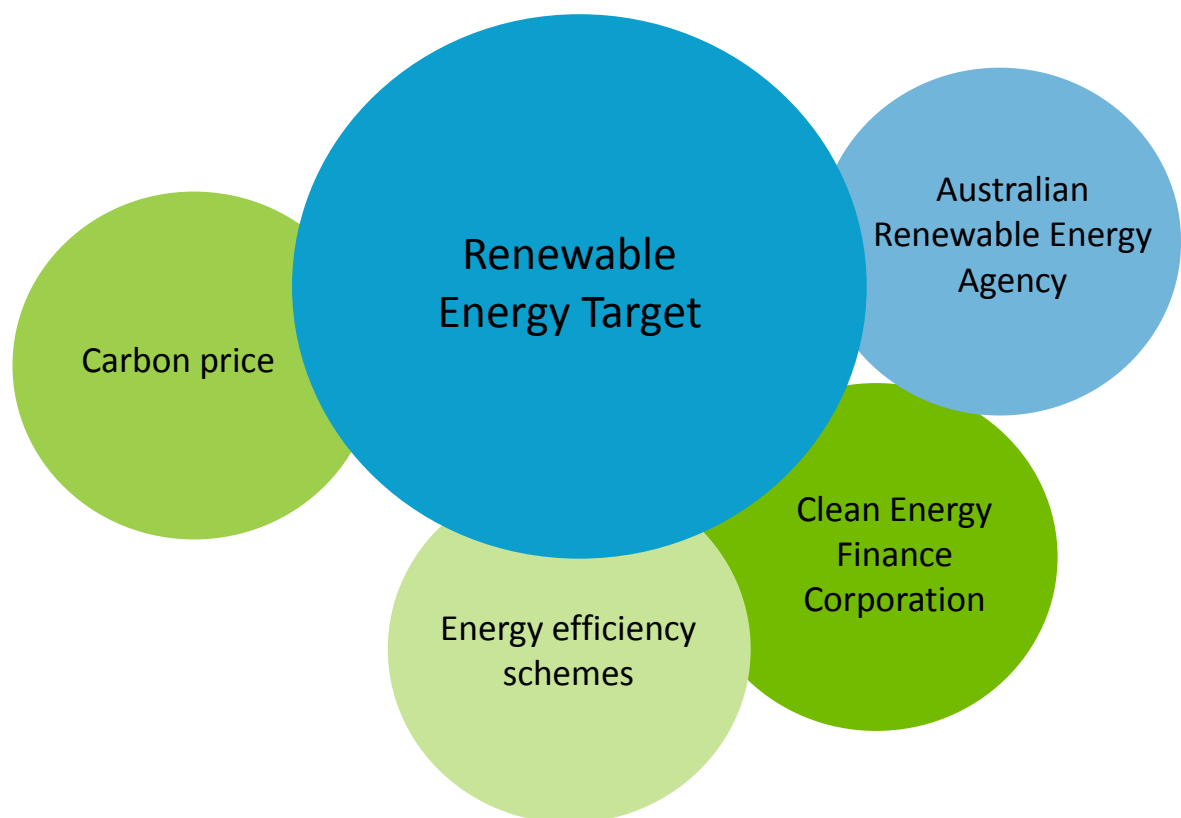
**Table 3.1 Renewable energy policies in other countries**

Country	Renewable energy policy commitment	Mechanism to achieve the target
Australia	20 per cent by 2020	Renewable energy certificate (REC) scheme
China	16 per cent by 2020	Feed-in tariffs
Germany	35 per cent by 2020	Feed-in tariffs
India	16 per cent by 2020	Feed-in tariffs (REC scheme under development)
Japan	25-35 per cent by 2030	REC scheme, feed-in tariffs
South Korea	11 per cent by 2030	REC scheme, feed-in tariffs
United Kingdom	15 per cent by 2020	REC scheme, feed-in tariffs
United States (30 states)	Varies from state to state	REC scheme, feed-in tariffs

## 4. THE RENEWABLE ENERGY TARGET IN CONTEXT

There are various policies and initiatives at both Commonwealth and state and territory level that affect the RET and the way it operates, figure 4.1 refers. While this review will consider these issues as part of the background and context for the operation of the RET, it is beyond the scope of the review to recommend amendments to policies beyond the RET.

**Figure 4.1: the Renewable Energy Target and other policies**



The Council of Australian Governments has prioritised a review of Government climate change programs to consider whether they are complementary to a carbon price, are effective and efficient and do not impose duplicative reporting requirements. This review is due to report to the Council on 8 February 2013. As noted above, the complementary measures review may draw on the report of the Authority.

### 4.1. Carbon Pricing Mechanism

The Carbon Pricing Mechanism came into effect on 1 July 2012. It works by requiring liable entities to report their emissions and surrender sufficient carbon units (equal to 1 tonne of emissions) to cover them. Entities may either reduce their emissions or purchase carbon units or international units. For the first three years of its operation (until 1 July 2015), the Carbon Pricing Mechanism has a fixed price

starting at \$23 per tonne of greenhouse gases emitted.<sup>5</sup> From 1 July 2015, the Carbon Pricing Mechanism shifts automatically to an emissions trading scheme with a flexible price. The total number of carbon units issued by the Government will be capped. Australian emissions covered by the scheme can only exceed the cap if approved domestic or international carbon offsets are surrendered instead.

The price of carbon units will fluctuate depending on supply and demand. For the first three years of this period (until 1 July 2018), there is a 'price collar', which means the price of a carbon unit cannot fall below the price floor (\$15) or rise above the price ceiling (\$20 above the expected international price).

The RET and the carbon price interact in terms of prices and the pattern of greenhouse gas abatement in Australia. In relation to prices, certificate prices under the RET can be viewed as the 'top up' level of subsidy required to make renewable energy viable. For example, say a wind farm's average cost of production is \$80/MWh. If the wholesale price of electricity was \$40/MWh, the wind farm would need an extra \$40/MWh to be viable. The price of certificates under the RET would need to be at least \$40 in order for the wind farm to be commercially viable.

The carbon price increases the cost of fossil fuel generation, which, in turn, would increase wholesale electricity prices. For example, if the price of carbon units increased the wholesale price of electricity from \$40/MWh to, say, \$60/MWh, the wind farm would now only require a 'top-up' of \$20/MWh in order to be viable. So long as certificate prices under the RET were at least \$20, the wind farm would be viable. *All other things being equal*, the higher the carbon price, the lower the certificate prices will be under the RET.

In practice, the price of certificates under the RET will be influenced by a broader range of factors, including changes in the cost of deploying renewable technology, changes in the RET target over time and changes affecting the demand and supply balance in the broader electricity market.

The RET also influences the pattern of emissions abatement in Australia. In the case of a closed emissions trading scheme, which did not permit the import of international units, a RET and carbon price would not drive more emissions reductions in Australia than a carbon price alone. The RET would independently drive the deployment of more low emissions technologies. In turn, this means that the demand for carbon units from the electricity sector would be lower than otherwise. This reduced demand would result in a lower price for carbon units. Faced with this lower carbon price, emitters in other sectors of the economy would be likely to do less abatement than they would have done if they had faced a higher carbon price. Total national emissions would equal the cap, but the RET would cause more abatement in the electricity sector and less in other industries than if the RET did not exist.

In the case of an emissions trading scheme with relatively unrestricted access to the international carbon market (such as Australia's Carbon Pricing Mechanism from 1 July 2015), reducing demand for units in the electricity sector is much less likely to cause a fall in the carbon price. This is because Australia is far more likely to be a price-taker from international carbon markets. If Australia is a price-taker, the effect of the RET would be to:

- reduce emissions and demand for units in the electricity sector (therefore increasing domestic abatement);
- not change the carbon price;

---

<sup>5</sup> The price rises in 2013-14 and 2014-15 reflect a 2.5 per cent rise in real terms allowing for 2.5 per cent inflation per year: Australian Government, *Securing a Clean Energy Future: the Australian Government's Climate Change Plan*, 2011, Appendix A, Table 1, page 103.

- not result in any changes to abatement activities of other sectors (which would respond to the unchanged international carbon price); and
- result in a reduction in the number of international units that Australian businesses purchase in order to comply with the Carbon Pricing Mechanism.

## 4.2. Research and development support

The Commonwealth Government also provides support for research and development of new renewable energy technologies. The *Clean Energy Future* plan created a new independent body, the Australian Renewable Energy Agency (ARENA), to provide early-stage grants and financing assistance for projects that strengthen renewable energy and energy efficiency technologies. ARENA administers funding of \$3.2 billion.

## 4.3. Energy efficiency schemes and regulations

Several energy efficiency schemes operate at state and territory level in Australia. These schemes encourage energy efficient behaviour, typically by placing an obligation on electricity retailers to retire a certain number of certificates per annum. Certificates can be created by activities that help energy consumers become more energy efficient – such as installing high efficiency hot water systems, air heaters and coolers and window treatments. Table 4.1 lists the existing energy efficiency levels operating at state or territory level.

As part of the *Clean Energy Future* plan, the Commonwealth Government is investigating a national ‘Energy Savings Initiative’ that would place an obligation on energy retailers to find and implement energy savings for householders and businesses. A working group of government officials has been asked to consider the potential of a nation-wide Energy Savings Initiative in Australia and will report on its work in the second half of 2012. If adopted, an Energy Savings Initiative would replace the energy efficiency schemes operating or planned at state and territory level.<sup>6</sup>

**Table 4.1: State and territory energy efficiency schemes**

State/territory	Name of scheme	Commencement date
Australian Capital Territory	ACT Energy Efficiency Improvements Scheme	Due to commence 1 January 2013. The scheme is based on the Victorian, NSW and South Australian schemes.
New South Wales	NSW Energy Savings Scheme	Commenced 1 July 2009.
South Australia	SA Residential Energy Efficiency Scheme	Commenced 1 January 2009.
Victoria	Victorian Energy Efficiency Target Scheme	Commenced 1 January 2009.

## Phase out of electric water heaters

In December 2010, all Australian governments except Tasmania agreed to phase out electric hot water systems. The phase out began by restricting the installation of electric systems in new detached, terrace and town houses (in all jurisdictions except Tasmania, Victoria and the Northern Territory). Existing houses will be regulated through changes to state and territory plumbing regulations that commence in line with individual jurisdictions’ decisions.

<sup>6</sup> Further information is available at the Department of Climate Change and Energy Efficiency website: <http://www.climatechange.gov.au/en/government/initiatives/energy-savings-initiative.aspx>

## 4.4. Clean Energy Finance Corporation

The Commonwealth Government has established the Clean Energy Finance Corporation (CEFC) as part of the *Clean Energy Future* plan. The CEFC is a \$10 billion fund dedicated to investing in renewable and low emissions and energy efficiency technologies in Australia. Fifty per cent or more of the CEFC's funds are to be allocated to renewable energy investment, and up to fifty per cent will be allocated to low-emissions and energy efficiency investment. The CEFC is intended to be commercially oriented and make a positive return on its investments.

## 4.5. Feed-in tariffs

Feed-in tariffs provide a guaranteed price for renewable energy generated or fed into the electricity grid – for example, x cents per kWh of electricity. Feed-in tariffs apply in some states and territories to support solar PV, micro-wind, micro-hydro and other small-scale renewable generation sources. In the past, some state and territory feed-in tariffs provided a significant level of support; however, most are now comparable to retail electricity tariffs. The state and territory feed-in tariffs combined with the SRES and the Solar Credits multiplier have contributed to high uptake of solar PV by households. The existence and level of feed-in tariffs is beyond the scope of this review.

## 4.6. Planning regulations

State and territory planning regulations may affect the level of renewable energy generation, its mix, and the geographic distribution of renewable power stations. For example, in 2011, Victoria enacted planning provisions imposing new requirements on the development of wind projects.<sup>7</sup> NSW has released draft planning guidelines also proposing changes to existing planning arrangements for wind farms.<sup>8</sup>

As noted in the Introduction, the RET review will take planning arrangements into account as part of the context for new renewable energy projects; however, the Authority will not be making any recommendations in relation to such arrangements.

It should also be noted that the National Health and Medical Research Council is investigating the impact of wind farms on human health. The Council is commissioning a systematic review of the scientific literature to examine the possible impacts of wind farms on human health, including audible and inaudible noise. See <http://www.nhmrc.gov.au/your-health/wind-farms-and-human-health> for further information.

