QUEENSLAND resources COUNCIL

Working together for a **shared future**

Draft for 23 November 2015

Commissioner Kim Wood
Queensland Productivity Commission
PO Box 12112
George Street
BRISBANE QLD 4003

via email: enquiry@qpc.qld.gov.au

Dear Principal Commissioner,

Thank you for the opportunity to provide a submission to the Queensland Productivity Commission's inquiry into solar feed-in pricing in Queensland. This inquiry is focussed on an important (and fast growing) component of the delivered cost of electricity in Queensland.

As you are aware, the QRC is the peak representative organisation of the Queensland minerals and energy sector. QRC's membership encompasses minerals and energy exploration, production, and processing companies and associated service companies. QRC works on behalf of members to ensure Queensland's resources are developed profitably and competitively, in a socially and environmentally sustainable way.

As you know, the resources sector is trade exposed and operates in highly competitive markets with a limited ability to modify consumption or pass additional costs onto customers. The global competitiveness of the sector is currently challenged from high structural costs, with energy intensive processing vulnerable to high domestic energy prices. Furthermore, most global resources markets are oversupplied, with subdued prices across many markets.

The terms of reference note that the inquiry is focussed on solar export pricing for small customers. There will be a number of small customers amongst QRC's membership. With many resource operations in remote and regional areas, solar energy is often a competitive source of electricity and can provide an important supplement to small diesel-fired generation sets for the industry

As the public debate over solar feed-in pricing continues to be highly politicised, the issues paper does a commendable job of objectively setting out the history and facts around solar feed-in pricing. The information on the costs of solar presented in the Commission's issues paper on electricity pricing were also helpful in putting the role of small solar generation into the broader context of Queensland's electricity networks. It is very important that the costs of the solar bonus scheme are not misrepresented as network costs, simply because that is how the revenue is collected.

ABN 59 050 486 952
Level 13 133 Mary St Brisbane Queensland 4000
T 07 3295 9560 F 07 3295 9570 E info@qrc.org.au
www.qrc.org.au

The Commission's electricity pricing issues paper notes that these estimates of network costs exclude the costs associated with Queensland's solar bonus scheme (SBS) and instead quotes the Queensland Competition Authority's (QCA) estimate that environmental schemes like the solar bonus scheme add around 11% to a typical residential bill (of which 8% is SBS and 3% is the Australian Government's renewable energy target (RET)) (page 8).

QRC suggests that these "environmental costs" for large industrial users, like many QRC members, may be an even higher percentage of their electricity bill. This is particularly the case for solar feed-in pricing, where this complex chain of revenue collection increases the risk of straying from a clear application of a user-pays principle. QRC suggests that in developing a view of what is a fair price for solar feed-in tariffs, the Commission needs to examine the incidence of cross-subsidies. QRC would be interested to see some analysis of the extent to which larger electricity users bear a larger share of these environmental costs.

An electricity system where 67 per cent of solar PV customers are paid a premium 44 cent/kWh tariff when the QCA have estimated that a fair feed-in tariff in regional Queensland is just 6.348 cents/kWh seems unconscionable as it represents almost a 500% mark-up on the economic price. The subsidy of 37.652 cents for every kWh of solar PV under the solar bonus scheme needs to be found from somewhere, and it is not clear that this cross subsidy is efficient or justified.

QRC endorses the QCA's 2013 conclusions in their inquiry into solar feed-in tariffs that to avoid cross subsidies, these feed-in tariff schemes should be funded by electricity retailers rather than regulated network businesses. The QCA concluded (page iv):

> *To be sustainable and fair to all consumers, any new scheme must be structured so that the price received for exports of electricity reflects the true, quantifiable savings and benefits that are being achieved by the installation and on-going operation of solar PV panels.*
>
> *Surprising as it may be for some consumers, there is no magic pudding when it comes to electricity prices. If one group of consumers enjoys a benefit in excess of the true savings they make, or enjoys prices below the cost of their consumption, other electricity customers have to pay the price of those excess benefits or lower prices. When those doing the paying are likely those least able to afford it and those enjoying the benefits are those likely to be most able to afford to meet their true costs, then something is truly wrong.*

In 2014, the Australian Energy Market Commission (AEMC) estimated that:

> *A consumer using an average-size north-facing solar PV system will save themselves about $200 a year in network charges compared with a similar consumer without solar. Because most of the solar energy is generated at non-peak periods during the day, it reduces the network's costs by $80, leaving other consumers to make up the $120 shortfall through higher charges.*

One of the risks of small-scale solar installations is that they are not installed and operated efficiently. On a residential scale, the risks of shading, dust, less than optimal orientation and a "set and forget" attitude from many households, means that there is an important difference between the installed capacity and actual performance of many solar systems in reliably exporting electricity.

The excellent NEM-Watch web widget developed by Global-Roam for the RenewEconomy website reports on the live contribution of small scale solar to the Queensland energy system updated in 5 minute increments. Unfortunately, due to data limitations, the data reported on small scale solar is delayed and based on estimates of the Australian PV Institute (APVI) rather than actual measurements of solar output. Inevitably, the APVI algorithms will not have sufficient information below the postcode scale on actual solar performance rather than potential. Given the calls in some jurisdictions to pay a solar tariff on the basis of estimated capacity rather than delivered solar output, it is important to understand the difference between the two figures.

