

A Feed-in Tariff for Tasmania

In Response to Public Consultation

February 2010

Feed-in Tariffs Post-Consultation Summary and Response

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Executive Summary

A Discussion Paper on Feed-in Tariffs was released in late 2009 for consultation. Some forty submissions were received and, along with other information provided, have been taken into account in the formation of this Report.

As outlined in the Discussion Paper, there are a number of justifications that are generally presented to support credit to electricity customers who install renewable micro-generation systems and are able to export energy into the electricity grid.

These justifications include industry assistance, reduction in greenhouse gas emissions, and cost savings that may be able to be attributed to deferred network augmentation and reduced distribution loss factors.

Consideration of the applicability of these justifications in the Tasmanian context was included in the Discussion Paper, however in general terms the submissions received did not provide strong evidence to contradict the majority of the information contained in the Discussion Paper.

Nevertheless, the majority of the submissions received were supportive of the introduction of a feed-in tariff, arguing that there should be some support from the community at large for individuals who are prepared to make a significant personal investment into renewable energy generation.

It is noted that the Council of Australian Governments (COAG) has established a set of principles that should underpin any new Feed-in Tariff scheme, with the key characteristics being that any such scheme should, as a minimum, involve a net metering arrangement with a “fair and reasonable” tariff.

It is also noted that Aurora Energy Pty Ltd currently offers, on a voluntary basis, a “net metering buy-back” scheme, at a rate equivalent to the relevant retail tariff. Such an arrangement is consistent with the principles agreed to by COAG.

Background

Consideration of Feed-in Tariffs

In March 2008, as part of the Tasmanian Government's climate change strategy, it was announced that the Government would consider a report on options for providing mandated minimum feed-in tariffs to support householders and small energy consumers that use solar panels and other forms of domestic renewable energy and that contribute surplus energy to the electricity grid. Part of the development of this Report was a round of public consultation based around the *Feed-in Tariffs Discussion Paper (Discussion Paper)*.

The purpose of the *Discussion Paper* was to:

- outline the possible scope of a feed-in tariff for Tasmanian electricity customers who choose to invest in renewable electricity generation;
- consider the implications for other customers; and
- consider the implications for the structure of the Tasmanian electricity market.

The paper was released in October 2008 with submissions closing in November 2008. There were 40 public submissions received by the Office of Energy Planning and Conservation which commented on the *Discussion Paper*. Submissions were received from private citizens, interest groups, government authorities and businesses.

This *Issues and Options Paper* is informed by feedback from the discussion paper, other submissions and representations to Government, as well as other research.

What is a Feed-in Tariff?

A feed-in tariff is a pricing mechanism whereby an electricity utility pays a customer for electricity that is generated by the customer and exported to the grid.

Feed-in tariffs can be used to promote one or more of a number of different policy objectives:

- encouraging distributed generation, with resultant savings by deferring network augmentation and reduced distribution losses;
- providing industry assistance by supporting innovation in and uptake of renewable technology; or
- encouraging private citizens to invest in renewable energy infrastructure to reduce greenhouse gas emissions.

Feed-in tariffs usually operate on a rate above normal wholesale prices being paid to a customer who generates the electricity, with the additional cost being supported by increased charges to other customers. An alternative approach for funding the rate paid to customers who generate electricity is for the increased cost to be supported by a direct government subsidy, where the cost is borne by the entire community

In Australia, the rate credited to the householder who generates the renewable electricity may be equivalent to the retail rate (sometimes referred to a "fair and reasonable" rate), or may be at a "premium" rate. A premium rate usually refers to a rate significantly above the normal retail rate.

Feed-in tariffs have been or are being introduced in South Australia, Victoria, Western Australia, Queensland, the ACT and New South Wales. Some jurisdictions offer premium rates for all renewable energy, whereas others only offer premium rates for solar photovoltaic systems. Further detail on these arrangements can be found later in this paper.

