



**Submission by**

**Alternative Technology Association**

**on**

**ACT Electricity Feed-in (Solar Premium) Bill**

**Exposure Draft**

**28<sup>th</sup> February 2008**

**By email to:** [luke.austin@parliament.act.gov.au](mailto:luke.austin@parliament.act.gov.au)

**For further information or enquiries contact:**

Brad Shone  
Energy Policy Officer  
ATA – Alternative Technology Association  
(03) 9415 2105

E-mail: [Brad.Shone@ata.org.au](mailto:Brad.Shone@ata.org.au)

## Introduction

ATA welcomes the opportunity to comment on the *Exposure Draft of the Electricity Feed-in (Solar Premium) Bill 2007* as proposed by Mick Gentleman and released by the Parliamentary Counsel's Office. We applaud the initiative shown by Mick Gentleman to introduce such a progressive and welcome piece of legislation, and encourage the whole of the ACT Government to embrace this proposal.

ATA is a not-for-profit organisation established in 1980 to promote the uptake of sustainable technologies in order to protect our environment. The organisation provides service to over 4000 members, who are actively promoting sustainability in their own homes by using good building design and implementing water conservation and renewable energy technologies. ATA supports the ease of access and continual improvement of these technologies, as well as being actively involved in the production and promotion of information and products needed to change the way we live.

ATA would like to offer our broad support for the introduction of a feed-in tariff in ACT, and for the direction and intention of the *Exposure Draft of the Electricity Feed-in (Solar Premium) Bill 2007* (the proposed Bill). Feed-in tariffs are universally recognised as the incentive mechanism of choice for delivering large-scale, low-cost and rapid roll-out of renewable energy technologies internationally. They have been instrumental in many countries in not only the deployment of renewable technologies but also the creation of jobs and establishment of local high-tech industries.

The ACT is in the position to lead the country in the implementation of an effective feed-in tariff which will lead to a genuine accelerated uptake of renewable energy technologies. ATA believes flaws in the design of the recent feed-in tariff legislation introduced in South Australia – the low tariff level and the use of net metering – will render the measure relatively ineffective, as payback times will remain well in excess of 20 years for the majority of systems. Such long payback times will not result in a sufficient incentive for widespread adoption of renewables by a broad cross-section of the community.

Alternatively, many of the features of the feed-in tariff mechanism outlined in the Exposure Draft go a considerable way to ensuring an effective incentive scheme which will result in rapid and widespread up-take of renewable energy technologies by the ACT community. We urge the proponents of the proposed Bill to carefully consider the comments and suggestions made within this submission, aimed at ensuring the proposal achieves its goal of increased adoption of solar photovoltaic electricity and other renewable energy technologies.

### **Key recommendations on the Exposure Draft of the proposed Bill**

- Renewable energy generators not more than 30kW of installed capacity receive the premium rate
- Renewable energy generators larger than 30kW of installed capacity receive 75% of the premium rate
- 'Fair and reasonable' criteria be developed for grid-connection standards
- The Minister and the regulator assess all grid-connection standards against this criteria
- The initial feed-in tariff premium rate be set at 67c/kWh
- Renewable energy generators are guaranteed a set tariff for 15 years from installation
- The feed-in tariff premium rate be indexed at CPI
- Occupiers be paid for the total production from their system via gross generation metering

## Comment on Exposure Draft

The following feedback on the proposed Bill consist of general comment on the intention and direction of the Exposure Draft, as well as specific comment on aspects of the proposed Bill. Where comments refer to specific aspects, direct reference is made to the relevant passages, with all numbering in the submission referring to the numbers used in the proposed Bill.

### Part 1 Preliminary

#### **3 Object of the Act**

ATA supports the objective stated within the proposed Bill of promoting the uptake of the generation of electricity from renewable energy sources. In the wake of the recently released Garnaut Climate Change Review Interim Report, and the suggestion of the need to adopt a 90% reduction in greenhouse gas emissions by 2050 in order to avoid dangerous climate change<sup>1</sup>, it is clear that we will need to employ all measures available to us to achieve these targets. With electricity generation contributing to 35% of Australia's greenhouse gas emissions<sup>2</sup>, and 72.3% of ACT's emissions<sup>3</sup>, it is essential that we modify our generation mix to reduce its emission intensity. The key sustainable, practical and efficient method for doing this is the adoption of available renewable energy technologies.

