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24th July 2009

The Secretary
Senate Economics Legislation Committee
PO Box 6100
Parliament House
CANBERRA ACT 2600

Dear Sir/Madam,

Inquiry into the Renewable Energy (Electricity) Amendment Bill 2009 and a related bill

Thank you for the opportunity to comment on the *Renewable Energy (Electricity) Amendment Bill 2009*.

Summary of Ausra's Position

The solar thermal energy company Ausra Pty Ltd supports the Australian Government's commitment to expanding the Mandatory Renewable Energy Target to create a new target of 45,000 GWh in 2020 and urges the Australian Parliament to pass this important legislation as soon as possible. Ausra also recommends further amendments to strengthen the legislation and further encourage the uptake of large-scale, zero emissions solar energy.

Ausra believes the expanded Renewable Energy Target is fundamental to the success of the Australian Government's world-leading Solar Flagships Program, which aims to deliver 1000 megawatts (MW) of zero emissions solar power. Without the Renewable Energy Target, the Solar Flagship Program is just a car without an engine.

While Ausra strongly supports the expanded Renewable Energy Target and the Solar Flagships Program, we believe the draft legislation still limits the potential of solar thermal. The legislation disadvantages solar thermal by failing to provide sufficient incentives for investment in large-scale solar thermal energy projects in the short term outside of the Solar Flagships Program and by crowding out the Renewable Energy Target with credits for solar hot water.

Ausra has identified three measures in the Draft legislation which could distort the renewable energy market and disadvantage solar thermal energy: the inclusion of solar hot water; the establishment of a micro-generation multiplier and unlimited banking. The first two measures could result in solar hot water and, to some extent, solar photovoltaics, crowding out the Renewable Energy Target and providing reduced incentives for investment in larger scale renewable generation. Unlimited banking creates an incentive to stockpile Renewable Energy Certificates by investing in wind power and more mature renewable energy sources potentially at the expense of solar thermal.

In this submission, Ausra calls for the establishment of a comprehensive solar credits scheme, or the banding of solar thermal, as a key sub-component of the Renewable Energy Target to help drive investment in zero emissions solar thermal energy.

The Australian Government has already indicated it will use the Renewable Energy Target to stimulate investment in household solar power, and it follows there should be a similar measure for large-scale solar power to help drive a solar revolution. Solar thermal has the capacity to deliver substantially greater energy production, substantially greater reductions in greenhouse pollution, more jobs and more export opportunities than household solar panels.

Importantly, solar thermal energy also has characteristics which allow lower cost and improved grid operation; the ability to feed in electricity from grid extremities along existing trunklines, a potential peaking capability (with storage and hybridization) which improves grid economics, and a lower cost per kilowatt hour than household solar panels.

The Solar Flagships Program will actually deliver the equivalent of a million solar roofs – with 1000MW equivalent to 1 million 1 kilowatt solar panels – and it deserves support through a comprehensive solar credits scheme.

A comprehensive solar credits scheme or the creation of a specific solar target would create new jobs in regional Australia, provide new export opportunities and help create an Australian supply chain for this emerging global industry. This would genuinely establish Australia as a world leader in solar technology.

Ausra

Ausra is an Australian/American company which designs, manufactures, installs, and operates solar thermal energy systems.

Ausra's zero-pollution emitting solar thermal energy systems produce steam directly from the sun. The company's core technology, the Compact Linear Fresnel Reflector (CLFR) solar collector and steam generation system, uses modular flat mirrors to focus the sun's heat onto elevated centralized receivers, which consist of a system of tubes through which water flows. The concentrated sunlight boils the water in the tubes, generating high-pressure steam for use in power generation and industrial steam applications.

More information on Ausra can be found at www.ausra.com.au and www.ausramediaram.com

Advantages of Solar Thermal

Solar thermal technology refers to the capture and utilisation of solar energy to produce steam for use in heat applications or electricity production.

There are several solar thermal electricity technologies competing in the world market, and plants are being built of all major types, including parabolic trough, paraboloidal dish, central receiver power towers, and Ausra's own primary technology, compact linear fresnel reflector technology. Solar thermal electricity generating plants are large-scale operations, generally from 50 megawatts to 500 megawatts, whereas solar thermal steam only plants can be deployed on smaller scale.

