



Submission by

Alternative Technology Association

To The

**New South Wales New South Wales Solar
Feed-in Tariff Taskforce**

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By e-mail to: fit.taskforce@dwe.nsw.gov.au

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Submission to the NSW Solar Feed-in Tariff Taskforce

The Alternative Technology Association (ATA) welcomes the opportunity to provide comment on the New South Wales Solar Feed-in Tariff 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 5,000 members, who are actively promoting sustainability in their own homes by using good building design and implementing water conservation and renewable energy technologies. ATA advocates in both the government and industry arena for ease of access and continual improvement of these technologies, as well as the production and promotion of information and products needed to change the way we live.

ATA welcomes the initiative of the New South Wales Government in proposing a feed-in tariff as an incentive mechanism for small scale renewable energy, recognising that the introduction of a progressive and effective feed-in tariff in New South Wales has the potential to establish the state as a leader in small scale renewable energy in Australia.

However it is vitally important that any proposed feed-in tariff mechanism is correctly designed to ensure that it provides the right incentives for increasing the adoption of renewable energy across the state. The ATA urges the New South Wales Government to carefully consider the views contained within this submission to ensure such a scheme eventuates.

Feed-in Tariffs

ATA supports the adoption of feed-in tariffs as an incentive mechanism for all scales of renewable energy. Recent studies of incentive mechanisms in Europe have shown that feed-in tariffs result in lower-cost deployment of renewable energy than mandated targets schemes such as Australia's Mandatory Renewable Energy Target (MRET)^{1,2,3}.

However, accepting the Federal Government's commitment to an expanded national renewable energy target scheme, ATA believes that feed-in tariffs still have an important role to play in providing an incentive for renewable energy technologies which currently either don't benefit significantly from MRET, or face significant barriers to deployment – or both.

Small-scale roof-top solar photovoltaic (PV) electricity is one example of such a technology. Unfortunately neither MRET nor other incentive schemes currently adequately value the contribution of solar PV and the many benefits that it provides. These benefits include improved supply reliability through generation diversity; generation closer to customers resulting in improved power quality and reduced transmission losses; reduced greenhouse gas intensity of Australia's electricity generation infrastructure; avoided network augmentation costs; the development of a local high-tech clean energy industry and increased employment in the energy sector; and the adoption of more efficient network tariffs.

However a significant number of impediments exist to the uptake of small-scale, embedded renewable generation, such as solar PV. These include market failure which discriminates against solar PV and fails to recognise the true value of electricity that solar PV systems produce during hot summer periods; complex technical regulation which discriminates against system owners; and an economic regulatory framework which provides little incentive for retail or distribution businesses to actively encourage small renewable embedded generation and minimal protection for system owners.

1 University of Cambridge, Department of Applied Economics (2004) Comparison of Feed in Tariff, Quota and Auction Mechanisms to Support Wind Power Development

2 Commission of the European Communities (2005) *The support of electricity from renewable energy sources*, Communication from the Commission

3 European Renewable Energies Federation (2007) Prices for Renewable Energies in Europe: Feed in tariffs versus Quota Systems – a comparison

The adoption of progressive, effective and world-class feed-in tariff laws has the potential to overcome these impediments and fully recognise the benefits arising from the adoption of solar PV and other clean energy solutions.

Key Design Elements

1) *What factors should be considered in setting a tariff rate?*

In setting the NSW feed-in tariff rate, the NSW Taskforce should give primary consideration to the objectives of the scheme. These are described as to “encourage and support people who want to act on climate change by generating renewable energy locally; build the State’s green collar jobs sector; and expand the visibility of renewable energy technologies to help motivate the whole community in responding to climate change.”