Further, the increased uptake of distributed renewable energy technologies which will arise from the adoption of an effective feed-in tariff in ACT will have a range of additional benefits other than purely greenhouse emission reductions, and as such, distributed renewable energy cannot be thought of in purely these terms. The increased uptake of distributed renewable energy technologies, will result in not only a decreased emission intensity of the territory's electricity supply but also reduced transmission losses, lower wholesale electricity prices and, in the longer term, reduced need for expensive network infrastructure augmentation.

Embedded micro-generation technologies have a true value to the market higher than is currently able to be captured. Peak output of solar PV systems corresponds closely with times of peak demand across the National Electricity Market (NEM) – sunny summer afternoons, typically times of high air-conditioner use. At these times, the wholesale electricity price frequently rises well above the average NEM price of \$35/MWh, reaching the hundreds, even thousands of dollars per MWh. This pushes the overall average higher, and hence increases the cost of power to the consumer. By generating electricity at these times of peak demand, solar PV effectively acts as a form of consumption abatement, reducing the demand on remote wholesale generators and thus lowering the peak wholesale price of electricity.

Further, by generating electricity close to the point of consumption, embedded generation technologies avoid the need for expensive transmission and distribution network augmentation. It has been calculated that Australian network services providers are committed to spending in the order of \$24 billion dollars over the next 5 years on upgrades to networks in order to meet growing peak demand. A feed-in tariff offers an opportunity to reward embedded generation for its contribution to avoiding this network augmentation, and the associated cost which is ultimately borne by consumers through electricity prices.

Additionally, when considering an incentive for solar PV it is important to also consider the economy-wide benefits of the development of a solar manufacturing, distribution and installation industry in Australia. Solar PV generates about 40 jobs per MW installed<sup>4</sup>, significantly higher than the fossil fuel sector, with all small-

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<sup>1</sup> *Garnaut Climate Change Review - Interim Report to the Commonwealth, State and Territory Governments of Australia* February 2008

<sup>2</sup> Australian Greenhouse Office *National Greenhouse Gas Inventory*, available from:  
<http://www.greenhouse.gov.au/inventory/>

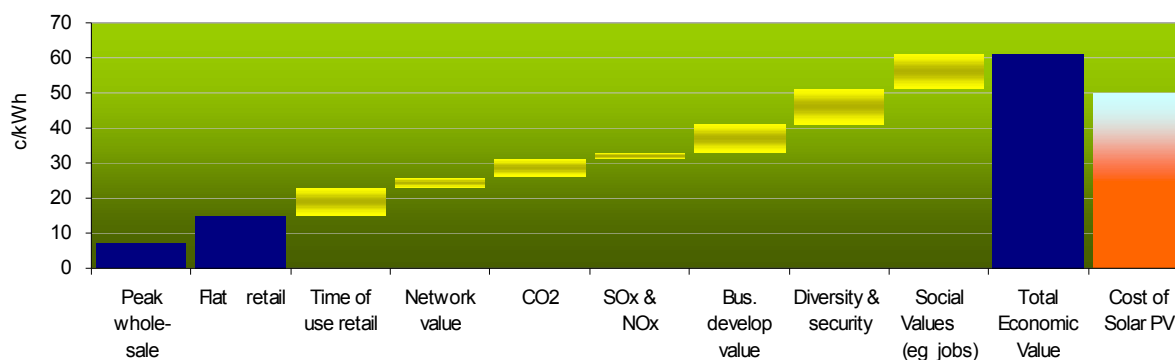
<sup>3</sup> Department of Territory and Municipal Services, *Weathering the Change: The ACT Climate Change Strategy 2007-2025*, ACT

<sup>4</sup> Andrew Birch (BP Solar) in a presentation to the Business Council for Sustainable Energy's Clean Energy Conference 2007, Melbourne, Victoria

scale renewable projects undoubtedly creating more jobs per MWh of electricity produced than conventional energy sources.

Not only would jobs be created immediately, but the development of a high-tech solar industry in Australia, with enormous export potential, would negate the present trend of locally-developed innovations, intellectual property and industry exports heading off-shore in search of markets. Further, the expansion of the solar industry locally will lead to economies of scale and reduced real costs, eventually enabling solar PV to reach parity in the Australian market without the need for financial incentives.

