Comments by Climate Change Balmain-Rozelle Inc.[1] on IPART's Nov 2011 Draft Report regarding A Fair Price for Solar Electricity fed into the NSW Grid[2].

Derek Bolton, 23/1/2012

We find that several aspects of the analysis are debatable, in most cases IPART taking that view which tends to minimise the tariff. Numerous savings are dismissed as negligible or not worth the effort to assess, yet no rough estimate nor feasible range is provided to support this. IPART is to be applauded for the reforms proposed, but there are several further opportunities that could lead to a more equitable arrangement in future.

1. No cost to the taxpayer

On p1, the document quotes this requirement:

"2. should not require any funding from the NSW Government budget"

The intent, clearly, is that there should be no resulting burden on the taxpayer. There are several ways in which domestic PV generation may reduce State government expenditure indirectly. To that extent, some level of financial support may turn out to be of net gain. In the interests of the taxpayer, the IPART report should assess the savings so that the Government can consider the option.

Specifically:

- *Reduced coal subsidy payments*
  Fed-in PV may displace some coal-fired generation which currently earns state subsidies. As part of the deal struck by the prior Labor government, some coal-fired power stations are obtaining their coal at $30/t below export price[3]. A reduction in demand for such power yields a saving to the state of about 2c/kWh.

- *Health savings*
  Various US research has indicated significant health and agriculture costs from the use of fossil fuels. In 2009 the NRC attributed $62bn a year in externalities to the use of coal-fired electricity[4] in producing 2 petaWh[5]. That equates to 3c/kWh. A more recent study put the cost 5 to 8 times higher[6].
  A European report ascribed 25 deaths per teraWh to emissions from coal-fired power stations[7]. Putting the economic cost of that mortality and corresponding morbidity (including non-fatal morbidity) at $1m each per death produces a cost of 5c/kWh.

- *Agricultural benefits*
  A 1986 Cornell study estimated total U.S. crop losses due to air pollution at over 12% per year[8]. If that applies to NSW's $8.6bn[9] of crop production, and is 20% attributable to combustion of fossil fuels for electricity, this comes to 0.25c/kWh.

  Mining coal has long-term economic impact on agricultural land. NSW governments have a poor history of ensuring mining companies perform adequate remediation, the cost frequently falling back on the state.

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1 http://www.climatechangebr.org/; PO Box 890 Rozelle, NSW 2039
2 http://www.ipart.nsw.gov.au/files/Draft%20Report%20-%20Solar%20feed-in%20tariffs%20-%20November%202011.PDF
3 http://www.nccnsw.org.au/media/power-asset-deal-public-funded-subsidy-polluting-coal-power
4 http://thinkprogress.org/romm/2009/10/22/204843/nrc-burning-fossil-fuels-costs-120-billion-a-year-mercury-climate/?mobile=nc
5 http://en.wikipedia.org/wiki/Coal_power_in_the_United_States
6 http://thinkprogress.org/romm/2011/02/16/207534/life-cycle-study-coal-harvard-epstein-health/ Epstein, P. (2011): Full cost accounting for the life cycle of coal. Annals of the New York Academy of Sciences. February, 2011
7 http://www.world-nuclear.org/sym/2000/pdfs/devezeaux.pdf Devezeaux J. G., (2000): Environmental Impacts of Electricity Generation. 25th Uranium Institute Annual Symposium. London, UK (September, 2000)
8 Boyce Thompson Institute for Plant Research, Cornell Univ.,1986, bti.cornell.edu/
9 http://www.abs.gov.au/ausstats/wmdata.nsf/activeimages/xlbutton/$File/button_xls_3.png

In view of the above, a state subsidy of 3c/kWh would be most unlikely to be a net cost to the taxpayer. However, these points can all be used as arguments for subsidising gas. It may therefore be more appropriate to levy a health pollution charge on all emissions, not just GHGs. This would flow through into a small increase in the price of coal-fired electricity, and thence into an increase in feed-in tariff.

2. Reduced network costs from PV exports

p 46, section 6.2.1

> *"... because the electricity exported by PV systems is often consumed in close proximity to where it is generated it uses very little of the network distribution system. However, ... there is no way to measure how much of the distribution system electricity has been used, due to current metering and billing arrangements. ..., as our purpose is to measure the direct financial gain to retailers, we must consider the costs retailers actually can and cannot avoid, rather than those they should be able to avoid."*

This overlooks the fact that, longer term, what the retailers pay for distribution changes according to the actual costs of the maintenance of poles and wires. Therefore these costs are actually avoided, just not immediately. While it is true that the metering does not permit the distance electricity has travelled to be measured, it should be possible to measure the throughput of substations. One possibility is for the distribution charge paid by the retailer to be computed from a combination of end-user metering and substation throughput.

On p47 we read:

> *"PV customers already receive a considerable benefit for the renewable electricity they generate."*

Since this has no bearing on the value to the retailer of fed-in kWhs, it is not germane to the report.

At p62, section 7.2.1 we read:

> *"PV exports provide a very small system-wide benefit in meeting summer peak demand, as their generation capacity when this peak occurs is equivalent to only 0.3% of the total peak demand"*

Peak demand is around 14GW[10]. 0.3% of that is 42MW, about 12% of the installed PV capacity of 345MW. This is reasonable for late afternoon in summer. So for each 1kW PV capacity, 120W should be fed in at peak time. The upgrade to the NSW distribution network will add 4.32c/kWh to residential retail prices in NSW by 2012/13[11]. In 2008, the state's total demand was 79,000 GWh[12], so the increase represents $3.4bn a year in revenue. Assuming the upgrade is to achieve an increase in peak capacity of no more than 20% on the existing 14GW (i.e. 2.8GW), trimming 100W from the peak demand should be worth about 120W*($3.4bn/year)/2.8GW = $14.6/year.
With a mean capacity factor of 13%, a 1kW PV system produces around 1150kWh/year. Therefore the saving from reduced peak network capacity averages $14.6/1150 = 1.3c/kWh fed in.

If IPART's calculation produces a significantly different result, it would be most helpful to include that in the report.

But that's just an average value. As discussed on pp 62-63 of the report, there is a threshold effect: a reduction in network costs only occurs when fed-in power during peak demand reaches a certain level. At low levels of PV feed-in there may be no immediate demonstrable saving, but come the day one of these thresholds is crossed the retailers make a windfall gain. Discounting the value totally therefore does not constitute fair treatment.

Again, it would be helpful were IPART to publish what it considers to be the first threshold in this regard.

> *"They may also be offset by system-wide cost increases as a result of the uptake of small-scale PV."*

10 http://www.dtiris.nsw.gov.au/__data/assets/pdf_file/0010/398926/spalding-presentation.pdf
11 http://www.climatespectator.com.au/commentary/our-costly-obsession-air-con
12 http://www.greenhousegas.nsw.gov.au/documents/Newsletter_Issue6_Dec07.pdf

That lies in the future. Elsewhere in the analysis, consideration of likely future benefits (increased fossil fuel costs, network savings) have been deferred for annual reviews. It would be appropriate to be consistent. If the problem arises from PV feed-in exceeding a certain fraction of total supply in a locality, the retailer could be allowed to set area limits.

> *"We also found that other potential benefits of PV exports, such as reductions in electricity losses and changes to the pool price and load shape, could not feasibly be captured due to the practical arrangements within the electricity industry."*

This appears to be saying that because it is hard to assess no credit will be given for it. Once again, this displays a bias towards a low feed-in tariff. The onus is on IPART to make a reasonable estimate on whatever information is available. If the retailers disagree, no doubt they will discover how to obtain the necessary data. At the least, IPART should publish whatever range of values it can calculate.

> *"Moreover, including these benefits in determining a future feed-in tariff could lead to increased electricity prices, and so would not be consistent with our terms of reference."*

It would be helpful to provide more detail of this analysis. Is there a clear reason to expect such an increase, or is this merely a possibility? Could it occur before the next review? Does it apply to all of the benefits considered (losses, pool price, load shape) or to just one or two of them?

p 67, section 7.3.2:

> *"... whether PV customers are entitled to avoided TUoS payments ... would require half hourly data on the PV customers' exports, but not all these customers have interval meters"*

That would not prevent a higher feed-in tariff for those PV customers with interval meters. If the administrative burden of that would be too high, the appropriate course is to make a reasonable, if conservative, estimate of the saving per kWh of total feed-in.

p 68:

> *"since the revenue earned by the transmission operator is regulated under a revenue cap with an unders and overs account, avoided TUoS charges are simply relocated and recovered in the next financial year from distribution network operators (and therefore through higher prices for customers)."*

That will only result in higher prices if the NER has underestimated the costs. This can happen anyway. The argument seems to assume that the calculated cost saving from PV feed-in is fictitious, requiring price increases to allow the transmission operator to catch up the next year.

3. Load Profile

p 74, section 8.3:

> *"the electricity PV customers export to the grid could lead to a larger difference between peak demand and average demand"*

This is true only by taking the non-exported PV as a given. In practice, the impact of PV systems on profile is related to the total output, not just the exported part. As IPART's own figures show, typically only one third of the output is exported.

[Wrt output/demand correlation, Figures 4.4, 4.5 on pp 30-31 may be a little misleading. Fig 4.4 shows peak output at noon, so presumably the time base is AEST. If Fig 4.5 uses the same base then it mixes summer and winter demand profiles with different AEDTs. Thus, a summer-only profile, as is most relevant to PV feed-in, will likely have an earlier peak than the one shown and therefore align better with output.]

Consider the demand profile in three parts: overnight base, daytime shoulder, and evening peak. Taking total

output into account, PV feed-in will bring the daytime shoulder level closer to the overnight base level but further from the evening peak level. Since daytime shoulder utilises gas peaking plant, there should be a net reduction in profile cost.

> *TRUenergy submitted that in the competitive market, any improvement in the load shape would get passed through to customers in the form of lower retail prices. Therefore, if retailers were required to pay PV customers a feed-in tariff to reflect a benefit from a change in the load shape, electricity prices for other customers would increase.*

This argument is bizarre. How does not passing a resulting price reduction to non-PV customers mean they will instead suffer a price increase? If it is saying that the price will increase merely in the sense that it will not go down, that is true of the entire concept of paying PV customers anything at all for power fed in. Denying non-PV customers a windfall must not be regarded as a price increase.

4. Merit Order Effect

p 75, section 8.4:

> *"there is no economic basis to include any benefit from this merit order effect in setting a fair and reasonable value for feed-in tariffs"*

Granting that, it overlooks a key reason for considering the MOE. Throughout the report, IPART is most keen to avoid net increases to prices for non-PV customers. Based on that concern, several potential savings to the retailer are not assessed. If it can be shown that the MOE will allow PV fed in to depress prices then, to that extent, such concerns should be alleviated and those other savings for the retailer given fuller consideration.

5. Miscellaneous benefits

p 71, section 8.1:

> *"First, due to arrangements in the NEM, any financial benefits arising from the impact of PV exports on energy loss factors, retailer load profiles and wholesale electricity prices ... are 'external benefits' that are shared by all customers (PV and non-PV customers).*
> *:*
> *"Third, even if the value of these benefits could be quantified accurately, reallocating the benefit from all customers to just PV customers would increase electricity prices for non-PV customers."*

Taken together, these two statements make the same "if it doesn't go down it will go up" fallacy as TRUenergy uses re load profiles.

6. Certainty for PV customers

p 94, section 9.5:

> *"We recognise that this would not provide customers with certainty in terms of the likely revenue that a feed-in tariff will provide over the life of a PV unit. However, for typical customers who are not participants in the Solar Bonus Scheme and are on net metering arrangements, this revenue is likely to represent only a small component of the overall financial benefit they derive from installing a PV unit."*

At present costs, the net benefit of a system is small compared with turnover. The revenue from a feed-in tariff could well make the difference between net gain and net loss for some. Certainty therefore remains crucial. The sorry history of boom and bust in the solar industry that has resulted from dramatic reversals in government policies must be brought to an end.

A recommendation is needed for the case in which the NSW government abandons price regulation, plus a

recommendation that a floor feed-in tariff be legislated for several years ahead.

7. Eligibility

p 95, section 9.6:

> *"eligibility should be limited to ... installed solar PV units of 5kW of less"*

Would it not be as simple, and fairer, to cap the power that earns the tariff at 5kW? Thus, a business that generates and consumes up to 10kW Mon-Fri could earn for output up to 5kW on weekends, the retailer getting the excess output free.

8. Other observations

p 48:
We were unable to follow the reasoning in this statement:

> *"... the gain to EnergyAustralia is around 2 c/kWh higher. This reflects the particular pricing arrangements for EnergyAustralia's PV customers, most of whom pay a time-of-use price. This means that most of their exports occur when they are paying the higher peak or shoulder price, and therefore the difference between this price and the costs EnergyAustralia can avoid is higher."*

The value of a kWh fed in is not related to the price that that particular customer would have paid had they instead drawn a kWh at that time. Rather, it is related to what the retailer can sell the kWh for to customers who do *not* have PV. Should it perhaps have said that they *earn* a time-of-use price?

p 71:

> *"retailers make a direct financial gain from losses due to the metering and billing arrangements in the NEM"*

Perhaps this should say " financial gain from *reduced* losses"?

p 147, Figure J.1: Insolation

The chart is for insolation of a horizontal surface. PV panels in NSW are elevated to around 15 degrees, which significantly reduces the contrast between winter and summer insolation.