To achieve these objectives, it is essential that the feed-in tariff rate be set at such a level as to encourage individuals to invest their savings in solar PV through offering a reasonable return on investment. As such, an effective feed-in tariff scheme needs a fair price paid for a guaranteed period of time on total generation in order to create the certainty required to drive increased investment. Our calculations show that an effective feed-in tariff scheme for New South Wales would involve a tariff:

- mandated at 80 cents per kWh for systems with a rated capacity up to 10kWh;
- offered for 15 years; and
- paid on the entire output of a system via gross production metering.

Whilst ATA has long been advocating for a feed-in tariff rate to be set at 60c/kWh, recent announcements to remove the Solar Homes and Communities Plan rebate as of July 1, 2009, means that the up-front capital costs of installation will increase for most people by \$8,000. As a result, 60c/kWh is no longer sufficient to bring about an adequate return on investment and payback of capital expenditure to bring about increased uptake.

The replacement of the SHCP with the proposed new “Solar Credits” scheme under the expanded Renewable Energy Target (RET) is in ATA’s view inappropriate, as the new policy distorts the amount of renewable energy deployed within Australia’s electricity grid from 1 July 2009 until 30 June 2015. This is discussed in detail under the section entitled *What eligibility criteria should exist for the FIT?* As such, the Solar Bonus has not been included in the calculations above.

At 80c per kWh the financial return on investment would see payback for a typically sized solar PV system achieved in between 10 and 15 years. ATA believes that rates for other small-scale renewable technologies should be calculated on a similar basis, ensuring financial payback is achieved within a realistic timeframe.

Internationally, we have seen the calculation of feed-in tariff rates based on payback times result in widespread adoption of distributed renewable energy, and we encourage the New South Wales Government to proceed along the same path as the best-practice international applications.

2) *Should the tariff be set for gross (all energy generated from the PV system) or net (energy generated less energy used by household)?*

The term ‘net metering’ is commonly used in place of what is described by the Australian Greenhouse Office as ‘import-export metering’⁴. Net metering or import-export metering results in credit for only the excess electricity exported to the grid after in-home consumption.

⁴ AGO (2001) *Metering of Embedded Generators in Australia*, Australian Greenhouse Office

This differs from gross metering in that only the excess after in-home consumption is exported, whereas with gross metering the total quantity generated is exported to the grid, and receives the feed-in tariff. The three metering arrangements described here (net, import-export and gross) are discussed further in **Appendix A**.

ATA strongly believes that for a feed-in tariff scheme to be effective in increasing uptake of embedded generation, the system must be based on gross metering in order to offer a guaranteed return, must be paid for a fixed period of time, and must bring about financial payback within a 10 to 15 year timeframe.

When compared with gross metering, net metering has some significant shortcomings. Net metering discriminates against people who are at home during the day, such as stay-at-home parents or senior citizens, or individuals with smaller systems; doesn't reward system owners for the full value of the clean electricity they generate, in terms of avoided emissions, network benefits and reduced demand; and doesn't provide financial certainty, as it is difficult to predict excess generation after in-home consumption without a detailed energy audit.

A system of net 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 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.

Under a regime of net export metering, with in-home demand subtracted from production prior to determining the quantity of electricity eligible for the feed-in rate, uncertainty surrounding ongoing demand makes it near impossible for PV system owners to predict the potential payback on their system over the duration of the scheme. Such uncertainty has the potential to act as a significant disincentive for the uptake of solar PV systems.

In addition, net metering lacks transparency, as it is impossible to determine either the total generation or the total in-home consumption via this form of metering. As a result, energy auditing of homes becomes near impossible under net metering, and the ability of homeowners with grid-connected renewable energy systems to monitor their energy consumption (and potentially their carbon emissions) is severely compromised.

Indeed the recently-released Garnaut Climate Change Review Draft Report recommended gross metering over net metering, stating that:

*"the benefits of embedded generation (lower transmission losses, deferred costs for network augmentation, and displacement of high-cost generation during peak periods) are present for every unit of electricity produced, not just the amount exported. A feed-in tariff based on gross metering is thus a more accurate means of pricing these benefits."*⁵

3) Should the tariff be based on a fixed rate or a variable rate consistent with time-of-use pricing for consumption?

