Senate Standing Committee on Environment, Communications and the Arts

Inquiry into the Renewable Energy (Electricity) Amendment (Feed-In-Tariff) Bill 2008

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How feed-in tariffs work

A feed-in tariff is one way of encouraging investment in renewable energy. Feed-in tariffs provide a guaranteed payment to owners of renewable energy generators, per kilowatt hour of electricity 'fed into' the electricity grid. This payment provides a guaranteed cash flow to the owner for a defined period of time, usually between 10 and 20 years. This payment may equal the usual tariff paid by the generator owner for electricity consumed from the grid, or may include a premium above the usual tariff. Where a premium is included, the cost of this is often borne by all electricity customers, through an additional standard charge on all electricity bills.

Feed-in tariffs have been introduced in several European countries (most notably Germany) and some states of the United States. Some countries have made the tariff available to a variety of renewable energy technologies, some countries assign different tariffs to different technologies, and some countries restrict the tariff to particular technologies.

Several states and territories in Australia have put in place or are considering feed-in tariff schemes to further support expanded deployment of solar photovoltaic (PV) systems and, possibly, other forms of renewable energy. However, these feed-in tariff schemes differ significantly in their design. The Australian Government recognises that adopting as consistent an approach as possible across Australia can reduce the regulatory burden and costs imposed on electricity market participants as well as on consumers. The Government announced in 2007 its intention to work with state and territory governments through the Council of Australian Governments (COAG) to address this issue. In March 2008 COAG agreed that it would consider options for a harmonised approach to renewable energy feed-in tariffs in October 2008.

To date discussion in Australia surrounding feed-in tariffs has focussed on small solar PV generators. However, DCC notes that the proposed amendment is not restricted to solar energy or to small generators; and this submission discusses the amendment in the context of its application to all renewable energy technologies.

The most instructive example of a feed-in tariff is Germany, which introduced a feed-in tariff in 1990 and refined it in 2000. The German feed-in tariff rate includes a premium above the regular electricity tariff, which reduces every year. In 2009 the Germany feed-in tariff rate is expected to be between 9 and 13 eurocents per kilowatt hour (kWh) of generation from wind, and between 32 and 43 eurocents/kWh for solar generation[i]. The German feed-in tariff is also available for biomass, hydro power, landfill gas, sewage gas, and geothermal power. It is expected to drive production of some 89.4 TWh[ii] of renewable electricity production in 2012 – approximately 20% of Germany's projected energy consumption in that year.

The feed-in tariff has not been the only driver of the renewable energy industry in Germany. Renewable energy projects in the former German Democratic Republic attract significant subsidies for the economic development they bring to those areas. Renewable energy developments are also eligible for "soft" loans; and significant numbers of farmers have taken advantage of European agricultural subsidies and constructed renewable energy plants on land that they are required to leave fallow.

Cost of feed-in tariffs

The International Energy Agency (IEA)[iii] estimates that the feed-in tariff costs Germany some 3 billion euros per annum, and notes that, while the feed-in tariff had stimulated growth in the Germany renewable energy industry (providing 4.2% of primary energy supply in 2006, expected to reach 12.5% by 2010 and 20% by 2020) this came at a very high cost. The IEA estimates that between 2000 and 2012 the feed-in tariff will cost 68 billion euros in total (about $113 billion), or between 350 euros and 1000 euros per tCO_2e. The IEA also urged the German government to "focus on creating sustainable market pressure to bring down the costs of operating and further developing its renewable energy resources."

The estimated cost of between 350 and 1000 euros per tCO_2e should be put into the context of the European Emissions Trading Scheme. Current permit prices in the EU ETS are around 20 to 25 euros per tCO_2e, implying a marginal cost of abatement around this level. Accordingly, based on these figures, the cost of abatement of the German feed-in tariff is in the order of around 12 to 50 times higher than that delivered through the European ETS.

The German Federal Ministry of Environment, Nature Conservation and Nuclear Safety (BMU) reports[iv] that differential costs to electricity retailers from the feed-in tariff will rise from 3.3 billion euros in 2006 to 6.2 billion in 2015. The BMU estimates that the surcharge payable by householders that provides the feed-in tariff will rise from 0.75 eurocents/kWh in 2006 to 1.5 eurocents/kWh in 2015. This represents an annual average per household cost of 26.40 euros in 2006 and 58.80 euros in 2015.

The Department of Climate Change notes that the distributional consequences of this cross-subsidy are unclear and depend on the precise distribution of household electricity use. That said, studies often indicate that additional imposts on the costs of electricity are mildly regressive. In contrast tax transfer systems (an alternate source of funds for an abatement or technology development program) are typically progressive (with the extent of the progressivity depending on the particular tax-transfer system under consideration).

Australian Government Support for Renewable Energy

Existing government support for renewable energy includes:

- the Mandatory Renewable Energy Target, and the Government's commitment to expand this target to increase the use of renewable energy to 20% of national electricity supply by 2020;
- a $500 million Renewable Energy Fund to support the development, commercialisation and deployment renewable energy in Australia;
- a $150 million Energy Innovation Fund to support critical clean energy technology research in areas such as solar power;
- establishing an additional two Solar Cities and at least ten green precincts (i.e. high profile demonstration units that ensure water and energy saving measures); and
- a National Solar Schools Program to allow every school in Australia to apply for grants of up to $50,000 to install solar panels and a range of energy efficiency measures.

In addition, the Carbon Pollution Reduction Scheme that will commence in 2010 will provide strong incentives for renewables and other low emissions technologies in technology neutral fashion at least cost.

Table of acronyms

BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit)
COAG	Council of Australian Governments
IEA	International Energy Agency
kWh	Kilowatt hour (standard measure of electricity consumption or generation)
PV	Photovoltaic – literally "energy from light"
tCO_2e	Tonne of carbon dioxide equivalent (standard measure of greenhouse gas emissions)
TWh	Terrawatt hour (= 1 million megawatt hours)

Sources

[i] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. 2008. 2009 EEG Payment Provisions

[ii] International Energy Agency (IEA). 2007. Review of German Energy Policy.

[iii] International Energy Agency (IEA). 2007. Review of German Energy Policy.

[iv] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. 2007. Background information on the EEG Progress Report