In addition to the greenhouse implications of our electricity supply, emissions of sulphur dioxide (SO<sub>2</sub>) and nitrous oxides (NO<sub>x</sub>) have a significant environmental, social and associated economic cost, and as such are subject to emissions reduction legislation, emissions trading and taxation in many countries internationally. A study by the European Commission places the cost of SO<sub>2</sub> and NO<sub>x</sub> emissions from electricity supply at roughly \$25/MWh for black coal and up to \$50/MWh for brown coal fired generation<sup>5</sup>. As such, economy-wide savings in these emissions must also be considered when evaluating the benefits of renewable energy. The below graph shows that, by combining the many economic and environmental benefits of embedded renewable energy generation outlined above, the total economic value of solar PV exceeds the installed cost of the technology.



**Figure 1: Cumulative benefit of distributed solar PV generation<sup>6</sup>**

Recent studies from the EU have shown that feed-in tariffs are the most efficient and effective mechanism for the deployment of renewable energy, resulting in lower cost roll-out than mandatory renewable energy targets favoured by Australian Governments<sup>7</sup>. Indeed, a recent progress report on the German feed-in tariff scheme shows that the financial benefits in reduced wholesale electricity costs, fuel imports costs and avoided damage resulting from climate change outweigh the cost of the feed-in tariff by a factor of approximately two-to-one<sup>8</sup>. Clearly, in such circumstances the benefits to the community far outweigh the costs and as such, ATA supports the rapid adoption of a feed-in tariff mechanism in the ACT.

An additional benefit to arise from the adoption of small-scale distributed renewable energy is the increased awareness of energy consumption behaviour and energy conservation options in the homes of those adopting these technologies. A recent study by the ATA found that around 85% of grid-connected PV system owners took or were planning to take additional energy efficiency and energy conservation measures after acquiring their PV system<sup>9</sup>.

<sup>5</sup> Rabl, A & Spadaro, J (2005), *Externalities of Energy: Extension of accounting framework and Policy Applications*, ExternE, European Commission

<sup>6</sup> Graphic courtesy of BP Solar

<sup>7</sup> Lipp, J. (2007) 'Lessons for effective renewable energy policy from Denmark, Germany and the United Kingdom' *Energy Policy* 35 (2007) pp 5481-5495

<sup>8</sup> Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) *Renewable Energy Sources Act Progress Report 2007*, BMU, Germany, 2007

<sup>9</sup> Alternative Technology Association *The Solar Experience – PV System Owners' Survey*, available from: <http://www.ata.org.au/about/projects/the-solar-experience-pv-system-owners-survey/>

All of the above benefits need to be carefully considered and provide a basis for the promotion of the generation of electricity from renewable energy sources. Further, it is essential to ensure that a progressive and effective feed-in tariff mechanism is adopted in the ACT in order to create the greatest opportunity to achieve these benefits.

## **Part 2 Renewable energy sources – supply to electricity distributors**

Again, ATA supports the intention of Part 2 of the proposed Bill. It is essential that any feed-in tariff is accompanied by both an obligation on the distribution network service provider to connect embedded generators such as small-scale renewable energy systems to the distribution network, as well as an obligation to purchase electricity generated by these systems. Additionally, the terms and conditions for the contractual arrangement between the generator and the network, or 'standards, need to be clearly defined. However, there needs to be some additional clarification around a number of the clauses Part 2, including some strengthening of the standards provision.

### ***6 Feeding-in electricity generated by renewable energy generator to electricity distribution network***

There is some confusion surrounding the size of generators which this law applies to, as outlined in Clause 6 (3) (a) & (b). Clause 6 (3) states that the distributor must pay the occupier "(a) for not more than 10kwh of installed capacity—at the premium rate"; and "(b) for more than 10kwh of installed capacity—at 50% of the premium rate."

It is difficult from the wording of these clauses to determine the true intention of this section. Primarily, the confusion arises from the fact that a kilowatt hour (kWh) is a measure of a quantity or volume of electricity, whereas the capacity of a system is measured in kilowatts. If the intention of the clause is to assign the rate paid based on the size of the installed system (the 'installed capacity'), the wording should read:

- (a) for renewable energy generators not more than 10kW of installed capacity – at the premium rate;*
- and*
- (b) for renewable energy generators larger than 10kW of installed capacity – at 50% of the premium rate.*

However, if the intention is to limit the amount paid based on the total production of a system (IE: at 10kWh), there needs to be a timeframe within which this level of generation is paid at the full rate, and beyond which the 50% threshold comes into play. For example:

- (a) for not more than 10kWh of electricity per day – at the premium rate; and*
- (b) for more than 10kWh of electricity per day – at 50% of the premium rate.*

Of these options, the former appears the far more workable and practical option. Controlling payments levels based on production over a specified period of time would require complex metering and billing methods by the retailers. For example, a retailer would need to apply one rate for the first 10kWh generated within a specified time frame, then a second rate for any quantity beyond that. Alternatively, if the rate was to apply for all production within a given timeframe where production exceeded the 10kWh threshold, there would be a perverse incentive for generators to limit their production to remain within the lower bracket and attract the full feed-in tariff rate. This is clearly unworkable.

ATA believes that any threshold for the payment of differing feed-in tariff rates needs to be determined by the size of the system, rather than that output over any given length of time. This can easily be managed by the known 'nameplate' rating of the installed system, and provides a clear and practical means of determining thresholds. It is a method that is replicated internationally where variable tariffs exist for the one renewable energy technology.

ATA believes that, in order to achieve that full benefits of distributed renewable generation, a feed-in tariff scheme needs to promote widespread adoption of renewable energy systems of all sizes. As the installed costs of systems under around 30kW in size is comparable on a 'dollars per watt' basis, ATA believes that the threshold should be set at 30kW of installed capacity, with systems up to this size attracting the full feed-in tariff, and larger systems receiving a discounted feed-in tariff.

However, it is highly unlikely that a tariff set at 50% of the full feed-in tariff rate would provide sufficient incentive for any additional renewable energy installations larger than 30kW. ATA believes that the discounted level should be set at 75% of the full feed-in tariff, in recognition of the more realistic costs of installing larger systems. Such tiering of a feed-in tariff has been adopted with great success in Germany, resulting in the widespread development of large-scale facilities as well as widespread adoption of small-scale distributed solar PV generation. The lower feed-in tariff level for larger systems takes into account the economies of scale able to be achieved by such systems, yet still provides sufficient incentive to ensure that systems larger than 30kW are installed under the legislation.

**Recommendation:**

ATA recommends that Section 6 of the proposed Bill be altered to read:

*(3) The distributor must pay the occupier for the total amount of electricity supplied to the distributor's network from renewable energy generators at the occupier's premises—*

*(a) for renewable energy generators not more than 30kW of installed capacity – at the premium rate; and*

*(b) for renewable energy generators larger than 30kW of installed capacity – at 75% of the premium rate.*

If, for some reason, production quantity was to be the chosen means of delineating between the two tariff levels, ATA recommend that the level be significantly increased beyond 10kWh and/or the timeframe be extremely short. By way of example, a 3kW solar PV system would nominally generate up to 3kWh of electricity per hour, and well in excess of 15kWh on an ideal summer day. Limiting this to 10kWh per day would provide a disincentive for the installation of systems larger than around 1.5kW due to the uncertainty surrounding the payment level on peak production days. This is obviously not desirable.

Putting aside concerns about billing, etc, the only workable threshold level based on production would need to be set at 10kWh per half-hour billing interval. This would then cater for systems up to around 20kW of installed capacity. Any less than this would provide a disincentive for larger renewable energy systems and significant uncertainty even for smaller sized installations.

## **8 Renewable energy generator – standards**

ATA welcomes the requirement for a distributor to determine and publish the standards that apply to renewable energy generator connections to distribution networks, and support the clauses under Section 8. However, we call for additional clauses to be inserted to ensure that the standards as developed by the distribution business is fair and reasonable, and doesn't disadvantage the renewable energy proponent.

Recent legislation in Victoria<sup>10</sup> has placed such a requirement on distribution businesses in Victoria, requiring them to guarantee connection, purchase electricity fed back into the grid, publish the terms and conditions and provide a copy of those terms and conditions to the relevant Minister for assessment against a fair and reasonable criteria, as developed by the Department of Primary Industries and the local industry regulator, the Essential Services Commission of Victoria<sup>11</sup>.

<sup>10</sup> PARLIAMENT OF VICTORIA *Energy Legislation Amendment Bill 2007*

<sup>11</sup> Unfortunately the Victorian legislation falls short of stipulating a buy-back rate, instead leaving it up to the fair and reasonable criteria to propose a buy-back rate of a minimum of 'one-for-one' (parity with the retail rate) rendering the legislation ineffective in stimulating the uptake of renewable energy technologies and falling short of a true feed-in tariff.