ATA believes that in order to provide the greatest investment certainty with respect to guaranteed returns (applicable to both the householder and/or any financial institution [i.e. bank] that may finance such a project), that a tariff based on a fixed rate should be employed.

5 Garnaut Climate Change Review (2008) *Draft Report*, p. 437

4) Should the tariff be paid to solar PV owners by the electricity distributor or the electricity retailer?

In order to maintain a simplified system of transaction, ATA believes that any feed-in tariff should be paid by the electricity retailer, through the electricity retail bill, and that the revenue should be collected by distribution businesses.

Maintaining the existing single relationship between consumer and retailer (with respect to billing and communication) is important so as not to further complicate the information received by the renewable energy investor. Our understanding is that this is the arrangement in place under the South Australian and Queensland schemes.

5) How long should the Government maintain the FiT and should the rate be fixed for the entire life of the program or varied over time?

In order to provide financial certainty for the renewable energy investor, ATA believes that the feed-in tariff rate should be guaranteed for 15 years from the date of system installation. However, going forward, the rate should take into account the economies of scale and technological advances which are likely to lead to a reduction in the installed costs of PV systems over time. On this basis, an annual degeneration rate should be included.

The successful German feed-in tariff model applied an initial degeneration rate of 5% to its scheme. With significant early uptake under the German model over the first six years, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) increased the degeneration rate to 7% from 2009 and plan to further increase it to 8% from 2011⁶.

Thus, an initial feed-in tariff for NSW of 80 c/kWh in the first year would fall to 76 c/kWh in the second, 72.2 c/kWh in the third year, and so on. With increasing retail rates for electricity and falling costs for solar PV over time, the feed-in tariff rate would ultimately reach parity with retail electricity prices.

As an example, with an average increase in electricity retail prices of 3% per annum over the next 15 years⁷, and assuming a \$25 / tonne carbon price, a degeneration rate of 5% would see parity reached in or around the 15th year of the scheme.

6) What eligibility criteria should exist for the FiT?

ATA's preferred criteria for eligibility is based on the following points (which are expanded below):

- Eligibility for all PV system owners (including existing system owners);
- Exclusion of those who participated in the RECs scheme;
- Provide option for purchasing RECs back in order to receive FiT;
- System size limit should be a minimum of 10kW (30kW for 3-phase systems), but ideally no size limit, but just different rates for different sizes (as in ACT and Germany).

Existing & New Systems Eligibility

ATA believes that both existing and new solar PV systems should be eligible to receive the NSW feed-in tariff. Australia presently has around 9.8MW of installed grid-connected solar PV capacity⁸, and very few other small-scale, grid-connected renewable energy generators.

⁶ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) Renewable Energy Sources Act Progress Report 2007, BMU, Germany, 2007

⁷ Based on the average CPI over the past 15 years

⁸ IEA PVPS (2007) *National Survey Report of PV Power Applications in Australia 2006*, p. 9

It would be expected that the adoption of progressive feed-in tariff schemes around Australia will expand this level to that closer to what is seen in Germany, where nearly 4000 MW of grid-connected solar⁹ – close to 50% of the entire global capacity – have been installed largely in the last six years as a result of the adoption of progressive feed-in tariff legislation.

Even if Australia was to achieve a quarter of the capacity of Germany over the next six to ten years, the existing capacity would represent less than 1% of the total, and thus would not be placing an undue financial burden on the scheme. As a result, we would favour the eligibility of existing generators to access the scheme.

Exclusion of MRET / RECs Participants

ATA supports the exclusion of access to the mandatory renewable energy target scheme (MRET) for renewable generators who opt to participate in the feed-in tariff scheme. However in doing so, careful thought needs to be given to the setting of feed-in tariff rates such that small scale and disadvantaged renewable energy generators are given sufficient incentives to overcome the economic barriers currently faced (i.e. a minimum of 80c / kWh).