Context: Policy Objectives

There were three policy objectives outlined in the Discussion Paper. Comment was invited of the extent to which feed-in tariffs would help to meet these policy objectives:

1. Encouraging local, distributed generation, thereby reducing load on the network and reducing distribution loss factors associated with the flow of electricity through the distribution network.
2. Stimulating uptake of, and innovation in, renewable energy technologies.
3. Reducing greenhouse gas emissions by lessening reliance on non-renewable energy sources.

These objectives were cast in the light of the *Tasmanian Framework for Action on Climate Change* and *Tasmania Together 2006*.

Summary of Submissions

A view reflected in many of the submissions is that Tasmanians want to do something to assist in reducing greenhouse gas, and are supportive of measures that are seen to be encouraging this, irrespective of the economic issues associated with feed-in tariffs.

It is important to acknowledge this level of support for a feed-in tariff, notwithstanding that a feed-in tariff is unlikely either in whole or part to achieve the objectives as stated.

Main Themes

The Discussion Paper outlined eleven questions. The responses to these questions along with other key issues raised in the submissions, in brief, were as follows:

- 90 per cent (36 submissions) were generally supportive of the introduction of a legislated feed-in tariff in Tasmania.
- three submissions were not in favour and one submission did not state a position.

Other issues

- Fourteen submissions supported the introduction of legislated feed-in tariffs in Tasmania, but argued that supporting measures to encourage the reduction of energy consumption also need to be introduced alongside a feed-in tariff, or as a first step. These other measures included support for solar or highly efficient hot water systems, and improved insulation in buildings.
- Many submissions proposed measures to help address the equity implications of a feed-in tariff scheme, including low or no interest loans, assistance for co-operative schemes, or support for energy efficiency measures.
- Five submissions supported the development of a nationwide feed-in tariff. However, a number of submissions argued that Tasmania should not take a “wait and see” approach, but introduce an “effective” Tasmanian feed-in tariff.
- Two submissions commented on the calculation of Tasmania’s emission intensity figure in the Discussion Paper. The figure used in the Discussion Paper was based on average CO₂ emissions per kilowatt hour (based on National Greenhouse Accounts (NGA) Factors prepared by the Commonwealth Department of Climate Change). Two submissions commented that it would be more correct to use marginal CO₂ savings, on the basis that emissions reductions at these margins should be on the basis of reduced imports of electricity over Basslink.

The Main Issues In Short

Submissions were generally supportive of a feed-in tariff for solar photovoltaic generators as well as for other technologies such as wind and micro-hydro generation systems. However there was a range of opinion with regard to two issues:

- tariff system design; and
- the degree to which a feed-in tariff meets the objectives.

A consideration of these two issues is meaningful assuming the adoption of a feed-in tariff. An analysis of the degree to which a feed-in tariff meets the three policy objectives will be discussed later in the paper.

System Design

The various positions on two issues need to be evaluated:

- whether the tariff should be based on gross or net metering; and
- the price per kilowatt unit.

Net or Gross Metering

It is clear that owners of generators have an interest in reducing their costs for installation and maximising their potential to recover costs from the sale of electricity. With gross metering producers are guaranteed that they will be paid for every kilowatt they produce. This benefits those at home during peak production times as the energy generated is exported regardless of domestic consumption.

However it is not just the interests of Tasmanian micro-energy producers that need to be taken into account. COAG and the Ministerial Council on Energy (MCE) are committed to a harmonisation of approaches to feed-in tariffs across Australia.

With the exception of the Australian Capital Territory and New South Wales, all other jurisdictions have adopted net metering.

In terms of making progress towards harmonising feed-in tariffs across Australia there are two ways to proceed:

- to achieve consensus about a uniform scheme for all jurisdictions; or
- to set minimum standards for all jurisdictions, and allow variation between systems above these minimum levels.

In order to decide which strategy to recommend, the wider policy objectives need to be considered. It is important to acknowledge that the details of a Tasmanian feed-in tariff need to be established in a national context. Indeed this is explicitly stated in the Tasmanian Framework for Action on Climate Change; the document which gave direct rise to the Discussion Paper.

