

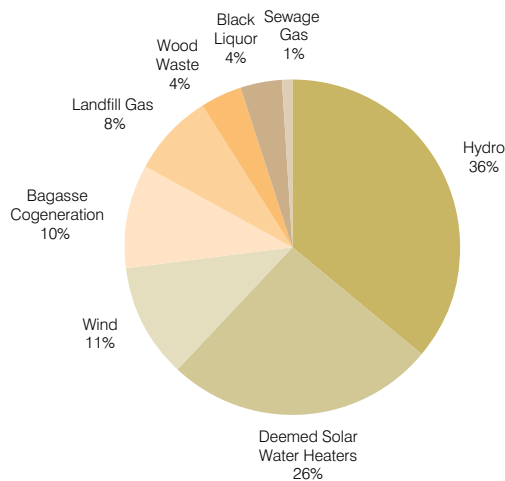
Executive Summary

- 1 The *Renewable Energy (Electricity) Act 2000* (the Act) originated as part of the Prime Minister's 'Safeguarding the Future: Australia's Response to Climate Change' announced in November 1997. The Act is supported by the *Renewable Energy (Electricity) (Charge) Act 2000* and the *Renewable Energy (Electricity) Regulations 2001* (the Regulations).
 - 2 The effect of the legislation, known as the Mandatory Renewable Energy Target (MRET), is to place a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of an additional 9500 gigawatt hours (GWh) of renewable energy annually by 2010. This level of generation is equivalent to more than twice the annual output of the Snowy Mountains Scheme.
 - 3 The legislation is administered by an Australian Government statutory authority, the Office of the Renewable Energy Regulator (ORER).
 - 4 Tradeable Renewable Energy Certificates (RECs) are created on the basis of eligible renewable energy generation with each REC equivalent to one megawatt hour (MWh) of renewable generation. A range of energy sources and technologies is eligible including hydro, wind, solar and various biomass sources, with provision for emerging technologies not yet commercialised in Australia such as wave, tidal and geothermal energy.
 - 5 Accredited generators which commenced operating on or after 1 January 1997 can earn RECs for all eligible electricity following accreditation. Pre-existing generators can only earn RECs for an increase in output above baselines determined by ORER.
 - 6 Achievement of the 9500 GWh target and interim targets prior to 2010 is underpinned by a \$40 per MWh shortfall charge.
 - 7 The Act requires that an independent review of its operation be undertaken two years after its commencement and specifies a number of matters to be considered. On 25 March 2003, the Minister for the Environment and Heritage and the Minister for Industry, Tourism and Resources announced the formation of the Review Panel to conduct the Review.
 - 8 The Review Panel's approach has been to conduct the Review in an open, timely and transparent manner. A total of 264 substantive submissions were received, along with more than 4800 petitions, mostly campaign submissions. The Review Panel held around 115 consultations with a wide range of interested parties in 16 communities across all States and Territories, including in regional Australia.
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Progress towards MRET objectives

- 9 MRET's objectives as set out in the Act are to encourage additional renewable energy generation; reduce greenhouse gas emissions; and ensure that renewable energy sources are ecologically sustainable.
- 10 The Second Reading speech to the legislation highlighted MRET's industry development objectives of 'providing an ongoing base for commercially competitive renewable energy' and 'contributing to the development of internationally competitive industries which could participate effectively in overseas energy markets'.
- 11 By August 2003, MRET had contributed significantly to additional renewable energy generation with 190 power stations accredited. Of these, 84 have been commissioned since MRET came into operation. MRET's interim targets for electricity generation during its first two years of operation have been exceeded with no evidence of significant shortfalls by liable parties.
- 12 To date, growth in renewable energy generation has primarily come from the hydro and solar hot water sectors, with strong growth in the wind sector coming from a small base. Generation from biomass, including bagasse, has not been as significant as expected prior to the introduction of MRET. The measure has only had a marginal influence on generation from solar photovoltaics, and no RECs have been created from wood waste sourced from native forests.

