

# Cost to Victorian Consumers of a Gross-Metered Feed-in Tariff

Following the announcement in May 2008 of Victoria's Feed-in Tariff for solar photovoltaic (PV) systems, there has been much discussion about the cost to consumers resulting from feed-in tariff schemes.

With increasing electricity prices resulting from the drought (with hydro power declining), increasing demand, mandatory renewable energy targets and the impending cost of an emissions trading scheme, it is understandable that governments are wary of what may be seen as an increased cost burden on consumers. However, these costs need to be put into perspective. Unfortunately, this perspective has been missing from the debate to this point and the costs of an effective feed-in tariff have been greatly exaggerated.

Government statements allege that an effective feed-in tariff would see electricity bills rise by at least \$100 per year for the average household. It is based on this costing that the Government has decided upon a weaker version of a feed-in tariff. Fortunately, these costings are shown below to be inaccurate. The Victorian government now has an opportunity to make sure the feed-in tariff is strengthened in order to offer all Victorians the multiple benefits of renewable energy.

## 1. The Mechanics of a Feed in Tariff

Simply put, a feed-in tariff is a premium tariff paid for electricity fed back into the electricity grid from a renewable energy generator. One of the attractions of feed-in tariffs is that they are cost-neutral to governments, with the costs of paying the tariffs apportioned to electricity consumers.

When spread across a broad consumer base, this cost is reduced to a tiny portion of a customer's total electricity bill. Additionally, this cost is at least partially off-set by savings that result from direct economic savings to the electricity network due to the adoption of the renewable energy (see section 4).

## 2. Feed-in Tariff Design

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. A fair price for the feed-in of electricity is one in which the solar system owner is rewarded for the full value to the network of the electricity they generate, and payback times on capital investment of around 10 years are achieved. As such, an effective feed-in tariff scheme would involve a tariff:

- mandated at 60 cents per kWh;
- offered for 15 years;
- paid on the entire output of a system via gross production metering;
- paid on all solar systems up to 10kW (and at 48c/kWh for systems from 10kW – 100kW); and
- paid to anyone who installs solar – households businesses and community buildings.

## 3. Government Cost Claims

In announcing the feed-in tariff scheme, the Government claimed that a 60c gross-metered feed-in tariff would cost consumers \$100 per year. However in coming up with this figure, they made a number of fundamental errors. The Government's calculations:

1. Applied the cost on a per-customer basis, rather than on the amount of electricity consumed by the customer. This is not how a feed-in tariff would be applied, and results in a significant discrepancy as it implies an average household would pay the same as a large factory – patently not true.
2. Only calculated the cost of the feed-in tariff, with no allowance for the value of the electricity it delivers. The costs to customers should be the feed-in tariff *minus* the retail value of the electricity, as any electricity purchased is on-sold to customers immediately.
3. Used a 'capacity factor' (average amount of sunlight) for Melbourne of 18.3%. The solar capacity factor for Melbourne is actually less than 14% according to the Office of the Renewable Energy Regulator figures. 18.3% is more appropriate for Alice Springs!