Price

The move by COAG and the MCE to harmonise approaches to feed-in tariffs again is at issue concerning the price per kilowatt paid to producers of energy. Again jurisdictions can either seek to set one price, or they can agree to minimum standards.

In order to decide on the best approach for Tasmania the stated policy objectives need to be assessed, and a realistic assessment of what an acceptable minimum standard with regard to price should be needs to be conducted.

Other States

In Australia, feed-in tariffs have been introduced or are under consideration, in the following jurisdictions:

- New South Wales has introduced a gross metering tariff, at a premium rate of 60 cents per kilowatt hour.
- Western Australia has cancelled its gross metering offering, and has retained a net-metering scheme at a 'fair and reasonable' rate.
- South Australia has a feed-in tariff of 44 cents per kilowatt hour (twice the retail rate) is available for electricity feed back into the South Australian electricity grid from a solar photovoltaic (solar pv) system. Owners are only credited on any excess electricity feed back into the grid rather than the entire production of their system, ie net metering.
- Victoria has had a feed-in tariff based on net metering at a fair and reasonable rate for renewables, with a premium rate for solar pv only.
- In Queensland the Solar Bonus Scheme commenced on 1 July 2008. Customers are paid 44 cents per kilowatt hour for surplus electricity fed back into the grid.
- In the ACT the Electricity Feed-in (Renewable Energy Premium) Act 2008 was passed on 2 July 2008 to implement a feed-in tariff of 60 cents per kilowatt hour on a gross metering basis.
- In Tasmania the current feed-in tariff rate for Tasmania is set at the relevant retail tariff on a net metering basis. This tariff is not yet legislated, but is a voluntary offering by Aurora Energy.
- In the Northern Territory the Alice Solar City project involves a feed-in tariff of 45 cents per kilowatt hour. The rate is 14.38 cents per kilowatt hour in other areas of the Northern Territory.

Several submissions state the need to recognise reforms in other states.

Other Developments - Council of Australian Governments (COAG)

COAG agreed at its 29 November 2008 meeting to a set of National Principles to apply to new feed-in tariff schemes for renewable energy, and to inform the reviews of existing schemes.

The National Principles state that any new or revised feed-in tariff must give consideration to mandating a tariff paid for power exported to the grid (a net tariff) at least at a "fair and reasonable rate". In addition they state that if more than a "fair and reasonable" rate is paid (ie a premium rate) then this is to be funded jurisdictionally, and not to be met through a cross-subsidy paid for by other electricity customers.

Objectives in Detail

The submissions reflected a range of views in the community about whether feed-in tariffs were the sole means to achieve the policy objectives, or whether a feed-in tariff should be a policy end-in-itself due to being motivated by the three policy objectives, as well as other considerations.

In these instances the question being addressed seemed to be about which objectives could be marshalled to support a policy for a feed-in tariff, rather than the policy objectives a feed-in tariff assists in achieving.

The submissions which constructed arguments for their positions tended to support the objectives but not the mechanism. That is to say they broadly supported the three objectives, but did not necessarily see a feed-in tariff as the best method of achieving the objectives.

Alternatives such as improved energy efficiency, or increased utilisation of solar hot water systems were identified as lower cost ways of reducing energy consumption. It is notable that these options have the dual advantage of reducing household energy costs and reducing carbon emissions.

A number of the submissions which suggested a feed-in tariff would work towards achieving the objectives tended to be expressions of support rather than being supported by analysis.

Distributed Generation

The first objective, of encouraging local distributed generation for the purpose of deferred network augmentation and reduced distribution loss factors, was examined in the context of Tasmanian generation and demand patterns.

Because of the pattern of energy consumption in Tasmania, increased generation from solar photovoltaic systems is not likely to have any impact on deferred network augmentation. This is because distribution networks need to be built to handle the peak load on the network. Savings by deferred network augmentation can only be achieved if the availability of the distributed generation coincides with peak demand.