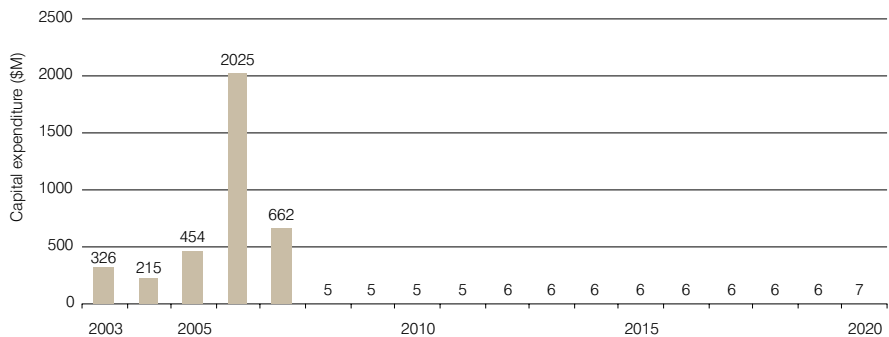
Figure 1—Mix of technologies (as at 18 August 2003)¹



¹ Figure 1 source: Office of the Renewable Energy Regulator. Sources that contribute less than 1 per cent of RECs created have been excluded.

- 13 Renewable energy industry sales have grown from around \$1.1 billion per annum prior to MRET to over \$1.8 billion during 2002–03, almost half way to the Renewable Energy Action Agenda target for 2010 of \$4 billion. From a small base, exports have grown to more than \$250 million in 2002–03.
- 14 Estimates sourced from ORER suggest that more than \$900 million worth of investment has taken place with more than \$1 billion in the pipeline.
- 15 By 2007, sufficient capacity is expected to have been installed to meet the MRET target of 9500 GWh for 2010. As a consequence, investment is expected to fall away rapidly.

Figure 2—Expected investment trend for the current MRET²



- 16 A further reason advanced for the anticipated decline in investment is that most renewable projects require high levels of up-front capital investment and a minimum payback period of 15 years. Under current MRET settings, RECs will be not be available beyond 2020, so that by 2007 the available payback period for investments will have fallen below the required threshold.
- 17 To date, MRET has made only a small contribution to greenhouse gas abatement, although this is expected to increase as interim targets rise towards 9500 GWh. By the time the Kyoto compliance period of 2008 to 2012 is reached, MRET can be expected to have contributed around 6.5 million tonnes (Mt) of carbon dioxide equivalent (CO₂-e) abatement per annum, or around 10 per cent of total current projected abatement.

² Figure 2 source; adapted from McLennan Magasanik Associates, *Impact of a 20,000 GWh target for the MRET Scheme*, p31

- 18 MRET is a relatively expensive abatement measure compared with a number of other Australian Government as well as some State and Territory government initiatives. In 2010, the cost of abatement to the economy arising from current MRET settings is expected to be about \$32 per tonne CO₂-e.
- 19 No submissions or evidence presented to the Review suggested that any specific MRET-accredited generator failed to satisfy the objective of ecological sustainability. The Review Panel supports the principle implicit in the legislation of utilising other relevant legislation, such as planning and environment protection regulations, for this purpose.

Wider economic, social and environmental impacts

- 20 As MRET imposes some additional costs on electricity users, it has a very small negative effect on the Australian economy as a whole. Potentially the main negative impacts will be on energy intensive, trade-exposed industries.
- 21 MRET has contributed to employment growth in the renewable energy industry, especially in regional Australia where many renewable resources are located. At this stage of its development, employment in the industry is small but growing with just over 6000 direct employees.
- 22 Renewable energy generally, and MRET in particular, has broad community support, with survey evidence showing that many residential consumers are willing to pay more for electricity generated from renewable sources.
- 23 No specific adverse environmental impacts were raised during the Review, other than concerns from some groups about the continued eligibility of wood waste from native forests. In other respects, MRET has the potential to offer multiple environmental benefits through the development of projects that contribute to salinity mitigation and noxious weed eradication.
- 24 Some concerns were expressed about visual amenity associated with wind farms and air quality associated with incineration. These are matters for the relevant government planners and regulators to address.