---

<sup>7</sup> Amendment VC82, gazetted on 29 August 2011, amended the Victoria Planning Provisions to prohibit wind farms in certain locations and, in other locations, require the consent of a dwelling owner within 2km of the project. For more information, see <http://www.dpcd.vic.gov.au/planning/planningapplications/moreinformation/windenergy#policy>.

<sup>8</sup> Department of Planning and Infrastructure, NSW Government, *Draft NSW Planning Guidelines Wind Farms*, <http://www.planning.nsw.gov.au/Development/Onexhibition/tabid/205/ctl/View/mid/1081/ID/66/language/en-AU/Default.aspx>.

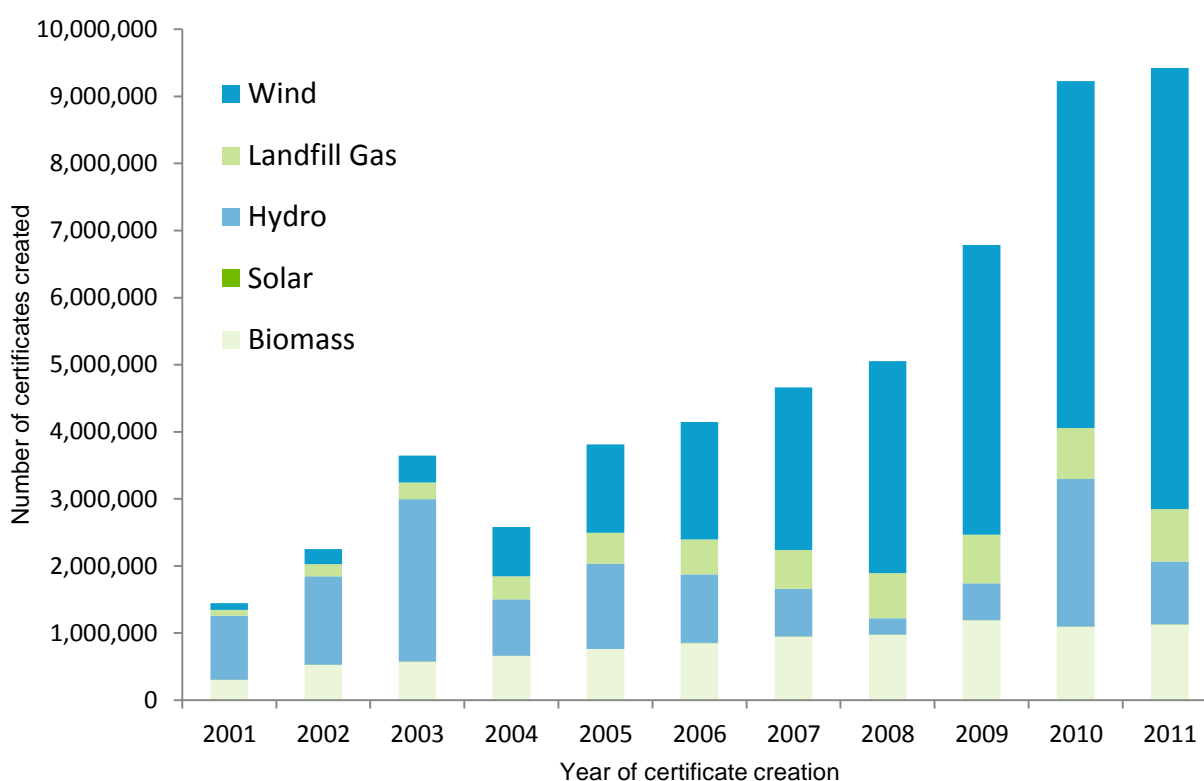
## 5. Large-scale Renewable Energy Target

The Large-scale Renewable Energy Target (LRET) creates demand for large renewable energy generation by setting annual renewable generation targets (in GWh). This target is then allocated amongst liable entities (largely electricity retailers), which must surrender sufficient large-scale generation certificates (LGCs) to meet their individual annual liability. Emissions-intensive, trade-exposed entities may apply for partial exemptions and certain self-generators are not liable under the scheme. Liable entities that do not surrender sufficient certificates to meet their liability must pay a shortfall charge.

LGCs are created by renewable power stations, which generate electricity from eligible renewable sources, such as wind, biomass and hydro. The LRET is technology neutral and does not distinguish between renewable energy sources. This is intended to ensure that the most competitive forms of renewable energy are deployed to meet the target at lowest cost. To date, most new renewable energy generation under the LRET has come from wind and biomass.<sup>9</sup>

Since the beginning of the RET in 2001, eligible renewable generation has increased from less than 2000 GWh in 2001 to over 9000 GWh in 2011 – see figure 5.1 showing the creation of LGCs over time.

**Figure 5.1 Large-scale generation certificate creation 2001-2011**



Note: The 2011 figures may increase as certificates may be created until the end of the year following generation.

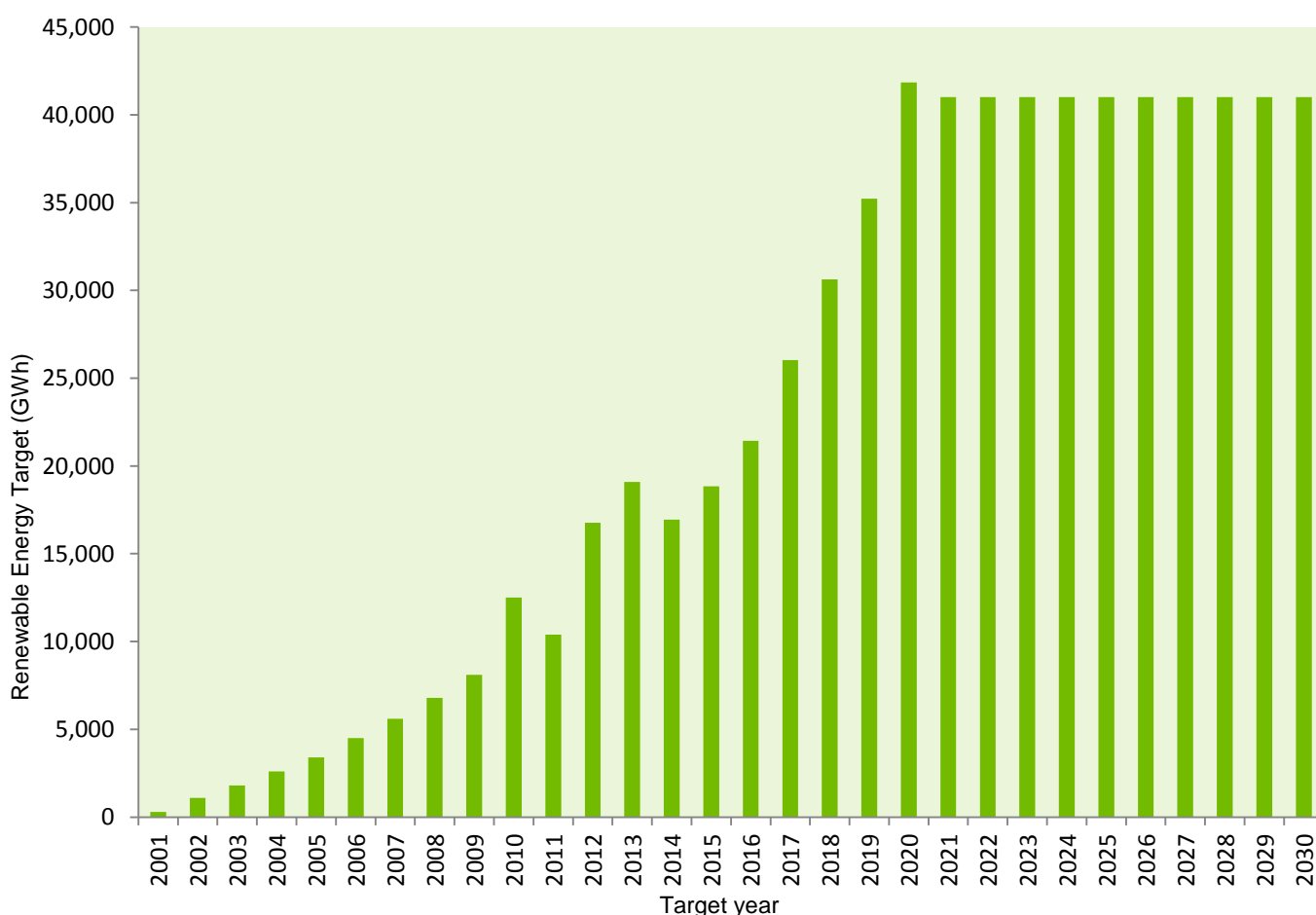
Source: Clean Energy Regulator, 15 July 2012

<sup>9</sup> Australian Government, ABARES Energy Update 2011, p 10.

## 5.1. The large-scale target

The LRET is set in annual gigawatt hour targets rising to 41,850 GWh<sup>10</sup> in 2020, see figure 5.2. The target remains at 41,000 GWh from 2021 to 2030. Several recent modelling exercises have considered the likelihood of the LRET target being met.<sup>11</sup> While these exercises have modelled different scenarios, work undertaken for the Commonwealth Treasury, the Australian Energy Market Commission and the Australian Energy Market Operator each indicate that the 41,000 GWh target may not be met without a carbon price to increase the wholesale price of fossil fuel generation, making renewable energy generation relatively more competitive. Recent modelling by the Australian Energy Market Commission indicated that most future renewable capacity under the LRET is likely to be in the form of wind and biomass.<sup>12</sup>

**Figure 5.2: Large-scale Renewable Energy Target 2001 - 2030 (GWh)**



Source: *REE Act*, s 40.

<sup>10</sup> The additional 850G Wh is the additional cap for waste coal mine gas as set out at s 40(1B) of the *REE Act*. See waste coal mine gas discussion below at '5.4 Eligibility Framework for the large-scale scheme' for further information.

<sup>11</sup> Recent reports include: Australian Energy Market Commission, *Impact of the enhanced Renewable Energy Target on energy market – final report* (2011); Australian Government, Treasury, *Strong Growth, Low Pollution* (2011); Australian Energy Market Operator, *2010 National Transmission Network Development Plan* (2010).

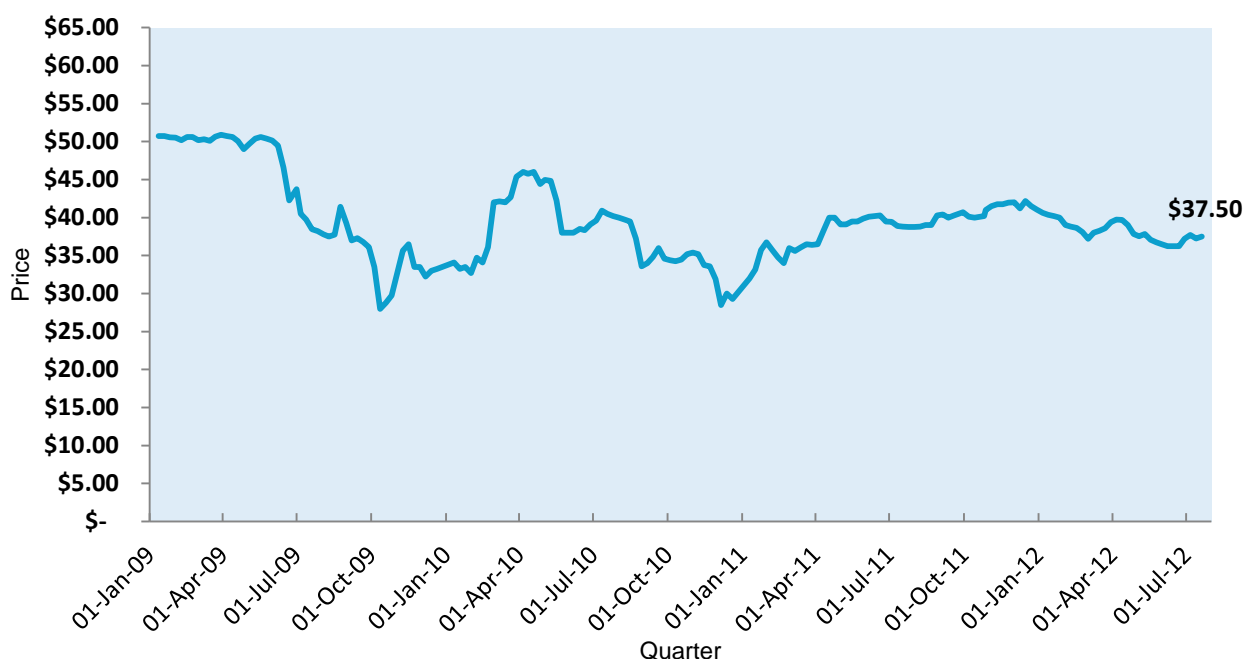
<sup>12</sup> Australian Energy Market Commission, *Impact of the enhanced Renewable Energy Target on energy market – final report* (2011)

## Target trajectory

As shown in figure 5.2, the LRET annual targets rise slowly at first, before a steeper increase from 2015 to 2020, with annual increases of around 4600 GWh per year. To meet this trajectory, significant investment in renewable energy capacity will be needed. Bloomberg New Energy Finance estimates that around 11GW of additional generation capacity (based on their projected mix of renewable generation), equating to around \$19.5 billion worth of investment to 2020, will be needed to reach the 41,000 GWh target.