Ausra's technology has two broad applications, stand-alone plants producing zero emissions electricity and solar augmentation or booster plants, which produce steam. Ausra and Macquarie Generation operate the world's only solar augmented coal fired power station at the Liddell power station in New South Wales' Hunter Valley.

The High Temperature Solar Thermal Technology Roadmap, prepared for the New South Wales and Victorian Governments and released in November 2008, argues solar thermal technology has the potential to “*contribute strongly to Australia's carbon abatement and international competitiveness in the near, medium and long terms*”.¹

The Roadmap notes that over the next decade market opportunities approaching 1,000 megawatts (MW) in total capacity could be available to solar thermal. Ausra believes this figure could be substantially higher with a comprehensive solar credits scheme, renewable energy infrastructure investment and a complementary regulatory framework.

Solar thermal has a number of advantages over other energy sources. A recent report by ACIL Tasman, commissioned by Ausra, noted that:

- A solar thermal plant's ability to generate electricity closely matches the current load curve, particularly as the summer demand peaks are increasingly driven by air conditioning load;
- A solar power plant would be eligible to earn renewable energy certificates under the Renewable Energy Target; and
- The technology is one that can relatively easily be used to reduce the emissions of existing coal fired plants (as has been done at Ausra's Liddell plant).²

¹ Wyld Group (2008) High Temperature Solar Thermal Technology Roadmap.

² ACIL Tasman (2008) Comparative cost of solar thermal and other technologies, pviii.

A 2008 report, the *Utility Solar Assessment (USA) Study*, argued that:

- Solar can offer a price hedge against volatile and increasing costs for fossil-fuel resources like coal and natural gas and, once installed, provides stable prices to utilities and users;
- Solar is becoming a cost-effective peak generation resource;
- Within a decade, solar power will be cost competitive in most regions of the US on a kilowatt hour basis; and
- Compared to coal, nuclear and gas-fired power plants, solar has no fuel costs, low maintenance costs and will provide credits, rather than costs, in a carbon-constrained world.

The Utility Solar Assessment projected that through to 2025, utility-scale solar power would grow by about 28 per cent per annum on average across the United States, with more than 6,000 megawatts installed in 2025.³

A 2006 World Bank/Global Environment Facility report concluded “*there is now a renewed enthusiasm for solar energy development around the world. Project development and implementation is moving at a fast pace, especially in Europe.*”⁴ A 2008 United Nations Environment Program report also concluded that more than 624,000 jobs could be created worldwide by solar thermal alone.⁵

The Solar Thermal Roadmap report notes that over 6 gigawatts (GW) of solar thermal power projects have been announced for deployment by 2012 in Europe, the United States, the Middle East and North Africa, with all of those projects being announced within the last five years.

In addition to the above projects, the American utility Southern California Edison recently announced plans to sign contracts for 1,300 megawatts of solar thermal generated electricity. It has been estimated that, as part of this project, a 400 megawatt plant would create 1,700 job years — with a job year equivalent to one full-time job for one year — during construction.⁶

³ Clean Edge Inc. and Co-op America (2008) *Utility Solar Assessment (USA) Study*, p23.

⁴ Global Environment Facility Program and World Bank (2006) *Assessment of the World Bank/GEF Strategy for the Market Development of Concentrating Solar Thermal Power*, quoted in Wyld Group (2008), op cit.

⁵ United Nations Environment Program (2008) *Green Jobs: Towards Decent Work in Sustainable, Low-Carbon World* (quoted in DB Advisors (2008) *Economic Stimulus: The Case for “Green” Infrastructure, Energy Security and “Green” Jobs*, Deutsche Bank.

⁶http://money.cnn.com/news/newsfeeds/articles/djf500/200902111558DOWJONESDJONLINE000864_FORTUNE5.htm

The demand for solar thermal power is growing exponentially, and the Minister for Resources, Energy and Tourism, Martin Ferguson, was right when he stated in January 2009:

“The world is crying out for cost-competitive solar technology. Action is required if we are to restore Australia as a key player in solar energy technologies.”⁷

There are very strong benefits in developing an Australian solar thermal industry as the demand for the technology grows exponentially worldwide. These benefits include the creation of new construction and maintenance jobs to service solar thermal plants, particularly in regional Australia; the development of new export markets; the creation of an Australian supply chain; and international leadership in the creation of zero emissions technologies.