Energy, environment and industry policy considerations

- 25 The report to the Council of Australian Governments, *Towards a Truly National and Efficient Energy Market* (the Parer Report) recommended a range of national energy reforms.
 - 26 While greenhouse gas abatement was not the principal focus of that report, it did recommend the introduction of a national emissions trading system and, following its announcement, the cessation of existing Australian Government and State and Territory government greenhouse gas abatement measures, including MRET.
 - 27 The Parer Report led to significant investment uncertainty in the renewable energy industry and to a stalling of investment. Its proposal for a scheme to compensate renewable energy operators for the cessation of MRET was not seen by the market as sufficient to maintain investor confidence in the industry.
 - 28 The Review Panel recognises that MRET is not a 'least cost' abatement measure, which was a consideration in the Parer Report but considers that there are sound policy reasons for retaining and refining MRET.
 - 29 Over time, national greenhouse gas abatement targets may become more stringent than Australia's Kyoto target set for 2008 to 2012. On the available information, abatement measures to achieve longer term targets may become significantly more expensive, and renewable energy may become a more cost effective means of abatement.
 - 30 In addition, if Australia does not invest in renewables in the short term, it may become difficult to realise the full benefits they offer in the longer term.
 - 31 The Review Panel considers that a continuation of the current gradual buildup of the MRET target would stimulate progressive growth in the renewables industry and provide opportunities for innovative Australian companies to gain experience in the domestic market, providing a sound base for future exports. Such an approach would also provide useful preparation for the larger contribution renewables may make at a later date.
 - 32 Increased penetration of renewables into the electricity grid will impose a number of technical challenges for electricity transmission and distribution infrastructure. Some renewable generation (for example, wind power) is intermittent and less predictable than coal or gas fired power.
 - 33 A gradual approach to the MRET target build-up will enable the operators of the National Electricity Market to address those challenges in a timely and considered manner so that renewable generation can become more prominent in the future.
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- 34 During the course of the Review, the Panel encountered many significant renewable energy projects underway or being developed. For many of these projects, site, technology and resource assessments will be time consuming, but, once completed, can offer a sound basis for sustained and cost effective renewable generation.
- 35 Against this background, the Review Panel recommends the continuation and refinement of MRET, not only to sustain the industry's further development beyond 2007, but as a sensible insurance policy against significant greenhouse gas abatement measures being introduced in the future.
- 36 The Review Panel's view is reinforced by widespread support for renewable generation within the Australian community, even at a slightly increased cost, and by the potential benefits that the renewable energy industry can bring to some regions across Australia.
- 37 Under current settings, MRET will not achieve its industry development policy objectives. The anticipated stalling of investment from 2007 will prevent the orderly development of a renewable energy manufacturing industry, which requires steady growth in demand, not a boom and bust. Such an outcome would also lock Australia out of technological developments that could otherwise reduce the cost of renewable energy generation over the next decade.
- 38 Additionally the development of a sound renewable energy industry structure would be assisted by significant improvements in research and development (R&D) activity, and commercialisation of technology. As these issues fall outside this Review's Terms of Reference, the Panel recommends further consideration of renewables R&D and industry programs to ensure that they effectively complement the recommendations contained in this Report.

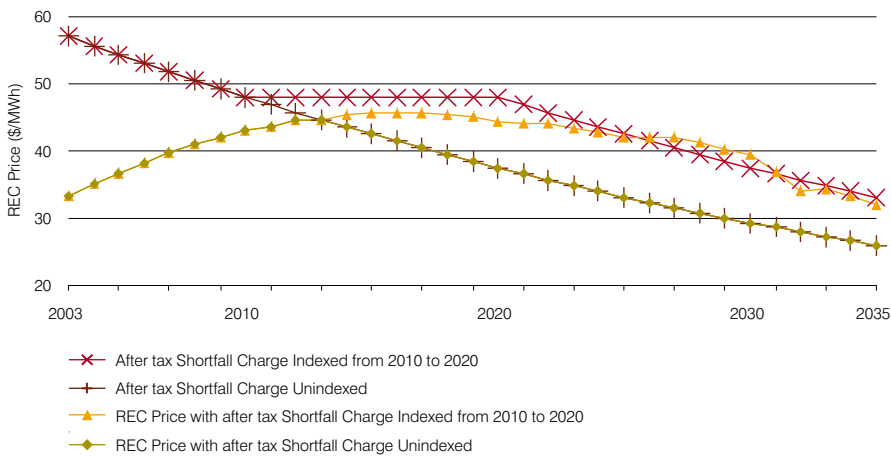
Refining the MRET measure

- 39 In developing refinements to MRET, the Review Panel's primary objective was to create a viable industry at minimum cost to the economy, while continuing to assist in the abatement of greenhouse gas emissions.
- 40 The Review Panel is not convinced that the achievement of this objective requires an increase in the target prior to 2010. Any significant increase in the 2010 target would be difficult to achieve because of the time needed to obtain planning and environmental approvals, to undertake community consultations, and to complete the necessary financial due diligence processes.
- 41 Doubts were also raised by the finance sector concerning the commercial viability of many projects that would be required to meet an increased target by 2010 without an increase in the shortfall charge.

- 42 A major issue to be addressed is the flattening out of the MRET target after 2010, which is the main cause of the anticipated stalling in investment from 2007.
- 43 The challenge confronting the Review Panel was to establish targets after 2010 which reach the threshold level of demand necessary to establish scale economies in renewable energy generation and to support related manufacturing and infrastructure development.
- 44 Setting a future target higher than this threshold would unnecessarily induce investment in marginal projects and raise costs to electricity users without commensurate benefits, and risks locking the industry into an uncompetitive cost structure.
- 45 On balance, the Review Panel recommends continuing steady increases in MRET interim targets towards a target of 20 000 GWh by 2020, in order to:
- Maintain the momentum established by the 9500 GWh target and provide ongoing certainty and industry development opportunities to the renewables industry.
 - Provide the minimum critical mass of investment needed to enable the industry to demonstrate its commercial viability, including the possible domestic manufacture of components for renewable energy projects.
 - Provide a domestic demand base to allow the development of further export markets.
 - Provide a more managed investment framework that will promote cost effective technology improvements and industry learning.
- 46 To achieve the generation target of 20 000 GWh in 2020, the Review Panel recommends that the end date for MRET continue beyond 2020 as most renewable energy project financiers look to a minimum 15 year payback period for their investments.
- 47 Under the Review Panel's proposals renewable capacity installed before the end of 2005 will no longer be eligible for RECs beyond 2020, except in respect of generation above a new baseline set by ORER at the end of 2020. New renewable energy projects commencing after 2005 will receive a full 15 years of REC eligibility.
- 48 With these arrangements in place, and an ongoing 20 000 GWh target beyond 2020, new projects can emerge to replace generation displaced by new baselines. Because their capital cost will have been fully recovered, mature projects no longer eligible for MRET support beyond 2020 can be expected to continue to generate competitive power, with new investments, refurbishments and upgrades underpinned by the ongoing availability of RECs.
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- 49 As a result, adoption of the Review Panel's recommendations can lead to a continuing increase in the proportion of electricity supplied from renewable sources over the longer term, with no further increases in the MRET target.
- 50 The Review Panel commissioned economic modelling on the possible impacts of the recommended target and allowable investment payback period. The modelling suggests that to achieve a 20 000 GWh target, the price of RECs would need to rise above the shortfall charge.
- 51 Without an increase in the shortfall charge, retailers may choose to pay the charge rather than acquire RECs. Should this eventuate, the target of 20 000 GWh would not be met, as shown in Figure 3.