Despite the increasing forward target, LGC prices have been relatively low since 2009 (see figure 5.3), apparently due to the continued excess of certificates remaining from small-scale technologies before the scheme was separated (the RET scheme allows unlimited banking of certificates). The *REE Act* made some provision for excess certificates: if there were over 34,500,000 valid certificates in 2010, the 2012 and 2013 targets are increased, this is balanced by a reduction in the targets from 2016-2019. While this increase has addressed the oversupply of certificates to some extent, it is estimated there are still sufficient certificates in current circulation to meet the 2012 and 2013 LRET targets.<sup>13</sup>

**Figure 5.3: Large-scale generation certificate price (spot rate), January 2009 – July 2012**



Source: Nextgen, <http://www.nges.com.au/>.

## The 20 per cent by 2020 commitment

The Commonwealth Government proposes the equivalent of at least 20 per cent of Australia's electricity supply should come from renewable resources by 2020 (the '20 by 2020 commitment'). This is a policy commitment and is not directly referenced in the *REE Act*, which sets rising annual targets in

<sup>13</sup> It is estimated that there are currently around 36 million valid certificates in circulation – the 2012 and 2013 targets require the surrender of around 16 million and 19 million certificates respectively.

gigawatt hours, rather than a percentage of electricity supply. In 2009, with the expansion of the RET, Parliament legislated a 2020 target of 45,000 GWh. The Explanatory Memorandum states that the expanded scheme and the 45,000 GWh target are the means of 'delivering' the Government's 20 by 2020 commitment. When the RET was separated into the LRET and SRES, the LRET target was revised to 41,000 GWh. As noted earlier, the SRES is an uncapped scheme but has an implicit target of 4000 GWh.

Reflecting the target in gigawatt hours has been established practice throughout the history of the RET – for example, the 'additional 2 per cent' MRET commitment was represented as 9500 GWh in the original legislation. The form of the target and whether it should remain as a fixed gigawatt hour target or be reflected as a percentage of future electricity demand was considered in the 2003 Tambling Review, which concluded:

The Review Panel [is] convinced ... that any future target should continue to be expressed in terms of a fixed GWh level. By their nature, projections of electricity demand contain a degree of uncertainty. The changes in projected electricity demand that have occurred since the MRET was announced demonstrate that a percentage-based target would require the corresponding generation level to be regularly revised. This would adversely impact on market certainty. Risk is a key factor in investment decision making, so that any changes to MRET that would reduce market certainty would also reduce the prospect of attracting the required financial backing for projects. The Review Panel considers that a fixed target is more compatible with market certainty, with MRET's industry development objective, which defines a level of renewable energy generation rather than a percentage of a fluctuating electricity market over which the industry has no control.<sup>14</sup>

The 20 by 2020 commitment relates to *total* renewable generation in 2020, not just renewable generation from the RET, covering:

**41,000 GWh (LRET) + SRES contribution + generation from baseline capacity**

For the reasons mentioned in the Tambling Review, the relationship of the LRET GWh target to the 20 by 2020 policy commitment will remain imprecise. Not only is 2020 electricity demand unknown, but so are the contributions from the (uncapped) SRES, and the future of output of pre-1997 capacity.<sup>15</sup> The latter can vary as most of the pre-1997 capacity is hydro and is affected by levels of rainfall. All of these uncertainties affect the percentage of electricity supply that will be contributed by renewable energy sources in 2020.

That said, the latest electricity forecast by the Australian Energy Market Operator has annual energy requirements from the electricity grid increasing more slowly than expected<sup>16</sup> (figure 5.4) and, if current trends continue, it is likely that the amount of renewable generation in 2020 could be above 20 per cent of electricity supply.

The 2001 MRET experience provides a useful illustration of the uncertainties regarding the relationship of a gigawatt hour target and a percentage policy commitment. The MRET 9500 GWh target supported a policy commitment of an additional two per cent of electricity supply from renewable generation by 2010. A number of factors such as higher than expected GDP growth resulted in electricity supply in 2010 being greater than originally expected. Because of this, 9500 GWh equated to less than

---

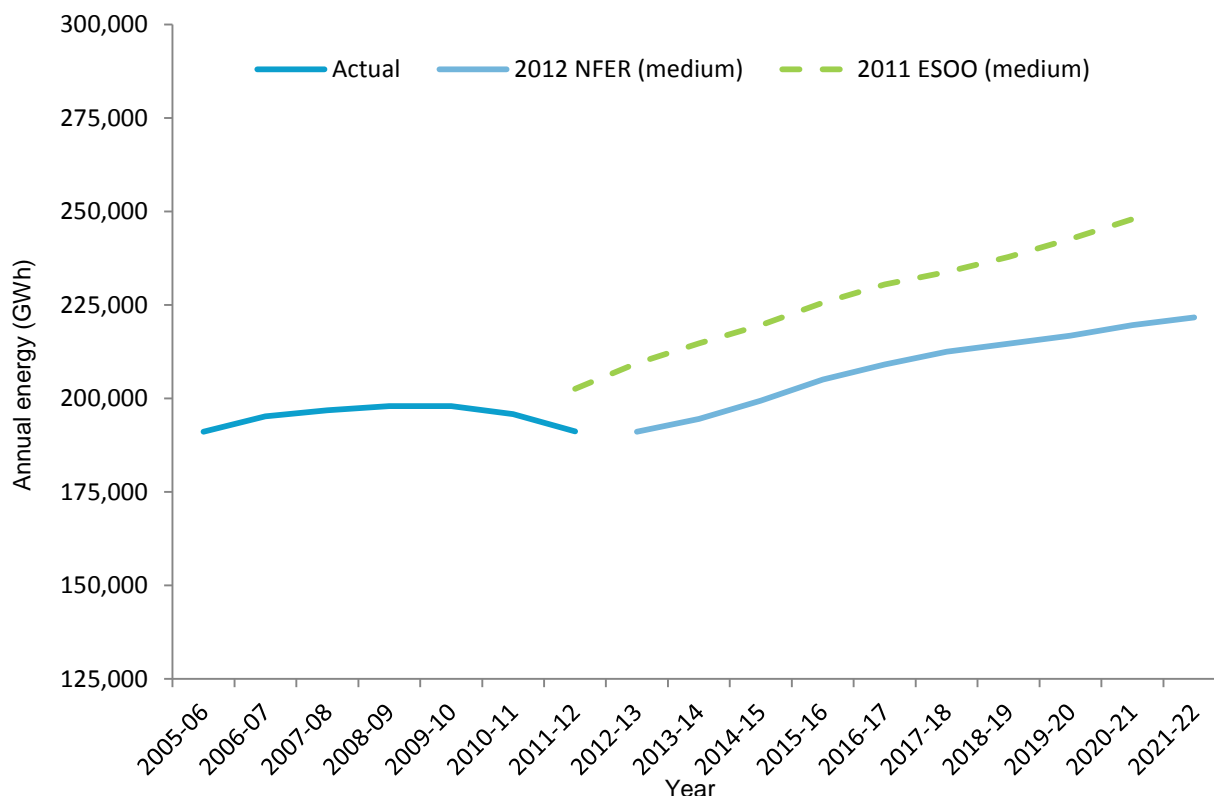
<sup>14</sup> MRET Review Panel, *Renewable Opportunities: A Review of the Operation of the Renewable Energy (Electricity) Act 2000* (September, 2003), p 119-120.

<sup>15</sup> The baseline for a renewable power station is generally set at the average amount of electricity generated over the 1994, 1995 and 1996. Actual generation in any year will vary and may be more or less than the baseline average.

<sup>16</sup> Australian Energy Market Operator, *National Electricity Forecasting Report*, 2012, p 5-11.

two per cent of electricity supply in 2010. The percentage could have been around 1.4 per cent or 0.1 per cent depending on the 2010 electricity supply figures used.<sup>17</sup>

**Figure 5.4: Annual energy forecasts for the National Electricity Market**



Note 1: The figure above depicts annual energy forecasts only for the National Electricity Market and does not cover the Northern Territory and Western Australia.

Note 2: 2011 forecasts were produced by AEMO aggregation of individual regional forecasts from different sources (published in the Electricity Statement of Opportunities (ESOO)); and 2012 forecasts were the first NEM-wide forecasts developed by AEMO alone (published in the National Electricity Forecasting Report (NEFR)).

Source: Australian Energy Market Operator, *National Electricity Forecasting Report*, 2012 p.3-4 -3-5.

<sup>17</sup> 1.4 per cent uses liable electricity under the RET (as published by the Office of the Renewable Energy Regulator in 2011) as 2010 electricity supply; whereas the 0.1 per cent uses Bureau of Resources and Energy Economics 2009-10 electricity generation data as published in the *Energy in Australia Report 2012*.

## Questions

*Are the existing 41,000 GWh LRET 2020 target and the interim annual targets appropriate? What are the implications of changing the target in terms of economic efficiency, environmental effectiveness and equity?*

*Is the target trajectory driving sufficient investment in renewable energy capacity to meet the 2020 target? How much capacity is needed to meet the target? How much is currently committed? Has the LRET driven investment in skills that will assist Australia in the future?*

*In the context of other climate and renewable policies, is there a case for the target to continue to rise after 2020?*

*Should the target be a fixed gigawatt hour target, for the reasons outlined by the Tambling Review, with the percentage being an outcome?*

*Should the target be revised to reflect changes in energy forecasts? If so, how can this best be achieved – as a change in the fixed gigawatt hour target, or the creation of a moving target that automatically adjusts to annual energy forecasts? How should changes in pre-existing renewable generation be taken into account? What are the implications in terms of economic efficiency, environmental effectiveness and equity?*

## Clean Energy Finance Corporation–funded projects

A further consideration is the relationship between the LRET target and the Clean Energy Finance Corporation (CEFC). The CEFC Expert Panel, which was appointed to make recommendations regarding the design of the CEFC, recommended that any investments by the CEFC should not affect a project's eligibility for large-scale generation certificates under the RET.<sup>18</sup> The Government accepted this recommendation, along with the other recommendations of the Expert Panel. The CEFC Expert Panel did not address the appropriateness of any adjustment to the overall 20 per cent target as this would be reviewed separately by the Climate Change Authority.

There are two broad options for the LRET target and its relationship with CEFC investment: one is to leave the target unaltered and the second is to increase the target. If the target remains unaltered, CEFC investment would most likely affect the mix of renewable energy generation, rather than increasing renewable generation beyond the 41,000 GWh target. In other words, any CEFC funded renewable energy project would most likely also generate LGCs. This generation would replace another renewable energy project that would otherwise have happened under the LRET.

The second option would be to increase the LRET target so that any LGCs generated by CEFC funded projects are additional to the existing 41,000 GWh target. This would require a prediction of how many certificates CEFC funded projects are likely to produce out to 2030, which is likely to be difficult in the short-medium term.

---

<sup>18</sup> CEFC Review Panel, *The CEFC Expert Review: Report to the Government* (2012) recommendation 3.4, p 22.

## Question

*What are the costs and benefits of increasing, or not increasing, the LRET target for Clean Energy Finance Corporation-funded activities? What are the implications in terms of economic efficiency, environmental effectiveness and equity?*

## 5.2. Liability framework and surrender

### Liable entities

Demand for renewable energy is created by requiring certain entities to surrender a set number of certificates – equal to 1 MWh of renewable energy generation for compliance purposes– each year. Entities are liable if they make wholesale purchases of electricity from grids of greater than 100 MW capacity.<sup>19</sup> In practice, liable entities are primarily electricity retailers.

There is no liability for electricity purchased from a grid of less than 100 MW. All of the major grids in Australia are over 100 MW, including the National Electricity Market and the major grids in Western Australia and the Northern Territory – see Table 5.1.

**Table 5.1: Electricity grids over 100MW**

Grid	Geographic coverage
National Electricity Market (NEM)	ACT, NSW, Queensland, SA, Tasmania, Victoria
Mt Isa grid	(Queensland)
South-West Interconnected System (SWIS)	South-west WA, including Perth
North-West Interconnected System (NWIS)	North-west WA, including Karratha and Port Hedland
Alice Springs grid	Northern Territory
Darwin-Katherine grid	Northern Territory
Gove grid	Northern Territory
Mount Keith Leinster grid	Western Australia
Newman grid	Western Australia
Telfer grid	Western Australia

Source: Australian Government, Clean Energy Regulator, *Off-grid systems and Solar Credits*, 11 July 2012, <http://ret.cleanenergyregulator.gov.au/Solar-Panels/Solar-Credits/solar-credits>.

### Calculating individual liability

The annual LRET target is split between all liable entities on the basis of market share. This is done through the application of an annual percentage - the Renewable Power Percentage (RPP) – to an entity's liable electricity acquisitions.

The RPP is set in the *REE Regulations*. In setting the RPP each year, the Minister must take into consideration the LRET GWh target for that year; the estimated total electricity sold on liable grids for that year; any surplus or deficit of certificates from previous years; and the amount of all partial exemptions (see below '5.3 Exemptions').

<sup>19</sup> Under the *REE Act*, liability to surrender certificates attaches to a 'relevant acquisition of electricity', defined as a wholesale acquisition or where an end-user purchases electricity directly from a generator: ss 31 and 32. In the second case, the generator is liable for the acquisition as the 'notional wholesaler': s 33.

The RPP for a given year must be set by 31 March of that year. The RPP for 2012 is 9.15 per cent; the RPP for 2011 was 5.62 per cent. The RPP fluctuations largely mirror fluctuations in the LRET target, see figure 5.2.

An entity's liability under the LRET is calculated with reference to the total electricity actually acquired from liable grids (over 100MW) in that year and the 'Renewable Power Percentage' (RPP):

**RPP of liable electricity acquisitions = number of certificates an entity must surrender that year**

Box 5.1 sets out an example.

### Box 5.1: Example of calculation of liability for a single entity

A liable entity purchases 110,000 MWh of electricity in 2012 (relevant acquisitions). The entity also has 10,000 MWh of partial exemption certificates (received from customers conducting emissions intensive trade exposed activities in 2012 – see '5.3 exemptions' below).

Liability =  $(110,000 - 10,000) \times 9.15/100 = 9,150$

The entity must surrender 9,150 LGCs.

## Surrender and shortfall charge

Liabilities under the LRET must be acquitted by 14 February of the following year. Liable entities are only able to calculate their exact liability at the end of a calendar year when they know the amount of electricity they have acquired.

If a liable entity does not surrender enough LGCs to cover its liability it must pay a shortfall charge of \$65/MWh. Since the purchase of LGCs is tax deductible, but the shortfall charge is not, this equates to around \$92/MWh after tax.<sup>20</sup> The (tax effective) value of the shortfall charge potentially acts as a cap on the market price of LGCs. If the price of LGCs rose beyond \$92, liable parties may be better off paying the shortfall charge and not purchasing LGCs. It is possible that some liable parties may be willing to pay a premium above the shortfall charge to comply for reputational reasons.

## Questions

*Is the calculation of individual liability using the RPP the most appropriate methodology?*

*Is it appropriate to set the RPP by 31 March of the compliance year?*

*Is the shortfall charge set at an appropriate level to ensure the 2020 target is met?*

*Are there other issues relating to the liability or surrender framework the Authority should consider?*

## 5.3. Exemptions

There are two different forms of exemption under the RET: a partial exemption framework for emissions intensive trade exposed (EITE) businesses, established in 2009, and an exemption for self-generators, which has been in operation since the establishment of the MRET in 2001.

<sup>20</sup> Assuming a company tax rate of 30 per cent.

The exemption framework does not affect the overall level of renewable energy generated under the RET. The design of the scheme means renewable generation not covered by exempted entities is made up by increased liability for other participants.

## Emissions-intensive, trade-exposed activities

Entities carrying on certain emissions-intensive, trade-exposed (EITE) activities may apply annually for a partial exemption certificate (PEC). The Government's rationale for creating this partial exemption was to recognise the additional cost of compliance borne by entities carrying on EITE activities in the context of a carbon price.

Recognising the additional cost of compliance with the expanded RET targets borne by entities carrying on emissions-intensive, trade-exposed (EITE) activities in context of the carbon price mechanism, the RET legislation provides that such entities may apply annually for a partial exemption certificate (PEC).

The partial exemption framework identifies EITE activities. There are currently more than 30 eligible EITE activities, including production of glass containers, integrated production of lead and zinc, manufacture of newsprint, carton board manufacturing, and petroleum refining.

Businesses conducting an eligible EITE activity may apply to the Clean Energy Regulator for a PEC in relation to liable electricity consumed for a particular year. PECs are not tradeable certificates – the PEC names a particular liable entity (usually the company's electricity supplier as the EITE company is not normally a liable entity under the RET). The PEC can only be traded to the named liable entity – the value is negotiated between the EITE company and the RET liable entity.

The amount of the PEC for a year (in megawatt hours) is calculated based on a range of inputs, including the EITE activity's electricity intensity per unit of output, the quantity of output produced and partial exemption percentage (maximum of 90 per cent for highly emissions-intensive activities and up to 60 per cent for moderately emissions-intensive activities).

The partial exemption framework under the RET is similar to, but not the same as, the Jobs and Competitiveness Program under the Carbon Pricing Mechanism. The information and data required to determine the assistance are largely the same – for example, generally the same EITE activities are eligible and the same production data is required. The exemption is calculated differently; however, largely because the RET exemption applies to electricity and not greenhouse gas emissions.

The partial exemption framework was introduced in 2009 when the RET was expanded, and it applies only to the liability above that which would have applied under the original MRET for that year.

## Self-generator exemption

Certain self-generators are not liable under the RET. This dates back to the establishment of the MRET and a government agreement not to cover self-generators under the scheme.<sup>21</sup>

To be exempt, self-generators must produce the electricity themselves, consume it and deliver it on transmission/distribution lines which operate solely for the purpose of transferring electricity between those two points. An entity cannot sell any part of the electricity to a third party: should this occur, the grid becomes liable and the exemption is limited to consumption within a 1 km radius.

In its *Review of Specific RET Issues*, the Council of Australian Governments' considered whether the self-generator exemption should be extended.<sup>22</sup> The majority recommendation was not to extend the

---

<sup>21</sup> Explanatory Memorandum, *Renewable Energy (Electricity) Bill*, p 55.

self-generator exemption as the scheme ‘is a national scheme that requires national participation, and ... extending the exemption would impose additional costs on liable parties [and] [t]his would occur in the absence of clear justification of the assertion that significant project investments would not occur, be substantially delayed or be substantially sub-optimised in scope in the absence of the broader exemption’. The Review also noted that the EITE exemptions should reduce the impact of the RET for the most materially affected and trade-exposed existing or planned projects.

Western Australia dissented from the majority view maintaining that the self-generation provision should be expanded. Western Australia argued that the current provisions were unduly restrictive and did not fully take account of the size and complexity of remote resource projects.

## Questions

*What are the costs and benefits of the current exemption arrangements?*

*The self-generator exemption pre-dates the EITE partial exemptions – are both required? If so, why?*

*What, if any, changes to the current exemption arrangements should be made? What would be the impact of those changes on directly affected businesses and the broader community?*

## 5.4. The large-scale eligibility framework

Under the LRET, accredited power stations using eligible renewable energy sources may create large-scale generation certificates (LGCs). These certificates may be sold (separately to the sale of generated electricity) and used by liable entities to acquit their liability under the LRET.

The LRET is designed to encourage additional generation from both existing renewable energy power stations, as well as the establishment of new renewable power stations. As such, LGCs are only issued for renewable energy generation in a particular year above a 1997 baseline. For renewable power stations operating before 1997, the baseline is generally the average amount of electricity generated annually over the 1994, 1995 and 1996 years. These power stations can only receive LGCs for generation *additional* to that baseline. For power stations that did not exist before 1 January 1997, the baseline is set at zero.

### Eligible renewable energy sources

The *REE Act* establishes a list of eligible renewable energy sources. To generate LGCs, a power station must generate electricity from one of these sources:

- hydro;
- wave;
- tide;
- ocean;
- wind;
- solar;
- geothermal aquifer;
- hot dry rock;

---

<sup>22</sup> Renewable Energy Sub Group, *Report to the Council of Australian Governments’ Select Council on Climate Change*, COAG Review of Specific RET Issues (2012), p 6.

- energy crops;
- wood waste;
- agricultural waste;
- waste from processing of agricultural products;
- food waste;
- food processing waste;
- bagasse;
- black liquor;
- biomass-based components of municipal solid waste;
- landfill gas; and
- sewage gas and biomass-based components of sewage.

Further eligible renewable sources may be added in regulations. This list of sources is consistent with the definition set out in the Intergovernmental Panel on Climate Change 2011 report, *Renewable Energy Sources and Climate Change Mitigation*.<sup>23</sup>

The *REE Act* specifically states that fossil fuels and materials or fossil fuel waste products derived from fossil fuels are not 'eligible renewable energy sources'.<sup>24</sup>

## Waste coal mine gas

Waste coal mine gas is the one exception to this rule. Waste coal mine gas was included as an 'eligible source' in 2009 to provide transitional assistance for existing waste coal mine gas-based generation projects that would be affected by the commencement of a carbon price and consequent cessation of the NSW Greenhouse Gas Reduction Scheme.<sup>25</sup> The *REE Act* limits eligibility to waste coal mine gas power stations existing in 2009. Waste coal mine gas ceases to be an 'eligible source' in 2020.

To ensure that generation from waste coal mine gas does not displace renewable energy generation under the RET, waste coal mine gas generation has annual targets up to 2020,<sup>26</sup> additional to the overall RET target.

In its *Review of Specific RET Issues*, the Council of Australian Governments recommended that new waste coal mine gas capacity not be included in the RET, concluding 'not only would extending eligibility to new waste coal mine gas increase the cost of the RET to accommodate a non-renewable energy source, it would also set a precedent for other low emissions technologies and shift the focus of the RET scheme away from renewable energy'.<sup>27</sup>

<sup>23</sup> The report defines renewable energy as 'any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate the equals or exceeds its rate of use': p 958.

<sup>24</sup> *REE Act*, s17(2). In effect this means that fossil fuels could not be added as an eligible renewable energy source through regulations.

<sup>25</sup> Wong, Combet 'Transitional Assistance for Waste Coal Mine Gas under the Renewable Energy Target' (media release, PW 242/09, 17 August 2009).

<sup>26</sup> 425GWh in 2012, 850 GWh from 2013 to 2020): *REE Act*, s 40(3).

<sup>27</sup> Renewable Energy Sub Group, *Report to the Council of Australian Governments' Select Council on Climate Change*, COAG Review of Specific RET Issues (2012), p 67.

## Questions

*Is a list approach to 'eligible renewable sources' appropriate?*

*Are there additional renewable sources which should be eligible under the REE Act?*

*Should waste coal mine gas be included in the RET? Should new capacity of waste coal mine gas be included in the RET?*

*What would be the costs and benefits of any recommended changes to eligible renewable sources?*

## 5.5. LRET administration

The Clean Energy Regulator administers the LRET. There are registration and accreditation requirements which must be met before LGCs can be created.

### Registration

A person or company must register with the Clean Energy Regulator before it can create LGCs. For the LRET, the registered person is normally a representative of the power station, which manages the power station's certificate generation. Registration involves a proof of identity check. There is also provision for a 'fit and proper person' test.

### Accreditation of renewable energy power stations

To generate LGCs, a power station must be accredited under the REE Act. The accreditation process confirms:

- that the system is a power station;
- that some or all of the power generated by the power station is generated from an eligible energy source;
- that the power station uses appropriate metering; and
- that the power station operates in accordance with any relevant laws.

The Regulator must decide an application within six weeks of receiving it.