ATA believes that, while an appropriate price paid for electricity fed into the grid is an essential element of stimulating the uptake of these important technologies, equally important is the terms and conditions of that access. Overly onerous condition, excessive up-front connection charges, uncertainty and lengthy delays all contribute to forming a barrier to uptake and need to be addressed as part of this package. We recommend the development of a set of criteria for assessment of proposed standards and a process by which these will be assessed.

**Recommendation:**

ATA recommends that the feed-in tariff Bill include provisions for the assessment by the appropriate Minister and the energy regulator of standards proposed by a distribution business for the connection of renewable energy generators to the distribution network.

These should be assessed against pre-determined criteria to ensure the fairness and reasonableness of the proposed standards.

### **Part 3      Solar premium – determination of rate to electricity distributors**

It is widely accepted that the biggest driver for enhanced uptake of renewable energy technologies is a realistic payback time created by certainty of return on investment. For this certainty to be achieved, two key elements need to combine – a sufficiently high level of tariff, guaranteed to be paid over a adequate length of time to ensure a suitable payback. This is evidenced by the German experience where the largest uptake rates have been achieved in the world on the security of a feed-in tariff ensuring payback within 5 to 10 years, guaranteed to be paid for 20 years from installation.

#### ***9      Determination of premium rate***

ATA supports the notion of a review period for the initial proposed feed-in tariff rate, after which the Minister is able to determine the feed-in tariff for ensuing installations in the following years. However, as it is essential to guarantee some level of certainty of return on investment, we have some concerns with the wording of the proposed Bill as it stands.

The effectiveness of any feed-in tariff depends primarily on the certainty of payback generated by the scheme. Whilst it is essential to set the tariff level at a point at which payback is achieved within a defined period of time, it is equally important for a potential adopter of a renewable energy technology to have some certainty surrounding the amount to be achieved over the length of the scheme. Without this, the certainty required to ensure uptake cannot be achieved.

ATA strongly believes that any proposed tariff rate review needs to take this into consideration. As such any alterations to feed-in tariffs arising out of a tariff rate review should only apply to subsequent installations, and all systems installed prior to any rate review should remain on the previous tariff level. Whilst we accept the need for an annual review of the tariff level, it is essential for the integrity of the scheme for any rate changes to only apply to systems installed after the rate change.

Failure to implement such a system of tariff guarantee would result in significant uncertainty for system proponents and hence act as a significant disincentive to installation. Without certainty of returns on investment, ensured by adopting gross metering and a guaranteed tariff level for a set period of time, a feed-in tariff scheme is rendered impotent to deliver the widespread uptake it sets out to achieve.

**Recommendation:**

ATA recommends that renewable energy generators are guaranteed a set tariff for a pre-determined period of time to ensure necessary certainty, and that any alteration of the feed-in tariff only apply to renewable energy generators installed after the altered level comes into effect.

ATA strongly supports the proposal in the ACT Government's *Feed-in Tariff Discussion Paper*<sup>12</sup> to calculate payback periods based on a ten year timeframe. Our research has shown that payback periods much longer than 10 years are unlikely to result in a significant increase in adoption of renewable energy technologies, and beyond 15 years will result in the maintenance of the status quo. We firmly believe that any feed-in tariff should be calculated on payback times rather than being linked to the retail rate of electricity.

To that regard, we support a feed-in tariff of 67c/kWh to be guaranteed for 15 years from the date of installation. Our modelling suggests that a feed-in tariff level for solar PV set at around the 67c proposed will result in paybacks between 10 and 12 years depending on system size.

Any subsequent feed-in tariff level arising out of a scheme review should equally apply for a period of 15 years from the date of any succeeding installation. ATA welcomes the provisions of Clause 9 (3) to which the Minister must have regards when determining any future feed-in tariff premium rate.

Finally, it is essential that the premium rate is indexed to CPI to ensure that the value of the feed-in tariff rate isn't lost over time. This should be provided for in the legislation.

**Recommendation:**

ATA recommends that Section 9 of the proposed Bill be altered to read:

*(4) Until the Minister determines the premium rate under this section, the premium rate is 67c/kWh the day this Act commences.*

*(5) The premium rate payable under this Act by an electricity distributor applies for 15 years from the date of installation, and is indexed at CPI over this period, after which the distributor must pay the occupier the current retail rate at that time for the total amount of electricity supplied to the distributor's network from renewable energy generators at the occupier's premises.*

**Part 4      Miscellaneous**

ATA strongly supports the insertion of the new section (20AA) in the Independent Competition and Regulatory Commission Act 1997, particularly with regards to Clause 20AA (2) which states: "In making the decision, the commission must direct that any increase in the price of electricity attributable to the cost of renewable energy feed-in is applied to consumers in proportion to the amount of electricity used by each consumer".