Figure 3—REC prices for indexed and unindexed scenario³

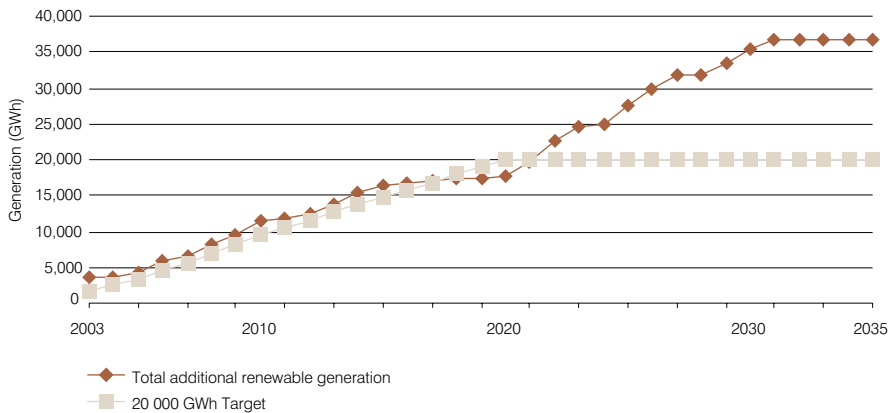


- 52 The Review Panel accepts there is a possibility that a 20 000 GWh target for 2020 could still be met if the shortfall charge remains unchanged, due to significant uncertainty about the future costs of energy. In addition, many electricity retailers indicated a strong preference to pay a premium for RECs, rather than pay the shortfall charge and be seen not to be meeting their individual MRET obligations.
- 53 However, without some adjustment to the shortfall charge, the results of the modelling could create serious uncertainty in the minds of investors. Any possibility that liable parties would elect to pay the shortfall charge rather than purchase RECs would be seen as a high risk factor by investors and could potentially reduce future investment levels.

³ Figure 3 source; adapted from McLennan Magasanik Associates, *Impact of a 20,000 GWh target for the MRET Scheme*, p22

54 To allay potential investor uncertainty and maximise the opportunities for renewable industry development, the Review Panel recommends that the shortfall charge be indexed to inflation from 2010 until 2020. The modelling indicates that, with this refinement to the MRET parameters, the 20 000 GWh target for 2020 would be met.

Figure 4—Total additional renewable energy with a 20 000 GWh target⁴

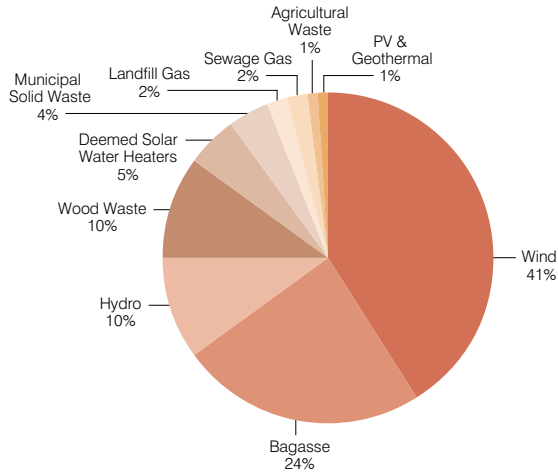


- 55 The modelling confirms that the removal of a significant amount of existing renewable generation from MRET would still allow mature projects to continue without MRET assistance. It would also provide scope for new projects to go forward without the need for further increases in either MRET targets or the shortfall charge beyond 2020.
- 56 Sustained growth in demand beyond 2020 will also provide the opportunity for significant industry development over the longer term. It will also enable MRET to make a continuing and growing contribution to greenhouse gas abatement at a cost which is likely to be more competitive with other abatement measures than presently.
- 57 This expectation is supported by the economic modelling which shows a steady increase in renewable energy generation towards an additional 20 000 GWh in 2020 and 37 000 GWh in 2030.
- 58 Based on current electricity market estimates, an additional 20 000 GWh would approximate an additional 2 per cent of overall demand in 2020 (from the 1997 baseline).

⁴ Figure 4 source; McLennan Magasanik Associates, *Impact of a 20,000 GWh target for the MRET Scheme*, p23

59 The modelling also shows that adoption of the Review Panel’s recommendations would ensure that, by 2020, Australia has a diverse range of renewable energy sources from which to meet future energy needs, with growth in most sectors, predominantly in the wind energy sector.

Figure 5—Share of renewable generation by fuel, under proposed settings, 2020⁵



60 The impacts of the refined MRET on the wider economy would continue to be relatively small. Gross Domestic Product would decline by less than 0.08 per cent annually compared to the current MRET settings.^{5a} Employment in the renewables industry would grow substantially with an additional 7000 jobs per annum above the current MRET settings, but these gains would need to be balanced against losses elsewhere in the Australian economy, with the net effect amounting to a minimal overall reduction.

61 Additional cost to energy users would be small with wholesale electricity prices rising to \$43.40 per MWh (in 2003 dollars) or 3.8 per cent above the current MRET in 2020.

