Senate Standing Committee on Environment, Communications and the Arts

Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008

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Summary

The purposes of a Feed-in-Tariff (FiT) are (i) to accelerate growth in the photovoltaic (PV) industry, both locally and internationally, and thereby contribute to an accelerated reduction in future costs and (ii) to compensate PV systems for price discrimination due to lack of carbon pricing and time-of-use pricing.

A FiT is an interim measure to assist the PV industry, which is presently disadvantaged relative to other electricity sources by the following factors:

1. An immature PV industry
2. Lack of carbon pricing (which discriminates in favour of coal and gas)
3. Lack of time-of-day electricity pricing (which means that PV electricity is implicitly valued at the average retail price, rather than the very high price it should command when PV power is generated during summer afternoon peak demand periods).

The requirement for a successful FiT is that it is sufficiently attractive for large numbers of households to purchase PV systems. There is no requirement that PV system owners enjoy a sufficiently high tariff to make significant profits. It is important that the level of the FiT be sustainable. If it is set too low then there will be a disappointing uptake. If it is set too high then the possibility of a backlash emerges. The FiT rate needs to reflect the following factors:

1. The existence of the PVRP subsidy program from the Commonwealth Government
2. The expected continuing high value of Renewable Energy Certificates in light of Federal Government policy for a 20% renewable energy contribution to electricity by 2020
3. The introduction of carbon pricing in 2010, and the likelihood that this will average around $50 per tonne
4. The strong desirability for the introduction of time-of-day electricity pricing. This will assist PV systems at peak periods on summer afternoons by properly valuing electricity production at that peak period when electricity prices rise to high levels.

I recommend as follows:

1. The FiT rate applies to total AC electricity generation, not net export to the grid.
2. The rate is fixed for a period of 20 years to allow people to invest in PV systems with confidence that a future government will not renege on support for PV.
3. In the near term, a contractually fixed rate for the FiT of 2.0 times the retail tariff is appropriate. Currently this would be about 30 c/kWh. Rates much higher than this run the risk of a backlash.
4. A 20-year FiT contract should only be made available to house owners who have undertaken the following energy efficiency measures (where possible) in order to triple the potential greenhouse gas savings: gas/solar water heating, gas space heating, efficient appliances, efficient lights and good thermal insulation of the walls, floor & ceiling.

The FiT rate for future systems can be adjusted upwards if there is a low take-up. However, the take-up is likely to be high while ever there is a combination of a PVRP subsidy and a 2.0 FiT.

The fixed contractual FiT rate for future systems will need to be reviewed periodically, particularly if there are changes in the following:

1. Reductions in the cost of PV systems
2. Changes in the PVRP program
3. Introduction of carbon pricing
4. Introduction of Time-of-use tariffs

Further comments

Encouragement of energy efficiency and solar water heaters

It is easy to reduce average electricity consumption in a home to 5-10 kWh per day (far below the national average) by using gas/solar water heating, gas space heating, efficient appliances, efficient lights and good thermal insulation of the walls, floor and ceiling.

These energy efficiency measures will cost about $10,000. A PV system will cost $15-30,000.

I recommend that a 20-year FiT contract only be made available to house owners who have undertaken all of these energy efficiency measures. This will leverage much larger (triple) greenhouse gas emission savings than is available from the PV system alone.

Environmental benefits

PV is a very special energy technology. Present support for the PV industry should be predicated on the clear understanding that photovoltaics will be a vast industry in the future, capable of meeting half of our future energy needs.

PV systems on the roofs of houses and commercial buildings will soon be competitive with daytime retail electricity price, leading to explosive growth in the industry. However, PV needs support now, to build for the future.

PV has a tiny environmental footprint. The solar resource is 1000 times larger than required for PV to replace all the world's fossil and nuclear power stations. The industry is doubling in size every 20 months, and cost is declining rapidly. In common with the allied integrated circuit industry, there is enormous potential for further performance and cost improvements.

The price of fossil electricity will rise sharply over the next few years, as large rises in oil price are matched by related rises in the price of coal and gas. Drought also drives up the price of electricity, because much water is needed for hydro electricity and the cooling towers of coal power stations. Carbon pricing will be introduced from 2010, reducing the vast subsidy inherent in the free license to pollute currently enjoyed by the fossil fuel industry.

On hot summer days, when PV is most productive, air conditioning demand causes the wholesale price of electricity rises manyfold. Unfortunately, retail tariffs do not reflect this price spike, which disadvantages PV. Smart electricity meters allow the price to be adjusted hourly to reflect true cost.

Discount rates

The very serious problems likely to arise from greenhouse gas emissions are long term. Such problems include rising sea levels, changing weather patterns, damage to agriculture and ecosystems and acidification of the sea.

The use of normal business discount rates heavily discounts future costs. For example, with a 10% discount rate, a cost of $1000 today will only be valued at $15 in 2050. In contrast, use of a 1% discount rate yields a cost in 2050 of $660. In short, market discount rates ignore long term costs (of greenhouse gas emissions) in favour of short term benefits (such as ignore the problem or use a "quick fix").

There is a severe inherent flaw in arguing for market-based solutions for a long term problem: because the market will select a high discount rate, short-term rather than long term solutions will be selected.

Massive investment to foster the development of PV is a long term solution to a long-term problem. Arguments by market economists in favour of a market solution to greenhouse gas emissions should be rejected, since they ignore the (discount rate) flaw at the heart of their arguments.

An FiT is better than a capital subsidy such as PVRP

A FiT is a far better method of supporting the PV industry than a capital subsidy such as PVRP.

Large capital subsidies for PV fail to discourage the use of cheap, short-lived PV modules. Such modules could out-compete more reputable brands if there was a capital subsidy, but would fail to develop an improved PV industry.

Large capital subsidies for PV fail to discourage poor installation (eg partially shaded) by shonky installers

In contrast, a FiT provides a strong incentive for households to purchase and maintain quality systems in order to reap on-going financial benefits from a long-lived system.

Equity, air conditioning and time-of-day metering

Owners of air conditioning systems purchase energy during peak-load periods (typically summer afternoons), but pay only the standard retail tariff. Since the pool price of electricity increases greatly on summer afternoons, but not the standard retail tariff (which is set at an "average" value), there is a cross subsidy from people who do not own air conditioning systems to those who do.

Since ownership and use of air conditioners is probably skewed towards affluent households, low income and rental households are subsidising air conditioned households.

Since very large numbers of Australian houses have air conditioning systems, the cross subsidy entailed in air conditioning far exceeds that pertaining to roof top photovoltaic systems.

The resolution of the air conditioning cross subsidy is time-of-use metering. This would strongly favour photovoltaic systems, which generate much of their energy during summer afternoons when pool prices are high. *A feed in tariff could therefore be viewed as an interim measure to better reflect the time value of PV electricity, pending the widespread deployment of time-of-use metering.*