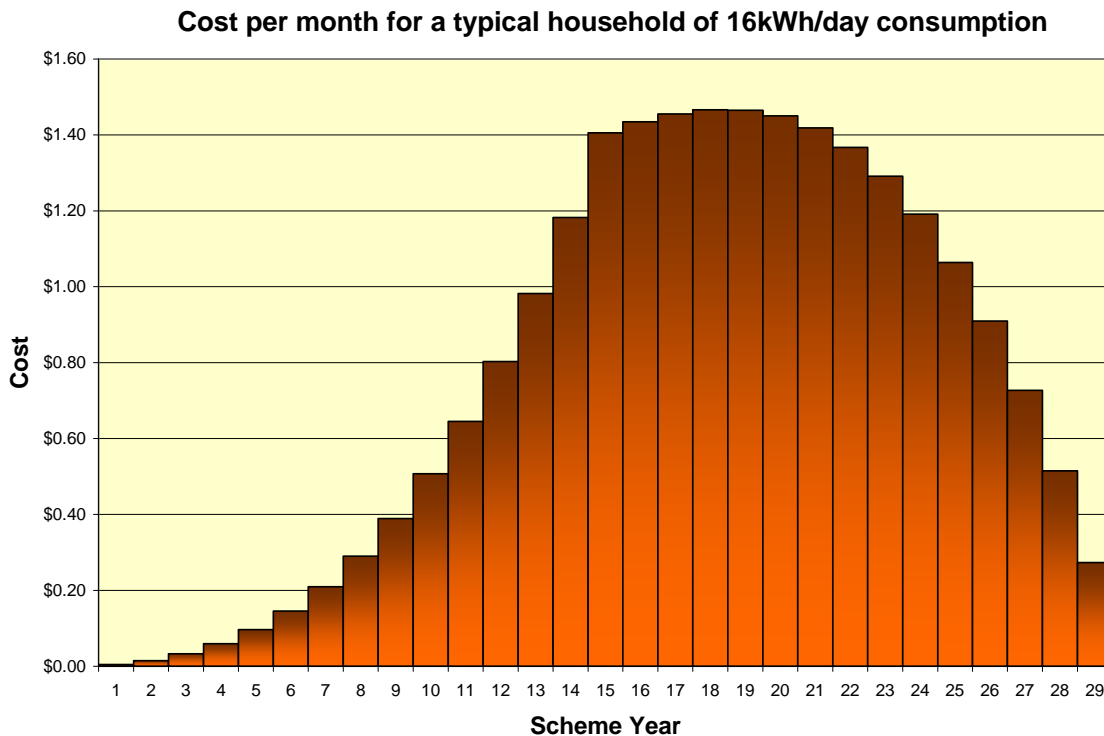
4. Used 250MW as a capacity for calculations, however have capped the actual scheme at 100MW.

5. Assumed that all 250MW would be installed in the one year! Installations will occur over time, so even if all 250MW are installed over the first 15 years of the scheme, by the 16th year, the costs for the first systems will be coming off the total costs.

#### 4. Cost to Consumers

Funding a feed-in tariff would be recovered from all electricity consumers on a consumption basis via a small increase in electricity tariffs. However, due to the broad base of consumers in the state, the final cost to average consumers is quite low.

Victoria currently has approximately 2.5 MW of grid-connected solar photovoltaic capacity. Modeling shows that, when applying a 60c gross feed-in tariff, Victoria would achieve a 100-fold increase in solar capacity, or 250MW<sup>1</sup>, for the cost to an average household of between 5c and \$17.60 per year, or an average of \$9.43 per year over the life of the scheme - a far cry from the government's claim of \$100 each. This equates to a maximum price increase of less than \$1.50 per month, as shown in the below graph.



These calculations include an exemption for cost recovery for low-income households (those eligible for energy concessions), as well as large electricity users connected directly to the electricity transmission network. Even with these exemptions which effectively concentrate costs to typical domestic and commercial consumers, typical increases in electricity bills resulting from the feed-in tariff will be in the order of less than 0.6%.

#### 5. Benefits of a Feed-in Tariff for Solar

Whilst the greenhouse benefits are often touted, the benefits of grid-connected solar PV are far greater than just greenhouse gas reductions.

In addition to being a clean source of electricity generation, widespread adoption of solar will result in significant economic savings to all consumers through:

<sup>1</sup> The State Government's current scheme is limited to only 100MW of solar.

- Reduced wholesale electricity prices, as output of solar PV systems corresponds closely to peak demand when the wholesale electricity price reaches its maximum; and
- Avoided network augmentation (new power stations and transmission infrastructure) by generating electricity close to the point of consumption, and at times of greatest stress on the network.

Australian electricity networks are committed to spending in the order of \$24 billion dollars over the next 5 years on network upgrades, and with network charges accounting for around 45% of consumers' retail electricity bills<sup>2</sup>, this represents a significant cost impost to retail customers in the National Electricity Market.

Ultimately, much of this network augmentation is being driven by peak demand. As such, there is a strong case for the adoption of electricity generation which is both close to the point of consumption and matches the demand of the network. Solar PV fits this bill.