62 In terms of greenhouse gas abatement, the refined MRET would more than double the current scheme’s contribution to an estimated 15.9 Mt CO₂-e per annum by 2020. This would be achieved at around the same cost to the economy of \$34 per tonne CO₂-e (in 2003 dollars) in 2020.^{5b}

⁵ Figure 5 source; McLennan Magasanik Associates. Note sources supplying less than one per cent of the total are not shown.

^{5a} Errata: Second line—delete ‘less than 0.08 per cent annually compared to the current MRET settings’ and insert ‘a maximum of 0.08 per cent in any one year, compared to a no MRET scenario’

^{5b} Errata: Third line—delete ‘\$34 per tonne’ and insert ‘\$33 per tonne’

- 63 The Review Panel is conscious of the uncertainty that can arise from scheduled future reviews, and recommends that future review should only be undertaken in two sets of circumstances.
- 64 The first of these would arise from any decision to implement an economy-wide emissions trading or carbon tax scheme. A review in such circumstances would need to ensure either a smooth transition to the new scheme or determine any necessary adjustments to MRET. Whichever course may be followed, existing investments should be protected.
- 65 The second review trigger would arise from any significant shortfalls in the meeting of MRET targets.
- 66 The Review Panel does not recommend changes to the scheme in areas such as baselines, caps or portfolio approaches, but does favour some improvements to the transparency of the RECs market.

Eligibility and operational issues

- 67 The Review Panel considered a number of issues concerning eligibility of renewable energy sources and various operational issues under the legislation.
- 68 There are currently six categories of wood waste. The eligibility of wood waste from native forests and the operation of the Regulations governing other wood waste materials were prominent issues raised during the Review, attracting diverse and strongly held views from interested parties.
- 69 For a variety of reasons, interested parties ranging from environment groups through to electricity market participants, expressed concern about inclusion of wood waste from native forests as an eligible renewable energy source. Some forestry and other interests supported its continued eligibility.
- 70 Wood waste RECs generally sell at a discounted rate, relative to other RECs. Market participants are currently unable to distinguish between RECs created from wood waste from native forests and RECs created from other eligible wood waste sources, including from plantations. Many liable parties indicated that, as a matter of policy, they would not purchase RECs sourced from native forests, as they did not wish to support electricity generation fuelled by native forest biomass.
- 71 The Review Panel proposes two options for consideration. The preferred option will be a matter for the Government, having regard not only to energy, environment and industry policies, but also to the National Forest Policy Statement, which falls outside the Review Panel's Terms of Reference.
- 72 The first option excludes wood waste from native forests as an eligible renewable energy source. The second option retains wood waste from native forests as an eligible source, but separates it from other eligible wood waste sources.

- 73 The Review Panel also considers that all biomass from plantations should be eligible and, along with energy crops, should be relieved from unnecessary regulation.
- 74 Various proposals for enhancement of MRET settings for the photovoltaic industry were considered. The Review Panel considers that some changes are warranted, including extending the deeming period for photovoltaic small generation units (SGUs) to 15 years, and increasing the photovoltaic SGU threshold capacity to 100 kW.
- 75 The Review Panel considers that the current regulations governing the eligibility of solar water heaters are unnecessarily complex and may have adverse impacts. Instead, the Panel recommends that all complete solar hot water systems be eligible for RECs upon their installation, to the full extent of their energy displacement capacity.
- 76 No other substantive changes to Eligible Renewable Energy Sources are proposed, other than some clarifications and enhancements to administration, and the adoption of proposals in the Renewable Energy (Electricity) Amendment Bill 2002.

List of Recommendations

1. The MRET measure to continue to operate.
2. Australian Government and State and Territory Ministers to investigate impediments to the inclusion of more renewable energy in National Electricity Markets.
3. MRET to be enhanced to support continued development of the renewable energy industry after 2007.
4. A review to be undertaken with a view to raising the level of research and development (R&D) in renewable energy. This review to consider whether MRET should, or could, be used as a vehicle to stimulate more investment in renewables R&D.
5. Australian Government renewable energy industry development programs to be reviewed with a view to improving the integration and focus of program support and that the funding levels be maintained on an ongoing basis.
6. MRET targets to continue to be expressed in gigawatt hours (GWh) and not as a percentage of overall electricity demand.
7. Interim targets prior to 2010 and the 9500 GWh target for 2010 to remain unchanged.
8. MRET targets to continue to increase beyond 2010 at a rate equal to the rate before 2010, and to stabilise at 20 000 GWh in 2020.
9. The end date of the measure to be extended beyond 2020 so that renewable energy from projects commencing after 2005 receive RECs for a full 15 year period.
10. Pre-existing generators and projects commissioned before the end of 2005 to receive RECs until 2020, after which they should be set new baselines.
11. The shortfall charge to remain fixed at \$40 per megawatt hour (MWh) until 2010 and to be indexed to the Consumer Price Index between 2010 and 2020.
12. A review of the Act to be initiated by the Minister if a decision is taken to implement a defined, economy-wide greenhouse abatement scheme, or in the event of more than 15 per cent of the overall liabilities being met by shortfall charge payments over two consecutive years.
13. The Act to be amended to enable publication of baselines by the Office of the Renewable Energy Regulator (ORER).

14. Electricity generation reported to ORER in Electricity Generation Returns for any compliance year to cease to be eligible generation after 10 October of that calendar year.
 15. The Act to be amended to enable ORER to publish:
 - a) Total eligible generation that occurred in the market in that year
 - b) Total number of RECs created that year
 - c) Total actual market liability for the year
 - d) Total number of RECs surrendered to offset that liability
 - e) Individual shortfalls and the proportion of those shortfalls relative to their liability.
 16. As the treatment of wood waste from native forests raises issues outside the Review Panel's Terms of Reference, such as National Forest Policy, two options are proposed:
 - a) wood waste from native forests to be excluded as an Eligible Renewable Energy Source; or
 - b) wood waste from native forests to be separately identified as an independent Eligible Renewable Energy Source with the existing regulatory arrangements applying to wood waste from native forests to be retained.
 17. Eligibility for plantation biomass to be redefined under 'energy crops'. Provisions to ensure plantation harvesting operations are conducted according to relevant approvals, and to deter landclearing of native forests, to be retained.
 18. Eligibility of sawmill residues to be restricted to post-processing residues from sawmilling, veneer or other processing operations (other than wood chipping).
 19. The 'primary purpose' test applying to energy crops to be removed.
 20. All biomass material directly sourced from a licensed landfill or licensed waste transfer station, which would otherwise be landfilled, to be eligible under the municipal solid waste provisions of MRET.
 21. Photovoltaic Small Generation Units (SGUs) with a rating of not more than 10 kW (or 25 MWh per annum) to be eligible to create RECs for a single deeming period of 15 years.
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22. The threshold generating capacity for eligible Photovoltaic SGUs to be increased from 10 kW (or 25 MWh per annum) to 100 kW (or 250 MWh per annum). Generators with a capacity between 10 kW (or 25 MWh per annum) and 100 kW (or 250 MWh per annum) to have the option for eligibility to be assessed under either the proposed 15 year deeming provisions or under the metered power station provisions.
23. A review to be undertaken to determine how further consideration can be given to special assistance for the Australian photovoltaic industry, either through enhancement of MRET or other measures.
24. All complete solar water heater systems installed, including replacement systems, to be eligible to create RECs to the full extent of their energy displacement capacity.
25. The Act to be amended to empower the Minister to make regulations to clarify the interpretation of Eligible Renewable Energy Sources or to determine the eligibility of new renewable energy sources.
26. Other than to accommodate Recommendations 16, 17 and 19, the list of Eligible Renewable Energy Sources contained in the Renewable Energy (Electricity) Amendment Bill 2002 to be adopted.
27. ORER to assess proposed generation projects with a view to providing 'provisional accreditation', on the basis of what is known at the time of the application and subject to the proponent satisfying the eligibility requirements of the Act.
28. ORER to be required to assess accreditation applications within six weeks after receipt of a completed application and other necessary information.
29. The Act to be amended to allow any registered owner of a REC to surrender the REC to ORER, either voluntarily or against a registered liability.
30. Except where amendment is necessary to accommodate the Review Panel's recommendations for changes to MRET, all other provisions in the Renewable Energy (Electricity) Amendment Bill 2002 to be adopted.