ATA takes this view for two reasons. Firstly, it is inequitable for system owners to access both the financial incentives provided through the MRET and any future feed-in tariff. As such, there needs to be a provision for existing generators who may have already sold their RECs under a retail purchase agreement for their renewable energy system to be able to access the feed-in tariff scheme in light of this clause.

This could be facilitated by the optional buy-back of an equal quantity of RECs sold by the proponent in order to qualify for the feed-in tariff. This would then be an optional path for the renewable energy generator to take – to either buy-back previously sold RECs and access the feed-in tariff, or alternatively settle for the funds obtained previously through the sale of RECs and forgo access to the feed-in tariff.

The second, and potentially more important reason that ATA supports the exclusion of access is the Federal Government's latest proposal (announced December 2008) with regard to the expanded Renewable Energy Target (RET).

Under the expanded RET, a new *"Solar Credits"* scheme has been announced. This new policy incentive works by providing system owners of up to 1.5 kW in size with an increased number of RECs in place of the current Solar Homes & Communities (\$8,000) rebate.

Specifically, from 1 July 2009 the new Solar Credits scheme provides new system owners with:

- Five times the amount of RECs between 1 July 2009 and 30 June 2012;
- Four times the amount of RECs between 1 July 2012 and 30 June 2013;
- Three times the amount of RECs between 1 July 2013 and 30 June 2014;
- Twice the amount of RECs between 1 July 2014 and 30 June 2015.

However, the increased amount of RECs for systems up to 1.5 kW available until mid 2015 does not correspond with an increase in the amount of renewable electricity generation from eligible systems. By selling available RECs to electricity retailers under the expanded RET, new solar PV purchasers will actually be reducing Australia's renewable energy required under the annual expanded RET mandated target (i.e. by four times the size of any system up to 1.5 kW between mid 2009 and mid 2012; by three times between mid 2012 and mid 2013, etc.....).

It is on this basis that the ATA does not support the new Solar Credits scheme and an additional basis for supporting the exclusion of access to system owners that take up the NSW feed-in tariff.

⁹ http://www.presseportal.de/pm/55240/1209211/invest_in_germany

System Size Limit

ATA supports the extension of feed-in tariffs beyond households to small businesses, local government, community groups and indeed to large businesses. The scale of the present climate change problem we face is such that significant action is required. Whilst small-scale renewables is only one part of the solution, we believe the range of benefits and economies of scale which can be harnessed by engaging all sectors of society are significant and we encourage the Government to support a feed-in tariff for domestic, commercial and industrial customers.

To this end, ATA supports no upper limit on the size of renewables eligible to attract a feed-in tariff. However we would support implementing a tiered system of support, similar to what is proposed in the ACT, whereby larger scale installations attract a percentage of the full feed-in tariff in recognition of the economies of scale achieved in installation for larger systems. Such systems are in place internationally, with Germany perhaps the most comprehensive and successful example of where staggered feed-in tariffs at different rates for different technologies has led to widespread uptake of a host of different technologies¹⁰.

Further Contact

ATA commends the NSW Government on its proposal to implement a feed-in tariff policy and we look forward to further discussion at the consultation session this coming Thursday in Sydney. In the meantime, feel free to contact me should you have any questions regarding the content of this submission. I am available directly on (03) 9631 5417 or via email at: damien@ata.org.au.