Ausra estimates the establishment of a 140 MW stand alone plant in Australia could generate approximately 900 construction and manufacturing jobs, and approximately 40 permanent jobs. A 280MW solar augmentation plant could create about 90 jobs.

A recent report commissioned by the Clean Energy Council states that for every kW of installed capacity there are 4.89 FTEs in solar thermal.⁸ A report commissioned by the Nevada and New Mexico State Governments found that a CST power station requires a 67% larger workforce than a comparably sized combined cycle natural gas plant.⁹

In developing an Australian supply chain for solar thermal equipment, new manufacturing and export opportunities exist in the steel and glass industries in particular.

Barriers to Solar Thermal Projects

The major barriers to the rollout of large-scale solar thermal plants are the substantial cost differences between solar thermal and other existing energy sources, and the lack of specific incentives to help reduce that cost differential.

Research undertaken by ACIL Tasman for Ausra indicates the Australian Government’s Carbon Pollution Reduction Scheme (CPRS) will not make a substantial difference to eliminating the cost difference between solar thermal and fossil fuel energy sources. In fact, it is likely that solar thermal would require a substantially greater carbon price than has been contemplated in the CPRS White Paper to be cost competitive in the National Electricity Market, despite solar thermal technology being technically available today. The full ACIL Tasman report is available from Ausra upon request.

⁷ Ferguson, M. (2009) Australian Solar Institute, 15 January.

⁸ Access Economics (2009) *The net employment impacts of climate change policies* .

⁹ Wyld Group (2008) High Temperature Solar Thermal Technology Roadmap.

Renewable Energy Target

The *Renewable Energy (Electricity) Amendment Bill* will ensure the equivalent of at least 20 per cent of Australia's electricity supply is generated from renewable energy sources by 2020. The expanded target is an important contribution to building a clean energy economy and cutting Australia's carbon pollution. As McLennan Magasanik Associates (MMA) have noted, the generation of Australia's renewable energy should more than double by 2020 under the expanded Renewable Energy Target.¹⁰

Ausra has been advised by the Office of the Renewable Energy Regulator that solar augmentation projects, such as the plant at Liddell, could be eligible for Renewable Energy Certificates (RECs), although accreditation would need to occur on a site by site basis. Eligibility for RECs provides a significant incentive for investment in solar augmentation, and it is critical that solar augmentation remains an accredited energy source in the expanded Renewable Energy Target. Ausra believes solar augmentation will play an important role in transitioning the coal industry towards a low carbon economy.

Whilst solar thermal energy is an eligible energy source under the Mandatory Renewable Energy Target and the expanded Renewable Energy Target, this in itself does not provide a sufficient incentive to overcome the substantial upfront construction costs of building large-scale solar thermal plants. That is why the Australian Government's \$1.6 billion Solar Flagships Program is so important – it provides direct funding to assist with those upfront construction costs.

Solar Flagships Program

The Australian Government announced in the 2009-10 Federal Budget that it would provide \$1.6 billion over six years for a Solar Flagships Program to support the construction of up to four large-scale solar power stations, operating within the energy market, with a total capacity of 1,000MW. The Government has indicated that two of the solar power stations will use solar thermal power. Ausra understands a consultant has been appointed to assist with the implementation of this program, and we will be providing advice to help maximize the effectiveness of Solar Flagships.

With the announcement of this program, solar thermal will begin to make an important contribution to Australia's renewable energy mix, and the importance of the program cannot be underestimated. The Solar Flagships Program will actually deliver the equivalent of a million solar roofs – with 1000MW equivalent to 1 million 1 kilowatt solar panels.

¹⁰ McLennan Magasanik Associates (2009) Benefits and Costs of the Expanded Renewable Energy Target.

The Solar Flagships Program is a critical measure for the Australian solar industry, but it cannot be delivered without an expanded Renewable Energy Target. This is because consortium partners will still be required to invest substantial upfront funds to at least match the Australian Government's investment, and renewable energy certificates provide a direct, reliable and additional income source. Without that income source, there is no specific incentive for investment in more expensive renewable energy technologies.

Design of the Renewable Energy Target

The Solar Thermal Roadmap notes solar thermal generates electricity at a higher cost than some existing renewable energy technologies. As a result, it is unlikely to benefit significantly through to 2020 from the Australian Government's expanded Renewable Energy Target as it is a "competitive support mechanism", that is, it primarily supports least cost renewable energy.¹¹

MMA has noted the proposed expanded Renewable Energy Target would particularly benefit wind power and, to some extent, geothermal generation. MMA estimates that two thirds of the increased generation would come from wind power.¹²

Unfortunately, the proposed design for the Renewable Energy Target has elements that provide additional disincentives for solar thermal investment in Australia. Specifically:

- the approach to unlimited 'banking' of Renewable Energy Certificates (RECs);
- the proposed REC multiplier for micro-generation units, including residential solar PV; and
- the continued accreditation for solar hot water systems in addition to an increased Commonwealth Government subsidy.

The price of Renewable Energy Certificates has plunged 30 per cent recently as a result of the deferral of the Renewable Energy Target legislation and the oversupply of solar hot water credits. RECs have gone from a high of \$53.80 in April 2008 to \$37.95 in mid-July 2009. This has stalled investment in large-scale renewable energy projects.¹³

Banking

Banking of RECs allows both purchasers and creators of RECs to purchase or create RECs in advance of the subsequent surrender of the REC in accordance with obligations on retailers. The proposal is that there will be unlimited banking opportunities such that:

¹¹ Wyld Group (2008) High Temperature Solar Thermal Technology Roadmap, pii.

¹² McLennan Magasanik Associates (2009) Benefits and Costs of the Expanded Renewable Energy Target.

¹³ Parkinson, G. (2009) :Greenchip", *The Australian*, July 13.

- 1 MWh of renewable energy produced in the first year of the scheme could potentially be surrendered in the last year of the scheme; and
- electricity retailers will be able to hedge expected future REC requirements through the sequential purchasing of RECs in advance of the obligation arising.

The effect of this approach to banking is that the proposed annual renewable energy targets become redundant, apart from providing an overall indication of the *total* amount of renewable energy that will be required for purchase over the life of the scheme.

The implications of this approach to banking is that an incentive is created to produce RECs through current technology and so create a stockpile of RECs that could be made available in order to meet future retailer obligations. Importantly, this approach creates disincentives for innovation and investment in larger-scale renewable generation, because the demand for renewable energy that is effectively available such that RECs will be required will be reduced in the future.

Micro-generation

This disincentive for investment is further exacerbated by the proposed REC ‘multiplier’ for micro-generation, including household PV. This aspect of the proposed Renewable Energy Target design creates even greater incentives for early investment in renewable generation, from sources that may or may not be as cost effective when compared to others. Indeed, the multiplier is explicitly designed to generate higher incentives in the earlier years of the scheme, but allowing more RECs to be created per unit of micro-generation in the earlier as compared to later years of the scheme.

It is clear that the intention is for the multiplier to provide explicit incentives for early investment in renewable micro-generation. The effect of such early investment, in combination with the unlimited banking approach is that it could lower expectations about the future price of RECs, and so there is a reduced incentive for investment in larger scale renewable generation that might take longer to develop or be cost-competitive.

The proposed approach to banking, the continued accreditation of solar hot water and, to some extent, the multiplier on micro-generation effectively cuts the size of the likely cost effective, large scale renewable generation that will be needed. Not only will this lead to less investment in large scale renewable energy, but it will also affect the likelihood that the target will be achieved at all.

It should be acknowledged that there is a limit to the extent that micro-generation can feasibly meet the government’s 20 per cent target for electricity generation from renewable sources, and so some form of larger-scale renewable generation will be needed.

Solar Hot Water

Solar hot water heaters currently contribute up to 30 per cent of the Mandatory Renewable Energy Target.¹⁴ This figure is likely to remain high under the proposed Renewable Energy Target in the early years, providing an additional disincentive for investment in solar thermal.

As noted earlier in this submission, the current REC market is suffering from regulatory uncertainty and a significant oversupply of solar hot water credits. There are currently approximately 600, 000 - 700, 000 solar hot water renewable energy certificates in the REC registry which will create a surplus for surrender this year. Market participants are not willing to use their balance sheets to hold RECs, and financial institutions are not interested in entering into repurchase agreements

As a result, the market price is depressed, and is expected to remain that way unless there is a change to the framework for the treatment of solar hot water.

Ausra notes that the Australian Government announced on 3 February 2009 that it would increase the Solar Hot Water Rebate from \$1,000 to \$1,600 until 30 June 2012. This rebate will not be means-tested.¹⁵ Whilst the announcement itself is an important measure in reducing Australia's carbon pollution, it will in fact act as an anti-stimulus for new renewable energy generation because it will allow solar hot water to continue to take up a substantial percentage of the Renewable Energy Target.

The decision to substantially increase the Solar Hot Water Rebate reaffirms Ausra's view that solar hot water should not be an eligible source under the expanded Renewable Energy Target. The best mechanisms to encourage solar hot water are the rebate and the phasing out of greenhouse intensive electric hot water.

It is also important to note that whilst solar hot water is accredited under the existing and expanded targets, it appears other solar thermal steam applications are not. Steam is used extensively in food processing and agriculture, oil refining, pulp and paper and chemical processing. It is discriminatory for the Renewable Energy Target to apply to solar hot water but not to other solar steam applications. The Australian Government should consider extending the Renewable Energy Target to all solar steam applications.

Encouraging Solar Thermal Through the RET

Whilst solar thermal energy is an eligible energy source under the Renewable Energy Target, the likely investment disincentives that the proposed scheme design has means that large-scale renewable generation like solar thermal, will continue to be disadvantaged.

¹⁴ McLennan Magasanik Associates (2009) Benefits and Costs of the Expanded Renewable Energy Target, p36.

¹⁵ Rudd, K. (2009) Energy Efficient Homes- Ceiling Insulation in 2.7 Million Homes, 3 February.

Ausra believes it is counterproductive to focus the Renewable Energy Target too much on short-term renewable investments, given the scale and significance of the climate problem to hand. There is an urgent need to use all measures, including the Renewable Energy Target to also provide incentives for research and development and early deployment of technologies in order to lower the costs of more large-scale renewable generation.

There are strong policy reasons for this including:

- it is uncertain whether it is technically feasible for current renewable generation technology to provide sufficient capacity to satisfy the Renewable Energy Target;
- the current front-runner for large-scale renewable generation is wind generation, however, the cost of transporting electricity from wind generation locations is significantly high given the likely distances over which it will need to be conveyed to satisfy the Renewable Energy Target; and
- there is a growing market overseas for large-scale renewable generation, and so substantial economic benefits to Australia.

Ausra would recommend amendments to the legislation to address the remaining disincentives for large-scale renewable generation investment.

Given the likely wider benefits from encouraging both micro-generation and solar thermal generation, there is merit in having an explicit large-scale solar credits scheme included within the Renewable Energy Target design.

Ausra therefore recommends the establishment of a comprehensive Solar Credits Scheme, including a multiplier for Renewable Energy Certificates created by solar thermal. This multiplier should be set at two RECs for every megawatt of deemed renewable energy for new systems, with a phase out by 2017-18.

An alternative approach, with a similar effect, would be to create a solar thermal “band”, or sub-target within the Renewable Energy Target. This approach draws on the United Kingdom’s banded scheme, which proposes awarding the equivalent of a quarter of a Renewable Energy Certificate per megawatt hour of electricity to established technologies such as landfill gas, one Certificate for wind and two for an emerging technology like solar thermal.

If the Australian Government believes there is merit in using the Renewable Energy Target to stimulate investment in household solar power, it follows there should be a similar measure for large-scale solar power. Solar thermal has the capacity to deliver substantially greater energy production, substantially greater reductions in greenhouse pollution, more jobs and more export opportunities than household PV. Clearly, PV has an important role to play in encouraging Australians to reduce emissions, but this does not in itself constitute a solar revolution.

If PV and other micro-generation are included in the Renewable Energy Target while receiving a doubled REC, it is only equitable that solar thermal energy should also receive a similar multiplier or band.

Ausra has previously called for the establishment of a national feed-in tariff for large-scale solar power projects and in the absence of specific incentives in the Renewable Energy Target will continue to work with Australian Governments to seek to achieve this outcome in individual jurisdictions or at a national level.

Ausra would welcome the opportunity to appear before the Senate Inquiry to discuss the matters raised in this submission with you in more detail.

Should you require any further information, please contact Ausra's Manager of Government Relations, Wayne Smith, on 0417 141 812 or wayne.smith@ausra.com

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'Bob Matthews', is positioned above the typed name.

Bob Matthews
Chief Executive Officer