Accreditation generally happens once the power station has been built, although there is provision for provisional accreditation to assist project developers secure project finance.

## Question

*Are the LRET accreditation and registration procedures appropriate and working efficiently?*

## 6. Small-scale Renewable Energy Scheme

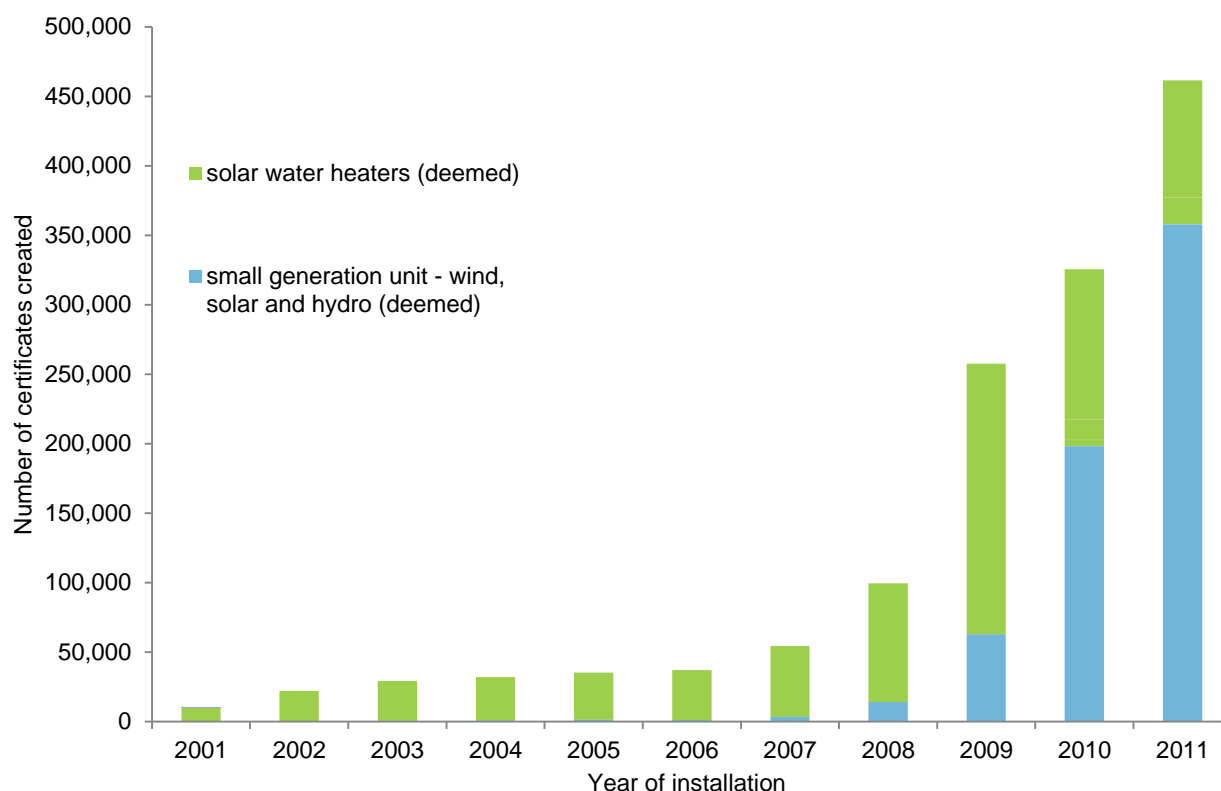
The Small-scale Renewable Energy Scheme (SRES) was established to assist households, small business and community groups with the upfront cost of installing small-scale renewable energy systems.<sup>28</sup> Owners of systems (or their designated agents) are able to receive small-scale technology certificates (STCs) upfront through deeming arrangements that estimate the amount of electricity the system would generate or displace over its lifespan.

Small-scale renewable systems have been included in the RET from its inception in 2001. Historically, small-scale uptake was relatively low as these systems were not competitive with large-scale projects. This changed in 2009, when the Commonwealth Government introduced its Solar Credits program, which provided multiple certificates for each megawatt hour of eligible small-scale solar PV, wind and hydro generation. Solar Credits, together with high feed-in tariffs in some states and territories and falling technology costs, led to a dramatic increase in small-scale systems – refer figure 6.1. This in turn led to large numbers of certificates, driving down their price and creating uncertainty among investors in both large-scale and small-scale renewable energy projects. The Commonwealth Government response was to separate the scheme into large-scale and small-scale components in 2010, with separate liability obligations and certificates. These changes came into effect in 2011.

---

<sup>28</sup> Wong and Combet, (Interview transcript, 47/10, 25 February 2010).

**Figure 6.1: Approved small scale installations, 2001 - 2011**



Note: 2011 installation numbers will continue to increase due to the 12 month creation rule.

Source: Clean Energy Regulator, 15 July 2012.

It is expected that certificate generation from small-scale technologies will stabilise in the near future: while technology costs continue to fall, the multiplier has been reduced and will end by mid-2013, and state and territory feed-in tariffs have been scaled back.

A separate SRES means that small-scale and large-scale technologies do not directly compete and different certificate prices (and hence subsidy levels) provided by the two schemes are likely. This has been borne out in experience to date.

## Questions

*What do you consider to be the costs and benefits of having a separate scheme for small-scale technologies?*

*Should there continue to be a separate scheme for small-scale technologies?*

### 6.1. Small-scale target

Unlike the LRET, the SRES does not have a pre-set 2020 target. Instead, annual liability is set on the basis of the expected number of STCs that will be created. In this sense, the SRES is an 'uncapped' scheme as the level of liability tracks certificate creation. This was justified on the grounds that it

ensured that any installation of small-scale technologies would be eligible for support under the SRES.<sup>29</sup>

In 2010, when the RET scheme was separated, the SRES was 'assigned' around 4000 GWh of the then-total 45,000 GWh 2020 target. Based on recent installation data obtained from the Clean Energy Regulator, it is likely the SRES will generate more than 4000 GWh by 2020. Due to the uncapped nature of the scheme, the greater than expected uptake has led to greater liability for liable entities.

## Questions

*Is the uncapped nature of the SRES appropriate?*

*What do you see as being the costs and benefits of an uncapped scheme in terms of economic efficiency, environmental effectiveness and equity?*

*Is the SRES driving investment in small scale renewable technologies? Is it driving investment in skills?*

## 6.2. Small-scale liability framework and surrender

The SRES liability framework operates in the same way as the LRET - liability attaches to wholesale electricity purchases from an electricity grid of over 100MW (see '5.2 liability framework and surrender'). Also like the LRET, individual liability is determined by applying a percentage to the amount of liable electricity purchased. For the SRES, this percentage is known as the Small Technology Percentage (STP).

The STP is calculated differently from the LRET RPP. The STP is set annually based on a forecast of the number of STCs to be created that year. Any difference between the forecast and the actual creation figures is taken into account when setting the next year's STP. The STP must be set in regulations by 31 March of that year. At this time, the Clean Energy Regulator must also publish non-binding estimates of the STP for the next two years. The STP for 2011 was 14.80 per cent and for 2012 is 23.96 per cent. The STP forecasts for 2013 and 2014 are 7.94 per cent and 6.10 per cent respectively.<sup>30</sup> The variability of the STP is due to higher than expected certificate creation in 2010 and 2011, which is expected to fall from 2012 onwards.

An entity can calculate its liability by applying the STP to its liable electricity acquisitions for that year:

**STP of liable electricity acquisitions = number of certificates an entity must surrender that year**

Liable entities must surrender STCs quarterly. Quarterly surrender was established to encourage timely purchase of STCs by liable entities and, hence, a steady cash flow to STC holders.<sup>31</sup> The surrender timetable is set out at table 6.1.

<sup>29</sup> Australian Government, 'Enhancing the Renewable Energy Target Discussion Paper', March 2010.

<sup>30</sup> Clean Energy Regulator, *Small Scale Technology Percentage*, <http://ret.cleanenergyregulator.gov.au/For-Industry/Liable-Entities/stp>.

<sup>31</sup> Explanatory Memorandum, *Renewable Energy (Electricity) Amendment Bill 2010*, p 26, para 122. See also Australian Government, 'Enhancing the Renewable Energy Target Discussion Paper' March 2010.

**Table 6.1: Small-scale technology certificate surrender timetable**

Quarter	Surrender Date	Description
1	28 April	Surrender 35% of annual SRES liability based on previous years liable electricity acquisitions minus any exemptions
2	28 July	Surrender 25% of annual SRES liability based on previous years liable electricity acquisitions minus any exemptions
3	28 October	Surrender 25% of annual SRES liability based on previous years liable electricity acquisitions minus any exemptions
4	14 February of the following year	Surrender remaining STCs to fully acquit liability

If a liable entity does not surrender the correct number of STCs by the legislated due date, it must pay a shortfall charge. The short fall charge for the SRES is the same as for the LRET, namely \$65/MWh (equivalent to \$92/MWh when tax is taken into account).

### 6.3. Small-scale eligibility framework

Under the SRES, solar water heaters and small generation units may generate STCs. To be eligible a water heater must be listed in the Clean Energy Regulator's 'Register of Solar Water Heaters' and meet certain Australian standards. Eligible water heaters include solar hot water systems and air heat pumps.<sup>32</sup> Eligible small generation units are defined as:

- solar PV with a capacity limit of 100 kW;
- micro hydroelectric systems with a capacity limit of 6.4 kW; and
- small wind turbine systems with a capacity limit of 10 kW.

To be eligible under the SRES, the annual generation of a small generation unit must not exceed 250 MWh for solar PV and 25 MWh for small wind and hydro.

Historically, solar water heaters were the most popular small-scale system but since 2010, solar PV has generated greater numbers of STCs – see table 6.2. The increased uptake of solar PV is most likely attributed to the combined effects of the Solar Credits multiplier, high state and territory feed-in tariffs and falling system costs. Small-scale wind and hydro systems have had much lower uptake.

**Table 6.2: Installations from small-scale fuel sources**

Year	Solar PV	Wind	Hydro	Solar Water Heaters	Total
2001	118	18	3	10,075	10,214
2002	251	11		21,839	22,101
2003	662	13		28,653	29,328
2004	1089	17		30,991	32,097
2005	1403	11		33,964	35,378
2006	1115	6		35,924	37,045
2007	3479	12		50,977	54,468
2008	14,064	43	1	85,385	99,493
2009	62,916	58	5	194,695	257,674
2010	198,208	136	3	127,093	325,440
2011	357,869	44	1	103,420	461,334
<b>Total</b>	<b>771,288</b>	<b>370</b>	<b>13</b>	<b>747,229</b>	<b>1,518,900</b>

Source: Clean Energy Regulator, 15 July 2012

<sup>32</sup> Air heat pumps may only have a volumetric capacity of 425 litres or less: *REE Act* s 21(4).

## Addition of new technologies to the SRES

The Explanatory Memorandum associated with the separation of the RET scheme indicated this review could be used as a means of assessing whether new technologies should be eligible to generate STCs under the SRES.<sup>33</sup>

In its *Review of Specific RET Issues*, the Council of Australian Governments' considered whether any new small-scale technologies should be included in the SRES.<sup>34</sup> The Review recommended against extending eligibility to any new technologies, primarily because it would add to the cost of the scheme due to its uncapped nature. The Review also considered that no new small-scale generation technologies were sufficiently prospective for inclusion in the RET.

The uncapped nature of the SRES means that the addition of new eligible sources is likely to increase the costs of the scheme, unless these new sources displace other eligible SRES sources at the same or lower cost.

## Displacement technologies

A further issue for consideration is the role of existing, and potentially new, displacement technologies in the SRES. The RET has included certain displacement technologies - solar water heaters and air heat pumps - since its establishment in 2001. Displacement technologies do not generate electricity, but displace electricity that would have otherwise been used. For this reason, they are often seen as energy efficiency measures.

The report of the Council of Australian Governments' *Review of Specific RET Issues* recommended against adding two prospective technologies (solar assisted cooling and geothermal heat pumps) to the SRES as they were displacement technologies. The report stated that these technologies were better suited to support under an energy efficiency scheme, rather than the RET, which was designed to support electricity generation.