A fair and equitable mechanism should ensure that cost of implementing a feed-in tariff is borne by all sectors of the community, and not concentrated in the residential / household sector. ATA strongly believe all sectors need to share the responsibility for mitigating climate change. Further, as businesses are set to reap the rewards of lower wholesale electricity prices and reduced transmission costs following on from the widespread adoption of distributed renewable energy technologies, it is only fair that they too should carry some of the costs.

Our modelling shows that the adoption of a typical 1.6kW system installed on 10% of homes in the ACT over 10 years would result in maximum a cost of roughly \$1.80 per week for a house with an average consumption of 22kWh per day, or less than \$1 per week over the life of the scheme. Even given these relatively low costs for the significant roll-out of renewable energy (over 20MW across the ACT), we believe that, in an environment where energy prices will be threatened by price increases associated with carbon pricing and climate change, the considerations of low-income and disadvantaged consumers must be taken into account.

It must be remembered that the impact of climate change will be greatest to those least able to respond, invariably low-income and disadvantaged consumers. As such, claims of the burden on low-income

<sup>12</sup> ACT Government's Feed-in Tariff Discussion Paper (the Discussion Paper), released in December 2007

households should not be used to delay action on this important measure. ATA supports financial compensation to concession card holders as the most suitable mechanism for minimising the impact of increased electricity prices, arising from a range of looming threats such as increased wholesale electricity prices resulting from the drought, future carbon costs on energy, proposed network augmentation costs and any additional, albeit minor, increase as a result of the feed-in tariff.

## Additional Comment

### Metering arrangements

As stated above, the effectiveness of any feed-in tariff depends primarily on the certainty of payback generated by the scheme. Whilst the tariff level and length of scheme are the two key components in creating this certainty, all of the above assumptions are based on a metering and billing system whereby a renewable energy generator is able to gain the full value of the premium feed-in tariff for the total amount of electricity they generate.

Such a system depends on 'gross generation' or 'production-consumption' metering, and this is presently widely adopted by ActewAGL for all grid-connected renewable energy generators. ATA believes that this needs to be specified in the proposed Bill to ensure that this form of metering and billing must be maintained under a feed-in tariff regime, as the alternative – often called 'net export metering', however more accurately described as 'import/export' metering – will not result in the same level of certainty.

A feed-in tariff scheme based on import/export metering creates significant uncertainty in the market, both in terms of potential financial return from the feed-in tariffs for system owner, and in the cost of the system for the government and wider community. The introduction of gross generation metering allows for far clearer estimates of ongoing costs and benefits of the tariffs due to the relative predictability of gross electricity production for a given sized installation over a given time frame.

In addition, a import/export export metering regime discriminates against both owners of smaller grid-connected systems and those who are more likely to consume electricity during the day, such as senior citizens or stay-at-home parents. In cases such as these, where instantaneous system production rarely exceeds household consumption, system owners rarely exporting electricity to the grid would not be able to receive the benefit for premium feed-in rates offered, and thus would gain very little financial return on their investment.

As such, it is essential for a robust and effective feed-in tariff mechanism that gross generation metering be mandated in the legislation.

#### **Recommendation:**

ATA recommends that the feed-in tariff Bill specify that embedded generators be metered and billed via gross generation metering which measures and rewards system owners for the total production from their renewable energy generator.

## Further Contact

ATA commends the Labor MLA Mick Gentleman for investigating feed-in tariffs and releasing the Exposure Draft of the *Electricity Feed-in (Solar Premium) Bill 2007*, and encourages careful consideration of the points presented in this submission. We urge the Honourable Mr Gentleman to adopt the above recommendations and to present the amended legislation to the ACT parliament.

We would welcome the opportunity to discuss any aspect of this submission further. Please direct any questions or further correspondence to Brad Shone, Energy Policy Manager, on (03) 9631 5406 or via email: [Brad.Shone@ata.org.au](mailto:Brad.Shone@ata.org.au)

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'Brad Shone', with a long horizontal flourish extending to the right.

Brad Shone  
Energy Policy Manager  
ATA