Yours sincerely,



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Energy Advocate
ATA

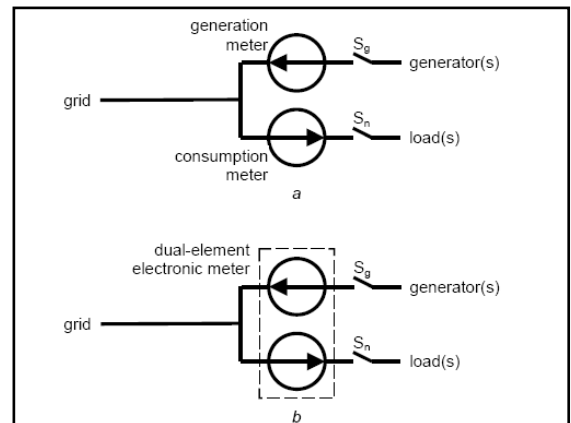
¹⁰ BMU 2007, *Renewable Energy Sources Act Progress Report 2007 - Draft*, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Berlin

Appendix A - Metering for Feed-in Tariffs

Adapted from *Metering of Embedded Generators in Australia*, Australian Greenhouse Office, 2001

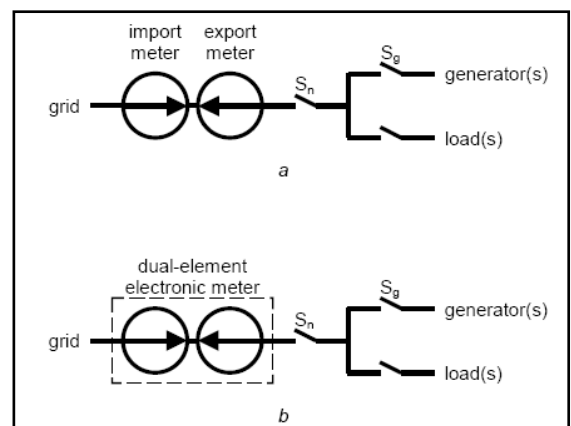
Gross Metering

- Typical metering used for feed-in tariffs internationally
- Measures both import & export independently
- Often requires two separate meters (or a dual element electronic meter)
- Generation and consumption wired separately
- Accumulates both values over time
- Customer paid for all generation
- Customer charged for all import
- Total generation valued
- Total consumption figures given
- Also called 'generation-consumption metering'



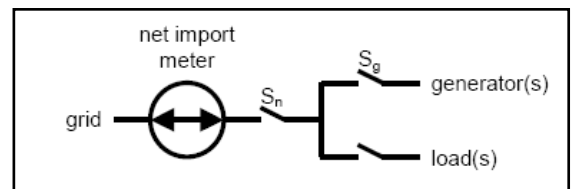
Import-Export Metering ('Net metering')

- Commonly called 'net metering' for feed-in tariffs
- Generation used in the home, then excess exported
- Measures either import or export at any instant, depending on balance between generation and consumption at any point in time
- Accumulates both values separately
- Export = generation minus instantaneous demand
- Import = Consumption minus instant generation
- Customer paid for all exports
- Customer charged for all imports



True Net Metering

- 'Old-school' spinning disk meter
- Not typically used for feed-in tariffs
- Measures either import or export at any instant
- Instantly 'nets' one value from other
- Customer either paid or charged depending on net result at end of billing cycle
- Least likely to give an export value, and hence least favourable for feed-in tariffs
- Can be achieved at billing stage with other options (above) by subtracting export totals from imports



Problems with Import-Export Metering ('Net Metering')

This form of metering has been proposed and adopted for the various state feed-in tariff schemes introduced in Australia. In this sense, we are unique in the world in adopting this metering arrangement for feed-in tariffs, where gross metering is the norm.

However, when compared with gross metering, import-export metering has some significant shortcomings. Import-export metering:

- Discriminates against people who are at home during the day, such as stay-at-home parents or senior citizens, as they will be consuming proportionally more of their generation.
- Doesn't provide financial certainty, as it is difficult to predict excess generation after in-home consumption without a detailed energy audit; even then, circumstances change. Without certainty, uptake rates will be low.
- Doesn't reward system owners for the full value of the clean electricity they generate, in terms of avoided emissions, network benefits and reduced demand.
- Lacks transparency, as it is impossible to determine either the total generation or the total in-home consumption via this form of metering. This makes energy auditing very difficult.