## Questions

*What is the appropriate process for considering and admitting new technology to the SRES?*

*Should any additional small-scale technologies be eligible to generate STCs?*

*Is it appropriate to include displacement technologies in the SRES?*

*Should additional eligible technologies be limited to generation technologies?*

## Deeming

Unlike the LRET, the SRES provides certificates upfront, rather than ex-post based on actual renewable generation. Small-scale units are 'deemed' to generate a certain number of STCs, which are issued upon installation of the system. Different deeming calculations apply to different small-scale technology systems based on the capacity of a system, the location it is installed and the average warranty period for particular systems (one or five years for small wind and hydro systems; ten years for solar water heaters; and up to 15 years for solar PV systems).

<sup>33</sup> Explanatory Memorandum, *Renewable Energy (Electricity) Amendment Bill 2010*, p8.

<sup>34</sup> Renewable Energy Sub Group, *Report to the Council of Australian Governments' Select Council on Climate Change*, COAG Review of Specific RET Issues (2012), p 11.

Upfront provision of STCs allows householders and small businesses to receive support to offset the initial capital outlay required to acquire and install a small-scale technology system. It is also practical given the small-scale of generation: each unit is likely to only generate one or two certificates per year – it would be time-consuming, costly and inconvenient for householders and businesses to measure their output and apply annually for certificates, and for the Clean Energy Regulator to verify and issue certificates on this basis.

Deeming arrangements do create inevitable uncertainty regarding the amount of generation or displacement an STC represents. As yet, there is little data against which to test the accuracy of the deeming calculations.

## Questions

*Is deeming an appropriate way of providing certificates to SRES participants?*

*Are the deeming calculations for different small-scale technology systems reasonable?*

## Solar Credits

Solar Credits provide a multiplier to the number of STCs generated from eligible small-scale systems. It was introduced to the RET scheme in 2009 following the closure of two Government rebate programs: the Solar Homes and Communities Plan, which provided \$8 per watt of installed capacity up to a maximum of \$8000, and the Renewable Remote Power Generation Program, which provided rebates of up to 50 per cent of the capital cost of renewable energy power systems.

The Solar Credits multiplier is applied to the deeming calculation for the small-scale technology system and works by applying a specific multiplier to the first 1.5 kW of the rated output. For example: a 1.5 kW system installed in Sydney in 2010 without solar credits received 31 STCs, while the same system with solar credits received 155 STCs. The multiplier reduces over time in line with the expected fall in technology prices – see table 6.3.

**Table 6.3: Solar Credits multiplier**

Dates	Multiplier
9 June 2009 – 30 June 2010	5 x
1 July 2010 – 30 June 2011	5 x
1 July 2011 – 30 June 2012	3 x
1 July 2012 – 30 June 2013	2 x
1 July 2013 – onwards	1 x (ie. no multiplier)

Source: Australian Government, Clean Energy Regulator, *Solar Credits*, <http://ret.cleanenergyregulator.gov.au/Solar-Panels/Solar-Credits/solar-credits>

In the event, the price of solar PV units fell much more quickly than anticipated and, in late 2010 and early 2011, the Government brought forward the reduction of the multiplier by two years to end on 1 July 2013.

The off-grid multiplier was introduced in 2010. It extended the generation capacity cap for the Solar Credits multiplier from the first 1.5 kW of rated output to the first 20 kW. The off-grid multiplier was designed to assist with the greater costs of installing off-grid systems. The *REE Act* limits the number of certificates that can be generated by the off-grid multiplier, beginning at 250,000 per financial year. The limit is allocated on a first come basis.

Multipliers tend to reduce the environmental effectiveness of a scheme as a certificate no longer equates to output – in this case 1 MWh of electricity. Multipliers therefore increase the number of certificates and, in the case of the SRES, the cost of the scheme, without necessarily providing a corresponding increase in renewable energy generation.

## Question

*What are the lessons learned from the use of multipliers in the RET? Is there a role for multipliers in the future?*

## 6.4. The STC Clearing House

The STC Clearing House was established to facilitate the transfer of STCs at a fixed price of \$40 (\$44 GST inclusive).<sup>35</sup>

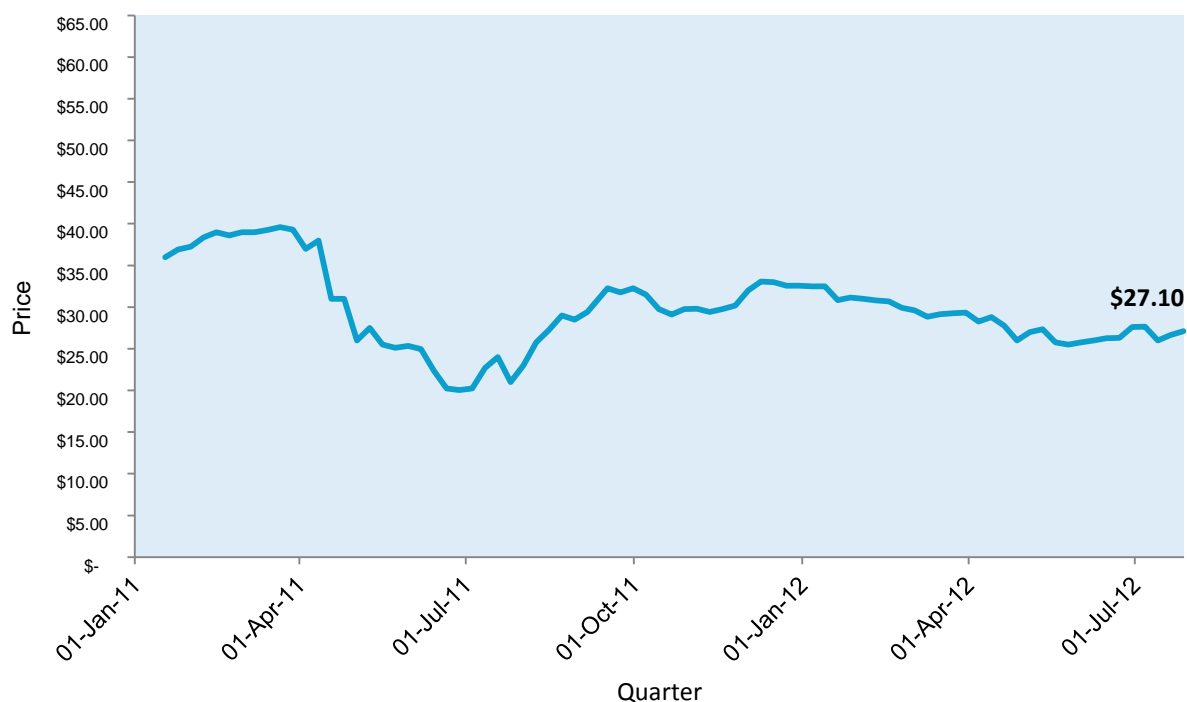
The Clearing House works by allowing STC sellers to list their certificates in the STC Clearing House Transfer List. The List clears based on time of listing (first in, first out) and, while the \$40 price is guaranteed, there is no guaranteed timeframe. Buyers can purchase STCs from the Clearing House even when there are no certificates listed in the Transfer List. In these circumstances, the Clean Energy Regulator creates an STC for sale, which is replaced by a genuine STC when one is registered in the Transfer List. This provides buyers with unlimited access to \$40 STCs.

In practice, the annual oversupply of STCs since the inception of the SRES has resulted in a secondary market STC price of around \$25 to \$30 in 2011/12 – see figure 6.2. This has meant that buyers have preferred the secondary market to the Clearing House as a source of STCs. The Clearing House has a current listing of 6 million STCs waiting to clear with a current waiting period of around 18 months. The waiting period may reduce in future years as the supply of STCs stabilises with the wind back of state and territory feed-in tariffs and reduction of the Solar Credit multiplier.

---

<sup>35</sup> Explanatory Memorandum, *Renewable Energy (Electricity) Amendment Bill 2010*, para 74.

**Figure 6.2: Small-scale technology certificate price (spot rate) over time**



Source: Nextgen, <http://www.nges.com.au/>.

The Clearing House potentially fills two roles: first to cap the price of STCs, and secondly to provide a set subsidy for small-scale technologies. In practice, it has operated as a cap on STC prices, but has not guaranteed any particular level of subsidy for small-scale technologies (at least, not with any guaranteed timeframe).

Both potential roles of the Clearing House could be fulfilled through alternative mechanisms. If the primary purpose of the Clearing House is to cap compliance costs, then this could be achieved by relying on the (potentially lower) shortfall charge. On the other hand, if the primary purpose of the Clearing House is to provide a set subsidy to small-scale renewables at an uncapped total cost, then a feed-in tariff could also potentially be used (although it would provide support based on actual generation, not deemed, and would be provided over time, instead of upfront).

## Questions

*Is the STC Clearing House an effective and efficient mechanism to support the operation of the SRES?*

*Should changes be made to the Clearing House arrangements? If so, what would be the costs and benefits of any suggested alternative approaches?*

*Is \$40 an appropriate cap for small-scale certificates given the recent fall in cost of some small-scale technologies, particularly solar PV?*

## 6.5. Small-scale administration

As with the LRET, the SRES is administered by the Clean Energy Regulator. Under the SRES, there are registration requirements, as well as standards for small-scale technologies and installation conditions which must be met before STCs can be created.

### Registration

A person must be registered before they can generate STCs. The owner of the small-scale system – usually the property owner – can register with the Clean Energy Regulator. Alternatively, the owner can assign the right to create certificates to a registered agent. In practice, nearly all STCs (over 99 per cent) are created by registered agents.

### Technology standards

The definition of solar water heaters and air heat pumps is based on an Australian standard,<sup>36</sup> which sets out particular system requirements. Any systems which do not meet this standard may not be listed on the Clean Energy Regulator's Register of Solar Water Heaters and cannot create STCs.

Solar PV units and inverters must be included on the Clean Energy Council's list of approved products.

### Installation requirements

Small generation units must also meet installation requirements before STCs can be created.<sup>37</sup> Before certificates are created, the registered person must obtain documentation confirming:

- the unit has been installed by a Clean Energy Council accredited installer;
- the installer adheres to the Council's code of conduct and has \$5 million public liability insurance;
- the installation adheres to relevant Australian standards;
- the electrical wiring was undertaken by a licensed electrical worker; and
- all local, state and territory requirements are met regarding siting of the unit.

### Compliance

The Clean Energy Regulator takes a risk-based approach to the assessment of applications to create certificates (in very broad terms similar to the tax assessment process). It may require the registered person to produce the above documentation.

Once certificates have been registered, they cannot be rescinded. However, the Clean Energy Regulator; however, can take criminal and civil action against a registered person or agent for failure to comply, and breaches of, the *REE Act*.<sup>38</sup>

The Clean Energy Regulator conducts an inspection program for small generation units aimed at ensuring that the installations meet the legislated requirements. If a system is found to not comply, the Clean Energy Regulator will report this to the owner, occupier of the premises, installer, registered agent (if applicable) and relevant state and territory authorities for remedial action.

---

<sup>36</sup> AS/NZS 2712:2007.

<sup>37</sup> There are no installation requirements for solar hot water systems, although system components are defined in the relevant Australian standard.

<sup>38</sup> The Clean Energy Regulator's compliance and enforcement policy is set out at: <http://www.cleanenergyregulator.gov.au/About-us/Corporate-policies/Documents/CER-Compliance-Education-and-Enforcement-policy.pdf>.

The safety and compliance aspects of the Clean Energy Regulator's inspection reflect agreed national standards regarding electrical safety and building. These are the same standards that are widely used by the state and territory electrical safety regulators. The Clean Energy Regulator's responsibility go to whether these standards are met *for the purposes of issuing valid certificates*, it does not have a role – or the ability to enforce – broader electrical safety and building standards. This is the purview of the states and territories.

## Questions

*Are the SRES administration arrangements appropriate and working efficiently?*

## 7. THE RET AND ELECTRICITY MARKETS

### 7.1. Cost of certificates

The LRET and SRES increase the cost of electricity to consumers. Electricity retailers bear the additional cost of purchasing LGCs and STCs to meet their RET liabilities. In turn, they pass this cost on to their customers.

The LGC price has generally ranged from around \$35 to around \$40 since the separation of the scheme. The STC price has generally ranged from around \$20 to around \$30, but did reach \$40 in early 2011.

Retail electricity prices in Australia are made up of a number of different components including transmission, distribution, wholesale and retail costs.

How electricity retail prices are set varies between the state and territory jurisdictions. In several jurisdictions the retail price is set by regulators or governments.<sup>39</sup> For those jurisdictions with regulated retail prices, an estimate of the cost of complying with the RET is generally considered by regulators as part of their decision on retail prices.