### 6. Additional Advantages

In addition to the economic benefits outlined above, there are other benefits arising from increased adoption of grid-connected solar power, including:

- Increased supply diversity and security, as renewable energy is inherently lower risk in the long term than traditional fossil fuel fired generation;
- More jobs per MWh as solar PV generates at least 30 jobs per installed MW – more than three times that for coal-fired electricity<sup>3</sup>;
- Development of a high-tech solar industry in Australia, with significant export potential; and
- Greater economies of scale from the expansion of the solar industry locally and reduced real costs, eventually enabling solar PV to reach parity in the Australian market.

Unfortunately, the above mentioned benefits of a feed-in tariff are highly unlikely under the Brumby Government's proposed model to be seen in Victoria, as the weak Victorian model will not drive the solar PV uptake required for such benefits to the community.

### 7. The German Experience

Recent reports from Germany's environment ministry, the BMU, have estimated that the savings achieved from the adoption of feed-in tariffs – reductions in the wholesale electricity prices, reduced energy imports, and savings resulting from reduced greenhouse gas emission – outweigh the costs of the feed-in tariff by a factor of three to one<sup>4</sup>. The savings achieved from reduced wholesale electricity prices alone exceed the costs of the feed-in tariff to consumers, resulting in a net benefit to consumers from the laws<sup>5</sup>.

Whilst it is acknowledged that Germany's feed-in tariff applies to all renewable energy, and different rates apply for different technologies, the economic benefits to arise from reduced peak demand is greatest for solar where generation closely matches these peaks.

All the same, Germany now has a whopping 4000MW of installed solar (we are calling for 250MW for Victoria). When looking at the costs only, and ignoring the afore-mentioned economic savings, electricity bill increases from solar alone total around 0.8% of an electricity bill<sup>6</sup>. In summary, Germany has installed 300 times Australia's total solar capacity, or 1500 times Victoria's capacity at a cost to consumers of less than €0.50 per month<sup>7</sup>. Again, this is before factoring in the savings.

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<sup>2</sup> AER 2007, *State of the Energy Market 2007*, Australian Energy Regulator, Melbourne

<sup>3</sup> Navigant Consulting, Inc., *Survey of Predicted and Actual Renewable Energy Job Creation* Presented at 'POWER-GEN Renewable Energy and Fuels 2007' conference, March 7, 2007

<sup>4</sup> BMU 2007, *Renewable Energy Sources Act Progress Report 2007 - Draft*, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Berlin

<sup>5</sup> *ibid*

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

<sup>7</sup> Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) *What Electricity from Renewable Energies Costs - Development of the Renewable Energy Sources Act* BMU, Germany, 2007

## 8. Don't we already have a renewable energy target? If so why do we need a feed-in tariff?

Victorian Ministers have claimed that unlike Germany Victoria already had a tradeable certificate renewable energy target in place, and therefore a feed-in tariff would be duplication. However Victoria's renewable energy target does not support micro renewable energy technologies like solar power. Given that we are considering a feed-in tariff to only support micro renewable energy technologies there is no duplication of policy effort, rather the feed-in tariff complements the renewable energy target.

## 9. Equity Issues

As outlined above, the cost to consumers of an effective feed-in tariff has proven to be relatively low in international examples. Modeling suggests that this would be the case in Victoria if a 60c/kWh gross-metered feed-in tariff was introduced, with the cost being as little as \$1 per month to the average household. When considering the savings that are likely to flow through from reduced wholesale energy prices and network infrastructure investment, it is false to argue that the adoption of a decent, progressive and world-class feed-in tariff in Victoria would hurt low low-income and disadvantaged consumers.

Further, the costings of a 60c/KWh gross feed-in tariff in this document assume that concession card holders are exempted from any price rise associated with the scheme – a safeguard which the Victorian Government's policy does not provide.

## 10. Fixing the Government's feed-in tariff

It is not too late for the Brumby Government to fix the weaknesses in their proposed solar feed-in tariff. The Government is currently drafting the legislation which will enter the Parliament later this year. Government MPs can work within their party to improve the draft Bill. Non-government MPs can suggest amendments to the legislation when it enters the Parliament.

A separate briefing entitled 'Strengthening Victoria's new solar laws: Suggested legislative amendments to the Brumby Government's solar legislation' outlines the necessary changes required to deliver an effective solar feed-in tariff for Victoria.

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This document is endorsed by the following organisations:

