

Solar feed-in tariffs 2013 to 2014

Submission to Independent Pricing and Regulatory Tribunal (IPART)

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1. Terms of Reference

“The Premier of New South Wales has asked IPART to undertake an investigation into solar feed-in tariffs. The investigation will establish a fair and reasonable value for electricity generated by small scale solar photovoltaic systems. The fair and reasonable value determined by IPART must not result in any increase in electricity prices in NSW, and must not be funded from the NSW Government budget.”

Comment

The last sentence in the Terms of Reference deserves strong condemnation for interpreting what is “fair and reasonable” within political statements by the government of NSW. “Fair and reasonable” ought to be interpreted as just that by an independent tribunal. The last sentence should not have been included.

2. The current situation

From the IPART Fact Sheet, 27 June 2012:

“We have updated our analysis consistent with the methodology in our March 2012 report, and determined a benchmark range of 7.7 to 12.9 c/kWh for 2012/13. This is higher than the benchmark range in 2011/12, mainly due to the start of the carbon pricing mechanism which increases the wholesale cost of electricity. The benchmark range in 2011/12 was 5.2 to 10.3 c/kWh.

The benchmark range is intended to provide a guide for customers as to the value of the electricity that their PV units export to the grid in 2012/13. However, retailers are not required to offer feed-in tariffs within this range. They are able to set their own feed-in tariffs.

The benchmark range of 7.7 to 12.9 c/kWh in 2012/13 is lower than the retail price of electricity (i.e. lower than a ‘1-for-1’ tariff). This is because electricity retailers still incur certain costs when their PV customers export electricity to the grid. For example, retailers are still required to pay network costs on that energy. These network costs represent around half the current retail price.”

The IPART Fact Sheet continues ...

“The benchmark range estimated in our March 2012 report reflected our methodology that included:

- *basing the value of PV exports to retailers on both our estimate of the direct financial gain to retailers and the wholesale market value method,*
- *not including a value for potential reductions in network costs, as PV exports are unlikely to provide system-wide benefits that materially reduce these costs, and*
- *not including a value for other potential benefits, including reductions in electricity losses and changes to the pool price and load shape.”*

3. Comments

The heart of the matter is whether or not it is desirable for our community to move towards an electricity system in which renewable energy plays a progressively greater role. The following arguments are agreed by the leading scientific societies in the world:

- combustion of fossil fuels releases CO₂ to the atmosphere, which acts to trap heat in the atmosphere, thereby warming the planet;
- the warming planet involves melting of glaciers and ice, expansion of the oceans, sea-level rise, and unpredictable changes of climate with implications for food and health security;
- these changes to the planet are likely to be extremely disruptive and economically challenging;
- it is commercial and political impediments, not technological impediments, that prevent a far greater role of renewable electricity generation in our society.

Additional risks that policy should mitigate

- Stranded asset risk
There is a commercial risk that continued emphasis on electricity generation via fossil fuels will lead to investment in assets that will become stranded in the future as the rest of the world takes strong action on CO₂ emissions.
- ‘Death spiral’ risk
There is every expectation that developments in storage technology will continue. This has potential to culminate in the ‘death spiral’: technological developments in storage allow consumers to move off the grid in large numbers, leaving high network costs to be borne by a reduced pool of consumers, causing an increase in prices, causing more consumers to invest in their own storage, ...

These commercial risks for our future economic strength should be taken into account by IPART and the NSW Government.

Societal benefits

Electricity generated by PV panels does not involve release of CO₂, other than in the manufacturing phase. The cost of CO₂ emissions have been documented in the international literature, for example by Epstein *et al.* [2, Table 4] who found monetised costs of between 1 (low estimate) and 10 (high estimate) US (2008) cents per kWh_e. When other social costs such as public health burden and emission of pollutants were added, the total cost of coal mining was estimated to be between 9 and 27 US (2008) cents per kWh_e.

In framing its recommendations on a fair and reasonable price for exported electricity, IPART should take into account avoided CO₂ emissions and other public costs, which represent a clear community benefit from the installation of PV panels.

I also wish to comment on the red-lettered statement “*NSW Govt estimates that Federal carbon tax and green energy schemes add about \$316 a year to a typical 7 MWh household bill*” that is printed on the bottom of my electricity bill. This gives the mistaken impression that renewables are mainly to blame for increased electricity charges, which is not the case. Figure 6 of Eadie & Elliott [1] shows the average household bill jumped \$700 - or 63 per cent - between 2007 and 2012. Network charges added almost \$300 per year. The Renewable Energy Target and state government feed-in-tariffs were responsible for only \$77, or 7 per cent of the overall increase. Eadie & Elliott point out that large increases in network costs, rising wholesale prices and more than a doubling in retail costs and margins all added more to electricity prices than support for rooftop solar and other renewable energy technologies.

In view of the comments above, I argue that it is desirable for the NSW Government to implement policies that support the growth of renewables in the electricity grid. Feed-in tariffs for PV are an effective agent for change, particularly since the populace is supportive of PV panels. Whatever tariff regime that is implemented should give certainty to the marketplace and be done with constancy of purpose.

To comment on the three specific bullet points quoted above in the IPART report:

The benchmark is set between 7.7 and 12.9 cents/kWh, reflecting the wholesale price of electricity and the financial gain that retailers might make from payment for electricity exported by roof-top systems. That statement seems reasonable to me, although details would doubtless be shrouded in commercial secrecy.

In the second bullet point it is stated that a value for potential reductions in network costs is not included, as PV exports are unlikely to provide system-wide benefits that materially reduce these costs. This seems a patently false statement to me, and also to Eadie & Elliott [1]. It is clear that PV panels produce most electricity on hot summer days when there is also a big demand for air conditioner usage in the grid. Peak demand is expensive since it requires suitable generation and distribution capacity. Actions that reduce peak demand should be supported, and PV panels are well-suited for the job. I strongly expect there to be system-wide community benefits and these should be modelled by IPART.

In the third point it is stated that a value for other potential benefits is not included. IPART says these might include reductions in electricity losses and changes to the pool price and load shape, but there is also benefit in avoided coal mining and CO₂ emissions as pointed out by Epstein *et al.* [2]. These omissions reflect shoddy modelling practice. Should not IPART develop the best possible model? In particular the merit-order effect¹ indicates that the community will receive financial benefits through the uptake of PV.

¹ Merit-order effect: electricity is produced by PV panels; therefore less electricity needs to be centrally generated; therefore the most efficient base-load generators are used; therefore the pool price of wholesale electricity is lowered; therefore consumers benefit.

4. Recommendations

1. As a preamble to the IPART Report, the NSW government should make a statement recognising the importance of increasing the renewables in the electricity grid. This is required to mitigate the effects of climate change and commercial risks associated with our fossil fuel generators. The statement should acknowledge that fair payment for electricity exported to the grid has an important role to play in the transition to the grid of the future.
2. A second statement by the NSW government is required to the effect that decisions taken by IPART reflect the best interests of the community. The decisions must not reflect commercial interests of the NSW government as owner of assets in the electricity system.
3. The red-lettered NSW Government statement at the bottom of household electricity bills should be deleted.
4. It should be mandatory for retailers to offer a feed-in tariff in the benchmark range set by IPART. (Here ‘feed-in tariff’ means a payment for electricity exported to the grid.)
5. Whatever tariff regime that is implemented should give certainty to the marketplace and be implemented with constancy of purpose.
6. In establishing the benchmark electricity export price, IPART should
 - a) continue to reflect the wholesale price of electricity and reasonable financial gain that retailers make from offering a feed-in tariff;
 - b) include a value for potential reductions in network costs;
 - c) include a value for other community benefits (social cost of emissions avoided, grid losses avoided, benefits due to pool price/shape, ...); and
 - d) recognise the long-term benefits in increasing the role of renewables in the grid, and therefore adopt policies that encourage further installation of PV panels.

I conclude with two general recommendations for IPART and the NSW Government:

7. In its report, IPART should also include tariff recommendations for small-scale industrial PV installations (typically of the order of 100 kW, such as could fit on warehouses, cinemas, shopping centres and the like).
8. IPART should also give consideration to building regulations so as to encourage exploitation of solar resources. This would include positive aspects (*e.g.* encouragement of north facing roofs) and sanctions against loss of sunshine due to trees or neighbouring buildings. (Perhaps these building regulations could be implemented in the BASIX scheme?)

References

- [1] L. Eadie and C. Elliott, *Going Solar: Renewing Australia’s electricity options*, *Centre for Policy Development Occasional Paper 28* ISSN 1835-0135 (2013).
- [2] P.R. Epstein *et al.*, Full cost accounting for the life cycle of coal, *Ann. N.Y. Acad. Sci.* 1219 (2011), 73–98.