The annual System Load Profile, as indicated in Figure 1, shows that peak demand in Tasmania occurs during the winter months.

Figure 1:

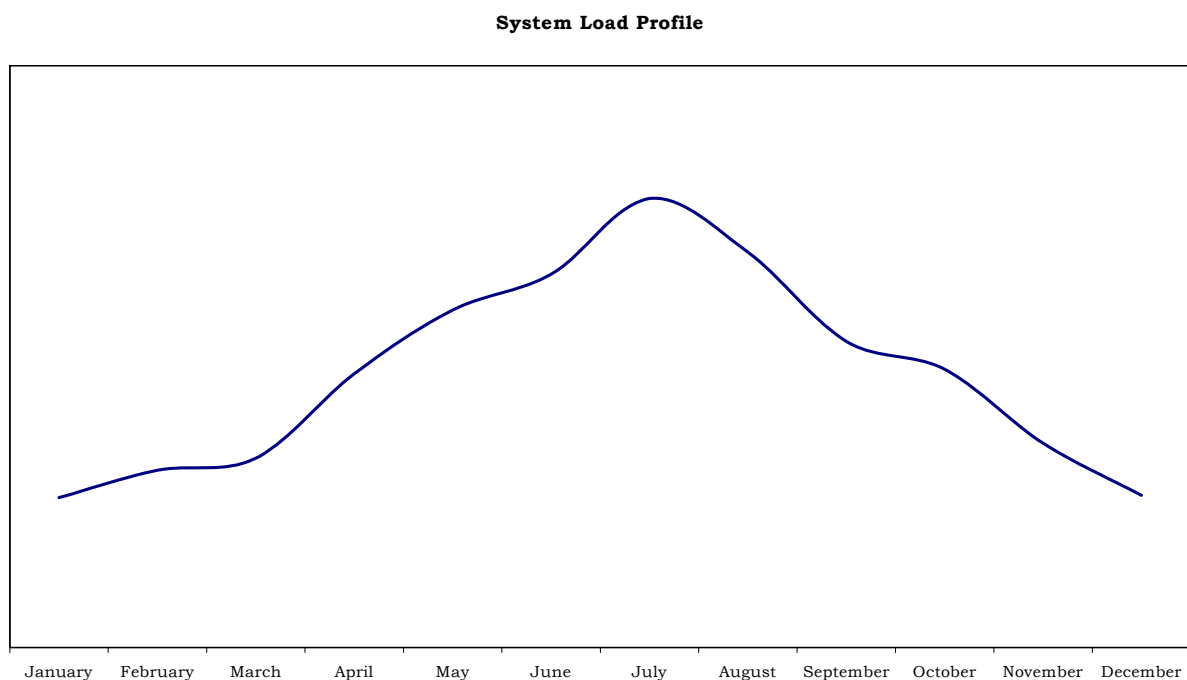


Figure 2:

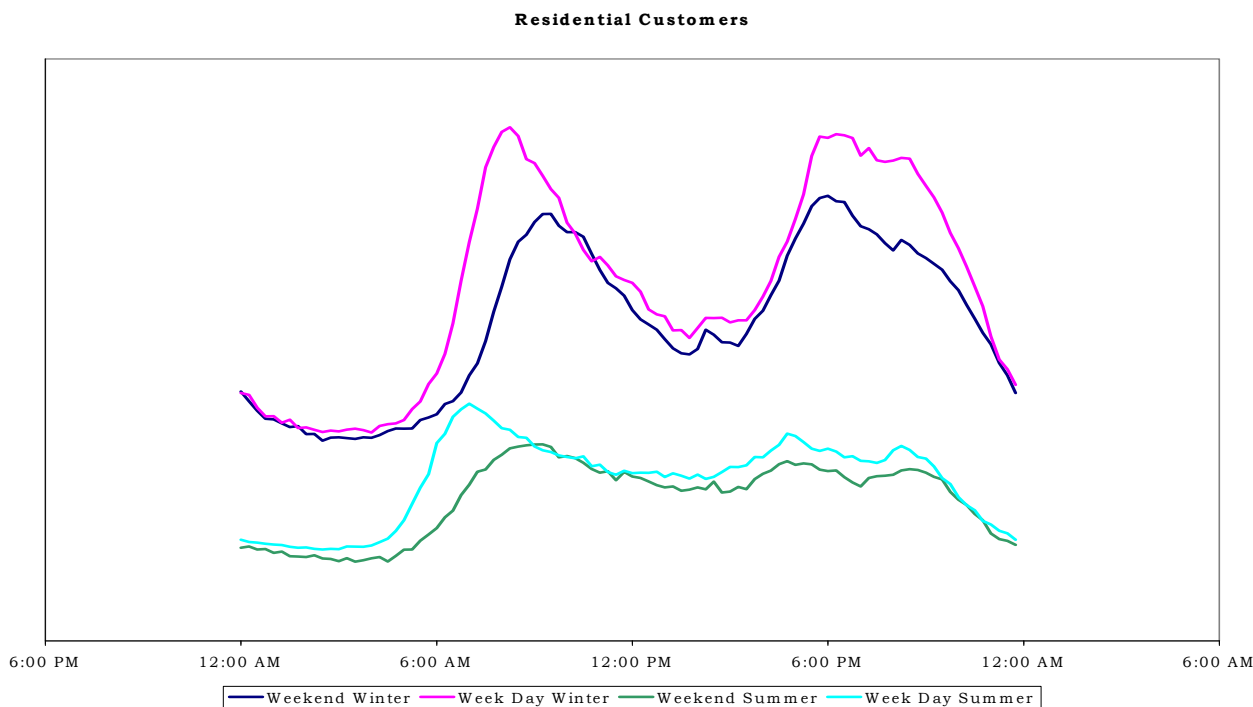


Figure 2 shows the peak use by time of day, for winter and summer week days and weekends. It indicates quite clearly that the peak winter demand occurs at times of the day when solar electricity generation would either be low (mornings) or absent (after 6 pm). Because the distribution network needs to be built to handle these peaks in demand, the value of embedded generation to contribute to savings in deferred network augmentation is not able to be achieved.

Renewable Energy Technologies

The second objective under consideration is stimulating uptake of and innovation in renewable energy technologies, where there are issues associated with cross-subsidisation for these technologies. Particularly for renewable electricity generation at the domestic level, the benefits of a feed-in tariff as an industry assistance measure in the Tasmanian context are not clear. There is no local manufacturing industry within the State, so if assistance to industry were a goal, it would be assistance to solar pv manufacturers interstate or overseas.

Reducing CO₂ Emissions

Before getting to the issue of emissions abatement it is instructive to consider the issue of the cost of different types of renewable energy technology in their own right. The following are tables which indicate the relative cost per MW hour of different types of technology, as well as comparing the cost per MW hour of varying photovoltaic capacities.

Table 1: Electricity Generation—Long Run Marginal Cost (LRMC) \$/MWh

| | |
|--------------------------------|--------|
| Victoria | \$/MWh |
| <i>Coal Fired (Brown Coal)</i> | 46 |
| <i>Gas Fires CCGT</i> | 54 |
| <i>Wind Turbine</i> | 100 |
| <i>Solar Thermal</i> | 200 |
| <i>Solar PV</i> | 240 |
| NSW/Queensland | |
| <i>Coal fired (Black Coal)</i> | 44 |
| <i>Gas Fired CCGT</i> | 60 |
| <i>Wind turbine</i> | 100 |
| <i>Solar Thermal</i> | 200 |
| <i>Solar PV</i> | 240 |

Source – ACIL Tasman Modelling, quoted in a report for the Energy Supply Association of Australia, June 2008. CCGT figures for Victoria reflect lower gas prices.