The Australian Energy Market Commission released a report providing an indication of future trends in residential electricity prices in 2011.<sup>40</sup> This report estimated that the LRET and SRES were likely to constitute around 1.8 per cent and 0.5 per cent of national retail electricity prices in 2013-14 – see table 7.1. Table 7.1 shows that LRET and SRES share of costs are not as variable between the states and territories as other factors.

**Table 7.1: Percentage share of residential electricity price in 2013-14 by component**

	National	Lowest state/territory	Highest state/territory
Transmission	7.3	0.0	16.9
Distribution	36.3	22.9	44.7
Wholesale	36.1	32.3	63.8
Retail	14.2	1.4	27.1
Feed-in tariff	0.8	0.1	4.1
LRET	1.8	1.6	2.4
SRES	0.5	0.5	0.7
State-based schemes	3.1	0.2	5.8

Source: Australian Energy Market Commission, 'Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014 (2011)', p 6.

In a separate report, *Impact of the enhanced Renewable Energy Target on energy markets*,<sup>41</sup> the Australian Energy Market Commission estimated the total compliance costs of the RET would be \$1.5 billion in 2019/20 (in 2010/11 dollars). In nominal c/kWh terms, compliance costs were estimated to decrease from 0.93 c/kWh in 2011/12 to 0.64 c/kWh in 2015/16. Costs were then projected to increase slowly to 0.77c/kWh in 2019/20. The fall between 2011/12 and 2015/16 was attributed to the

<sup>39</sup> In Victoria, retail electricity prices are no longer regulated.

<sup>40</sup> Australian Energy Market Commission, 'Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014 (2011)'.

<sup>41</sup> Australian Energy Market Commission, 'Final Report: Impact of the enhanced Renewable Energy Target on energy markets' (2011).

projected fall in solar PV installations under the SRES as the Solar Credits Multiplier ends and jurisdictional feed-in tariffs decreased. The LRET is projected to comprise around 60 per cent of compliance costs associated with the RET, the SRES around 30 per cent (increased costs associated with managing power system operation with increased volumes of intermittent generation amount to around 9 per cent).

## 7.2. Impact on the wholesale market prices

The LRET tends to lower electricity wholesale prices, at least in the short run. First, the LRET supports new (renewable energy) generation and thereby adds to generation capacity in the market. Increased supply may have the effect of pushing down wholesale prices. Secondly, most renewable generation installed in Australia has very low short-run marginal costs of operation. This means, once constructed, renewable energy generators can dispatch electricity at zero or very low prices. As more renewable generation comes on line, it competes with the incumbent generators, potentially driving down the wholesale price.

## 7.3. Impact on electricity network security

As noted in the Commonwealth Government's Draft Energy White Paper, larger levels of intermittent generation may have implications for maintaining system security. The Government has stated that it will continue to monitor the integration of new technologies into the grid and may consider undertaking an assessment of the effects on the security and operational safety of the system should these issues become increasingly problematic for networks to manage.

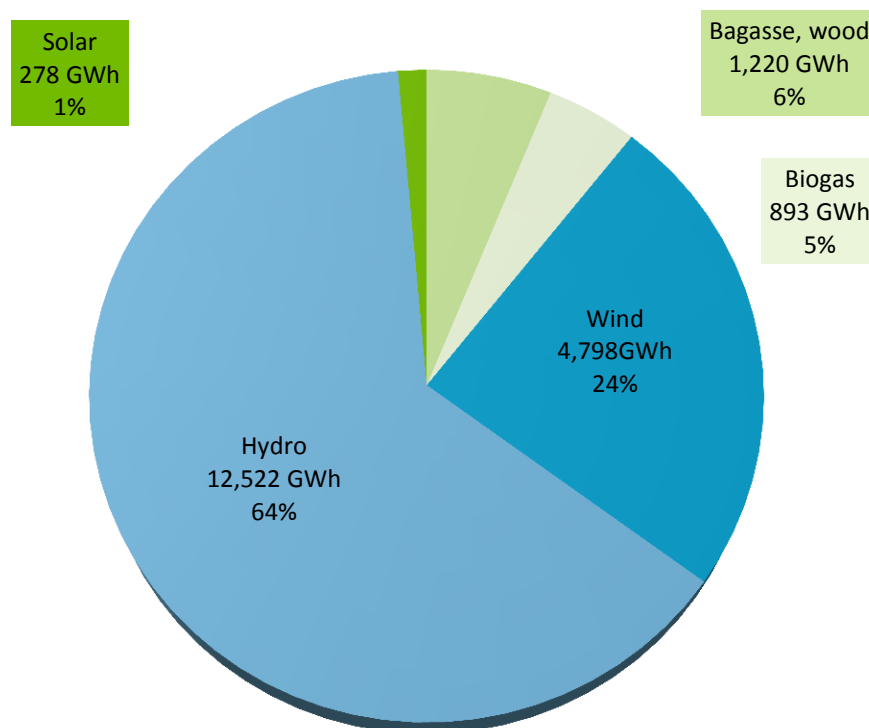
Although subject to on-going refinement, the Australian Energy Market Operator has in place arrangements that require all significant intermittent generation to participate in central dispatch processes to control the output of such generation at times when that output would otherwise violate secure network limits.

## 8. DIVERSITY OF RENEWABLE ENERGY ACCESS

The *REE Act* specifically directs the Authority to review the diversity of renewable energy access to the scheme, providing a cost-benefit analysis of the environmental and economic impact of that access.

The majority of renewable energy generated by the RET is large-scale wind and small-scale solar PV. There also remains significant pre-1997 hydro generation – see figure 8.1.

**Figure 8.1: Renewable energy mix, 2009-10**



Source: Australian Government, Australian Bureau of Agricultural and Resource Economics and Sciences, *Energy update 2011*, p 10.

The RET was designed with a technology neutral approach, so that the most cost-effective technologies are deployed to meet the target. Such an approach minimises the costs of the scheme.

To encourage further diversity, various mechanisms are available to preference particular technologies, including multipliers, caps and banding.

Multipliers can be applied to certificates generated from particular technologies to influence their uptake. The use of a multiplier greater than one will preference a technology (as seen with the Solar Credits multiplier under the SRES), and a multiplier of less than one ‘discounts’ certificates generated by a technology. Multipliers greater than one create certificates that are not backed by renewable generation.

Caps limit the total amount of generation from a particular technology. Once a cap is reached, further support will not be given to additional generation from that technology.

Banding sets a quota of total generation for each technology to meet. By assigning particular targets to different technologies, banding allows particular technologies to evolve without having to compete with others that might be cheaper. Technology barriers could mean that a particular band is not met – this will impact on the overall level of generation. The SRES can be seen as a band within the RET as it provides a separate incentive for small-scale technologies. While there may be justification for these measures, they are all likely to increase the overall cost of the RET as more expensive technologies displace cheaper ones.

Separate to the RET, there are also state, territory and Commonwealth Government measures to encourage the development and deployment of renewable energy, including research and development tax credits, grant funding and financing. The predominant Commonwealth support measures include the Australian Renewable Energy Agency and the Clean Energy Finance Corporation. These measures will support the uptake of renewable energy by mitigating start up and capital costs for many technologies that will be eligible under the RET to create certificates. This has the potential to make certain technologies more cost competitive over the long run.

## Questions

*Should the RET design be changed to promote greater diversity, or do you think that, to the extent that there are barriers to the uptake of other types of renewable energy, these are more cost-effectively addressed through other means?*

*What would be the costs and benefits of driving more diversity through changes to the RET design?*

## 9. REVIEW FREQUENCY

The *REE Act* mandates reviews of the RET by the Climate Change Authority every two years. This allows regular consideration of the operation of the RET, including the addition of new technologies, and may permit more frequent ‘fine tuning’ of the scheme, if required. Frequent reviews may also create uncertainty, negatively affecting the investment climate.

### Question

*What is the appropriate frequency for reviews of the RET?*

*What should future reviews focus on?*

## 10. GLOSSARY

Term	Acronym/ Abbreviation	Explanation
Australian Energy Market Operator	AEMO	Australian Energy Market Operator was established in 2009 and is responsible for the operation of the National Electricity Market which includes the east and south east regions of Australia (Queensland, New South Wales, Victoria, Tasmania and South Australia).
Australian Renewable Energy Agency	ARENA	The Australian Renewable Energy Agency is an independent statutory authority established under the <i>Commonwealth Authorities and Companies Act 1997</i> , tasked with the objectives of improving the competitiveness of renewable energy technologies and increasing the supply of renewable energy in Australia.
1997 Baseline		During the process of accreditation for a power station under the Renewable Energy Target the Clean Energy Regulator determines a baseline value for generation prior to 1997 (when the scheme was first proposed). The baseline is generally calculated by using the average amount of annual electricity generated from eligible renewable energy sources in 1994, 1995 and 1996.
Bankable certificates		Renewable energy certificates for both the large-scale and small-scale market do not have an expiry date. They may be purchased and held for any length of time before they are surrendered.
Clean Energy Finance Corporation	CEFC	The objective of the Clean Energy Finance Corporation is to overcome capital market barriers that hinder the financing, commercialisation and deployment of renewable energy, energy efficiency and low emissions technologies.
Clean Energy Regulator	CER	The Clean Energy Regulator is an independent statutory authority that administers regulatory schemes relating to clean energy, including the Renewable Energy Target, the Carbon Pricing Mechanism, the National Greenhouse and Energy Reporting scheme and the Carbon Farming Initiative.
Climate Change Authority	'the Authority'	Established on 1 July 2012, the Climate Change Authority provides independent advice on the operation of Australia's carbon price, emissions reduction targets, caps and trajectories, and other Australian Government climate change initiatives.
Compliance period		A full calendar year, the period over which each annual target under the Renewable Energy Target must be achieved.
Council of Australian Governments	COAG	The Council of Australian Governments is the peak intergovernmental forum in Australia. The members of the Council of Australian Governments are the Prime Minister, State and Territory Premiers and Chief Ministers and the President of the Australian Local Government Association.
Department of Climate Change and Energy Efficiency	DCCEE	The Department of Climate Change and Energy Efficiency leads the development and coordination of Australia's climate change and energy efficiency policy. It is responsible for policy advice, policy implementation and program delivery in four areas: reducing Australia's greenhouse gas emissions; promoting energy efficiency; adapting to climate change; and helping to shape a global climate change solution.

Deeming		The estimation of the amount of electricity a solar panel or small-scale wind or hydro system generates, or the electricity a solar water heater or heat pump displaces. Deeming allows the owners of these technologies to receive their entitlement to small-scale technology certificates before the system has produced or displaced the electricity.
Emissions-intensive trade-exposed	EITE	Businesses conducting specified emissions-intensive trade-exposed (EITE) activities are eligible for assistance through the Jobs and Competitiveness Program under the carbon pricing mechanism and under the RET scheme.
Energy Savings Initiative		Under the Clean Energy Future Plan the Australian Government committed to do further work to investigate the merits of a national Energy Savings Initiative (ESI). An ESI is a market-based tool for driving economy-wide improvements in energy efficiency.
Gigawatt hours	GWh	A measure of electricity generation / use over a period of time (or energy).
Kilowatt	kW	A measure of power (or demand).
Kilowatt hour	kWh	A measure of electricity generation / use over a period of time (or energy).
Large-scale Generation Certificate	LGC	A Large-scale Generation Certificate represents one megawatt hour of renewable energy generation.
Liabe entities		Entities that make wholesale acquisitions of electricity and are required by the legislation to surrender a specified number of renewable certificates or pay a renewable energy shortfall charge.
Large-scale Renewable Energy Target	LRET	Large-scale Renewable Energy Target encourages the deployment of large-scale renewable energy projects such as wind farms.
Mandatory Renewable Energy Target	MRET	Mandatory Renewable Energy Target began operation in 2001. The Mandatory Renewable Energy Target had a target of 9,500 Gigawatt hours in 2010 (mandated out to 2020) and interim targets that gradually increased year on year.
Megawatt	MW	A measure of power (or demand).
Megawatt-hour	MWh	A measure of electricity generation / use over a period of time (or energy).
National Electricity Market	NEM	The National Electricity Market interconnects five regional market jurisdictions (Queensland, New South Wales, Victoria, South Australia and Tasmania). Western Australia and Northern Territory are not connected to the National Electricity Market.
Partial exemption certificate	PEC	The Renewable Energy (Electricity) Act 2000 and the Renewable Energy (Electricity) Regulations 2001 include provisions to provide partial exemption from Renewable Energy Target liability for electricity used in defined emissions-intensive trade-exposed activities. To obtain exemption, prescribed persons may apply to the Clean Energy Regulator for a partial exemption certificate.
Renewable Energy	REC	The term used for renewable energy certificates generated under the

Certificate.		Renewable Energy Target scheme prior to 2011.
Renewable Energy (Electricity) Act 2000 (Cth)	REE Act	The legislative framework for the Renewable Energy Target scheme.
Renewable Energy (Electricity) Regulations 2001	REE Regulation	The detailed rules and provisions of the Renewable Energy Target scheme.
Renewable Energy Target	RET	The Renewable Energy Target operates in two parts - the Small scale Renewable Energy Scheme and the Large scale Renewable Energy Target.
Renewable Energy Target review	RET review	The Climate Change Authority's review of the Renewable Energy Target. The review is defined in Section 162 of the Renewable Energy (Electricity) Act 2000 (Cth).
Renewable Power Percentage	RPP	The Renewable Power Percentage establishes the rate of liability for Large-scale Renewable Energy Target and is the mechanism that liable entities use to determine how many Large-scale Generation Certificates need to be surrendered to discharge their liability each year.
Solar credits		Solar Credits work by multiplying the number of certificates that eligible small solar panel and solar water heating units would generally be able to create under the standard deeming arrangements for the Small-scale Renewable Energy Scheme.
Solar photovoltaic panels	PV	Solar Photovoltaic panels produce electricity by gathering and transforming the sun's energy.
Small-scale Renewable Energy Scheme	SRES	Small-scale Renewable Energy Scheme supports the installation of small-scale systems, including solar panels and solar water heaters.
Small-scale Renewable Energy Scheme	SRES	Small-scale Renewable Energy Scheme supports the installation of small-scale systems, including solar panels and solar water heaters.
Small-scale Technology Certificate	STC	Certificate created by small-scale technologies like solar panels and solar water heaters.
Small-scale Technology Certificate Clearing House	STC Clearing House	The Small-scale Technology Certificate Clearing House facilitates the exchange of small-scale technology certificates between buyers and sellers at the fixed price of \$40 (excl. GST).
Small-scale Technology Percentage	STP	The Small-scale Technology Percentage establishes the rate of liability for Small-scale Renewable Energy Scheme. Small-scale Renewable Energy Scheme commenced on 1 January 2011. The Small-scale Technology Percentage is the mechanism that liable entities use to determine the number of Small-scale Technology Certificates needed to be surrendered to discharge their liability quarterly.
South West Interconnected System	SWIS	South West Interconnected System is the electricity network that services a majority of Western Australia's population.

# 11. LIST OF QUESTIONS

## Large-scale Renewable Energy Target

- Are the existing 41,000 GWh LRET 2020 target and the interim annual targets appropriate? What are the implications of changing the target in terms of economic efficiency, environmental effectiveness and equity?
- Is the target trajectory driving sufficient investment in renewable energy capacity to meet the 2020 target? How much capacity is needed to meet the target? How much is currently committed? Has the LRET driven investment in skills that will assist Australia in the future?
- In the context of other climate and renewable policies, is there a case for the target to continue to rise after 2020?
- Should the target be a fixed gigawatt hour target, for the reasons outlined by the Tambling Review, with the percentage being an outcome?
- Should the target be revised to reflect changes in energy forecasts? If so, how can this best be achieved – as a change in the fixed gigawatt hour target, or the creation of a moving target that automatically adjusts to annual energy forecasts? How should changes in pre-existing renewable generation be taken into account? What are the implications in terms of economic efficiency, environmental effectiveness and equity?
- What are the costs and benefits of increasing, or not increasing, the LRET target for Clean Energy Finance Corporation-funded activities? What are the implications in terms of economic efficiency, environmental effectiveness and equity?
- Is the calculation of individual liability using the Renewable Power Percentage the most appropriate methodology?
- Is it appropriate to set the Renewable Power Percentage by 31 March of the compliance year?
- Is the shortfall charge set at an appropriate level to ensure the 2020 target is met?
- Are there other issues relating to the liability or surrender framework the Authority should consider?
- What are the costs and benefits of the current exemption arrangements? Are they appropriate?
- The self-generator exemption pre-dates the emissions intensive, trade exposed partial exemptions – are both required? If so, why?
- What, if any, changes to the current exemption arrangements should be made? What would be the impact of those changes on directly affected businesses and the broader community?
- Is a list approach to 'eligible renewable sources' appropriate?
- Are there additional renewable sources which should be eligible under the *REE Act*?
- Should waste coal mine gas be included in the RET? Should new capacity of waste coal mine gas be included in the RET?
- What would be the costs and benefits of any recommended changes to eligible renewable sources?
- Are the LRET accreditation and registration procedures appropriate and working efficiently?

## Small-scale Renewable Energy Scheme

- What do you consider to be the costs and benefits of having a separate scheme for small-scale technologies?
- Should there continue to be a separate scheme for small-scale technologies?

- Is the uncapped nature of the SRES appropriate?
- What do you see as being the costs and benefits of an uncapped scheme in terms of economic efficiency, environmental effectiveness and equity?
- Is the SRES driving investment in small scale renewable technologies? Is it driving investment in skills?
- What is the appropriate process for considering and admitting new technologies to the SRES?
- Should any additional small-scale technologies be eligible to generate small-scale technology certificates?
- Is it appropriate to include displacement technologies in the SRES?
- Should additional eligible technologies under the SRES be limited to generation technologies?
- Is deeming an appropriate way of providing certificates to SRES participants?
- Are the deeming calculations for different small-scale technology systems reasonable?
- What are the lessons learned from the use of multipliers in the RET? Is there a role for multipliers in the future?
- Is the Small-scale Technology Certificate Clearing House an effective and efficient mechanism to support the operation of the SRES?
- Should changes be made to the Clearing House arrangements? If so, what would be the costs and benefits of any suggested alternative approaches?
- Is \$40 an appropriate cap for small-scale certificates given the recent fall in cost of some small-scale technologies, particularly solar PV?
- Are the SRES administration arrangements appropriate and working efficiently?

## Diversity of renewable energy access

- Should the RET design be changed to promote greater diversity, or do you think that, to the extent that there are barriers to the uptake of other types of renewable energy, these are more cost-effectively addressed through other means?
- What would be the costs and benefits of driving more diversity through changes to the RET design?

## Review frequency

- What is the appropriate frequency for reviews of the RET?
- What should future reviews focus on?

## 12. LETTER FROM THE MINISTER FOR CLIMATE CHANGE AND ENERGY EFFICIENCY TO THE CHAIR OF THE CLIMATE CHANGE AUTHORITY



**Minister for Climate Change and Energy Efficiency  
Minister for Industry and Innovation**

Mr Bernie Fraser  
Chair  
Climate Change Authority  
GPO Box 1944  
MELBOURNE VIC 3011

Dear Mr Fraser

I write to you concerning the Climate Change Authority's statutory review of the Renewable Energy Target (RET) scheme.

I first of all would like to take the opportunity to once again thank you for agreeing to lead the Authority and note the very important role it has to play in advising the Government on the operation of the key components of the Clean Energy Future plan. I intend writing to you again in the near future to set out the Government's expectations generally in relation to the role the Authority, its relationships with the Government and Department of Climate Change and Energy Efficiency, and issues of corporate governance, communication and financial management.

As you are aware, the Authority's first significant task is to review and report on the operation of the RET scheme (the Review) before the end of 31 December 2012. The parameters of the Review, including its scope, consultation requirements and timelines, are set out in Section 162 of the *Renewable Energy (Electricity) Act 2000*. This includes the requirement that the Climate Change Authority's recommendations cannot be inconsistent with the objects of the Act.

The Government recognises that renewable energy will play a crucial role in a clean energy future. As such, promoting innovation and investment in harnessing our abundant renewable energy resources is a key element of the Clean Energy Future plan.

The RET scheme, as an integral part of the Government's plan, is designed to deliver the Government's commitment that the equivalent of at least 20 per cent of Australia's electricity supply will come from renewable sources by 2020. Renewable energy investors have been assured by the Government of our ongoing commitment to this target, to provide confidence for their investment decision making.

The RET scheme will work alongside the carbon price, the Australian Renewable Energy Agency and the \$10 billion Clean Energy Finance Corporation (CEFC) recently established through legislation, to speed up the deployment of renewable energy technologies, helping smooth Australia's transition to a clean energy future. These policies and institutions are intended to be mutually supportive and work together to enhance clean energy outcomes for all Australians.

In the long term, transformation of our electricity supply to renewable and low emissions sources is essential to cutting our national emissions and remaining competitive in a carbon constrained world. The carbon price will drive investment in clean energy sources such as

---

Parliament House, Canberra ACT 2600 Tel 02 6277 7920 Fax 02 6273 7330

solar and wind. However in the near term, the RET is intended to complement the carbon price by accelerating the deployment of market-ready renewable technologies at least cost through a technology-neutral, market based scheme. It will also help diversify our energy mix which is currently highly reliant on emissions-intensive coal-fired generation.

Under the RET scheme, and its smaller precursor which commenced in 2001, over 300 power stations have been accredited, increasing renewables-based generation by around 5 times, albeit off a small base. In terms of small-scale renewable energy systems, over 600,000 rooftop solar photovoltaic (PV) installations and 700,000 solar and heat pump water heaters have also received support since 2001.

The Government has recently made policy changes to the RET to improve its operation. In mid-2010, the RET was separated into two components - the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES) - to provide greater certainty for large-scale renewable energy project investors, households and installers of small-scale renewable energy systems. The Solar Credits mechanism under the SRES boosts upfront support for eligible solar PV systems by multiplying the number of tradable certificates able to be created. The multiplier reduces over time, reflecting declining costs of small-scale solar PV.

In response to unsustainable growth in small-scale solar, driven by declining system costs, the strong Australian dollar and economy, and incentives such as state and territory feed-in tariff schemes, the Government has brought forward the phase-out of Solar Credits by two years to mid-2013. These changes were aimed at maintaining a balance between supporting households with the upfront cost of installing solar panels, the impact on electricity prices, and the sustainable development of the industry.

In light of the above, the Government is continuing to monitor the efficiency of the SRES and the clearing house which operates to cap the price of certificates in the small-scale market. In addition, the Government considers that it is important the requirements relating to the creation of small-scale technology certificates ensure that only systems of appropriate quality are supported with regard to compliance with State and Territory legislation, relevant Australian standards and industry practice. This framework also needs to take into account the responsibility of State and Territory Governments and industry accreditation schemes have for electrical safety and quality matters.

The Government is also interested in how the RET, as a market-based scheme, is performing in terms of encouraging generation of electricity from a range of renewable sources and how it is influencing the long-term development of the industry to assist the transition to a low emissions economy at least cost. The Government is conscious that the RET needs to provide investment certainty and predictability for investors long lived assets. It also needs to deliver renewable energy outcomes at least cost to electricity consumers. In this context, I note that some renewable energy industry stakeholders have expressed the view that the statutory requirement for the Authority to review the RET scheme every two years is inappropriate and contributing to uncertainty for investors.

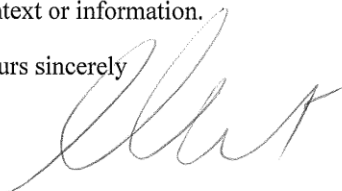
Regarding the Government's broader activities in this area, you will be aware that COAG has prioritised a review of Government climate change programs to look at whether they are complementary to a carbon price and are effective, efficient and do not impose duplicative reporting requirements. The Select Council on Climate Change (SCCC), which I chair, has developed an approach to this review and is due to report to COAG by

8 February 2013. My Department will draw on the findings of the CCA RET Review to assist with completing the COAG Review of complementary measures.

At a meeting on 4 May 2012, the SCCC also agreed that the report of the recently completed *COAG Review of Specific RET issues* be conveyed to the CCA to inform its considerations. COAG commissioned this review in April 2008 in agreeing the design of the RET scheme. As Chair of the SCCC, I attach a copy of the report in accordance with the SCCC agreement.

In closing, I look forward to receiving the Authority's report of the Review and would encourage the Authority to contact the Department of Climate Change and Energy Efficiency and the Clean Energy Regulator as appropriate should you require any further context or information.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Greg Combet', written over the 'Yours sincerely' text.

GREG COMBET