Table 2: LRMC of Renewables \$/MWh

| | |
|------------------|-----------|
| Technology | \$/MWh |
| Geothermal | 70 - 80 |
| Onshore wind | 80 - 120 |
| Hydro | 60 - 150 |
| Biomass | 85 - 158 |
| Concentrating PV | 130 – 200 |

Source – MMA report to Renewable Generators of Australia, October 2007

Table 3: Small PV systems.

Average cost of energy produced over 25 years, without rebates, based on solar yield for a Tasmanian site.

| System size | Cents/kW | \$/MWh |
|------------------------------------|----------|--------|
| 1 kw system (6 x 175 watt panels) | 38 | 380 |
| 1.5 (9 x 175 watt panels) | 37 | 370 |
| 3 kw system (18 x 175 watt panels) | 32 | 320 |

Source:- "Energy Matters" website

With regard to this third objective of reducing greenhouse gas emissions by reducing reliance on non-renewable energy sources, there is a clear indication that some sections of the Tasmanian population are prepared to assist with efforts to reduce greenhouse emissions either by making a personal investment in renewable technology, or by accepting as reasonable that those who make this investment should be subsidised by other members of the community.

In the Discussion Paper, a cost of CO₂ abatement by a feed-in tariff equivalent to the current retail rate was estimated as equivalent to \$150 per kilogram, or \$1500 per tonne. This figure was based on the average CO₂ emissions in Tasmania. As noted above, some submissions queried this figure, and suggested that the abatement should not be based on average figures, but at the marginal rate, ie on the CO₂ emissions intensity of electricity imported over Basslink. Using the most recent figures on CO₂ emissions (June 2009), this would give cost for abatement in the order of \$85 per kilogram or \$850 per tonne.

It is important to note that the emissions factor for Tasmania rose from 0.13 in 2007 to 0.23 in 2008. This is accounted for by the operation of Basslink, and the net import of electricity from Victoria during 2007. The emissions factor is worked out on a three year rolling average. Future emissions factors will therefore be determined by the balance of imports and exports over future three year cycles. For example 2009 may well contribute to a decreased emissions factor in future cycles due to periods of high exports.

Table 4: Emission factors for consumption of purchased electricity from the grid

| State, Territory or grid description | Emission factor Kg/CO₂-e/kWh |
|---|--|
| New South Wales and Australian Capital Territory | 0.89 |
| Victoria | 1.22 |
| Queensland | 0.89 |
| South Australia | 0.77 |
| South West Interconnected System in Western Australia | 0.84 |
| Tasmania | 0.23 |
| Northern Territory | 0.68 |

Sources: National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Schedule 1) and *National Greenhouse and Energy Reporting (Measurement) Amendment Determination 2009 (No.1)*

Although there is a belief in the community that a feed-in tariff for renewable energy micro-generation will help towards this end, there was no substantial information provided in the submissions that suggested that solar pv would be more cost effective than other strategies at a household level, such as improved insulation, more efficient heating and lighting. It should be noted that all of these measures will not only save on greenhouse gas emissions, but will also result in reduced electricity bills for households, with a much shorter pay-back time. While increased micro-generation in Tasmania may mean that less power has to be imported via Basslink, it is likely that the non-renewable energy producers will find other markets for their energy within the limits of the Emissions Trading Scheme (ETS).

Further, energy saved by Tasmanians means an increased opportunity for Tasmanian generators to sell renewable energy over Basslink. Assuming the ETS functions as intended, given that renewable energy should become less expensive than non-renewable energy, Hydro Tasmania and Roaring 40s will be in a good position to capitalise on renewable generation within the National Electricity Market (NEM) and bring a higher revenue stream into Tasmania.



Tasmania
Explore the possibilities

OFFICE OF ENERGY

Department of Infrastructure,
Energy and Resources

GPO Box 936, Hobart 7001

Ph: (03) 6233 2009

Email: energy@dier.tas.gov.au

Visit:

<http://www.dier.tas.gov.au/energy/home>