The inquiry's background section presents some good information on both Queensland's installed PV capacity of 1,328 MW and output of 1,045 GWh in 2014-15, but doesn't call out the utilisation of that installed capacity, which QRC estimates sits at just 9%

Small customer PV in Queensland

Installed capacity 2014-15	1,328 MW
Energy exported 2014-15	1,045 GWh
Maximum output at 100% dispatch in (MWh)	11,601,408 MWh
Maximum output at 100% dispatch in (GWh)	11,601 GWh
Effective utilisation rate of exported energy from small customer PV	**9%**

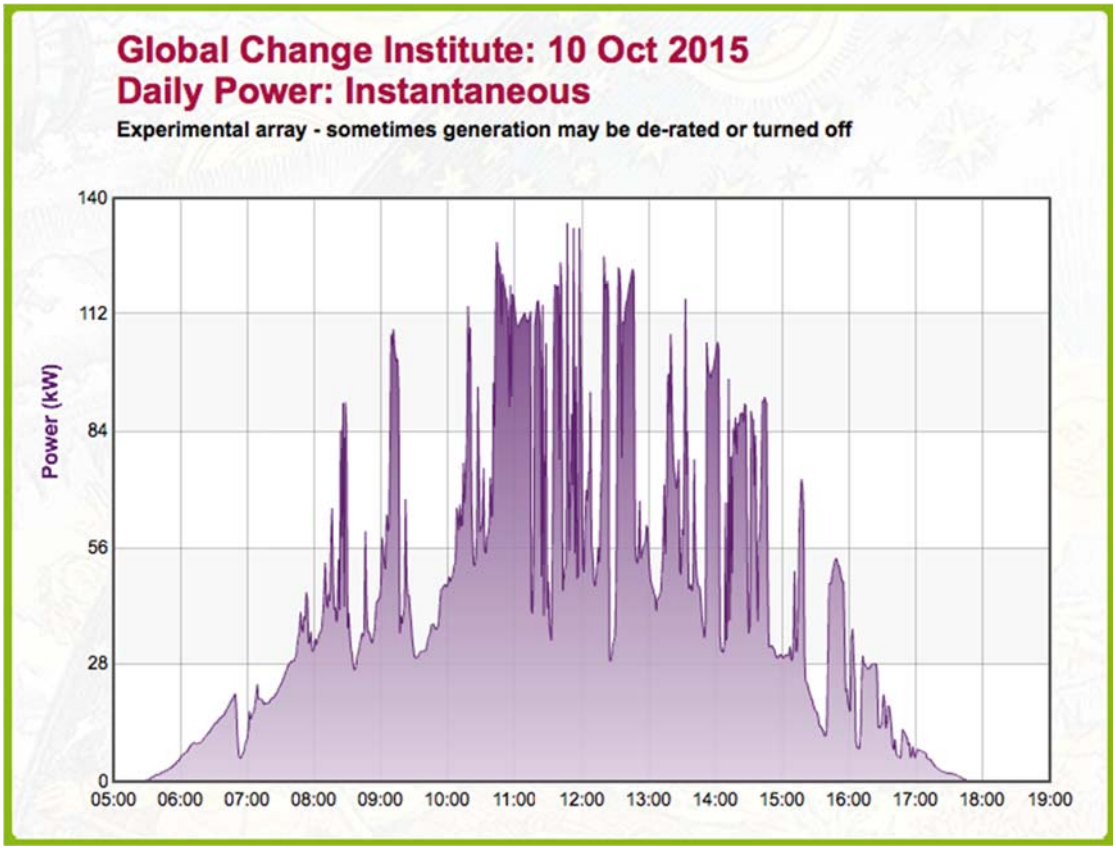
QRC suggests that this low utilisation rate is a very important part of understanding the role of solar PV in the Queensland energy market and that the issues paper should have explained this aspect of solar generation. It may well be the case that the electricity exported from small customer PV was as much as was consumed behind the power meter, but this would still only increase the utilisation rate to 18%.

While it is true that collectively installed solar PV capacity is equivalent to the fourth largest generator in Queensland; it is also true that the three larger generators all run at utilisation rates in the high double figures, which means they play an important role in offsetting the intermittency of solar PV.

It is important that electricity customers understand that if Queensland is to achieve the target of having a million solar rooftops (or 3,000 MW) by 2020, then not only does that involve a major investment in more than doubling Queensland's solar capacity in four years (with an increase of 1,672 MW required to achieve that target); but also that history suggests that this new PV capacity will on average only be available for around two hours a day (on the basis of a 9% utilisation rate). Importantly, the timing of this capacity is not well matched to Queensland's peak electricity load.

The graph below is from the University of Queensland's live data feed of PV solar performance. It is a graph of the energy output from the array on the Global Change Institute on their peak power day of 10 October 2015. While the instantaneous energy output reaches around 135 kW just before noon, it also drops below 50 kW several times in that hour. The intermittency of the electricity production is quite striking, with large variations within quite short time periods.

The graph also shows that the system delivers less than 20 kW of energy for the fifteen and half hours before 8 am and after 4:30 pm, so the energy production is well aligned with the energy load of a school or university campus, but perhaps not as well suited for the evening peaking energy demand of a Queensland household.



While the Global Change Institute are justifiably proud of having a building which is 100% solar powered and generating 175,000 kWh per year the output of their sophisticated array of PV panels demonstrate why the building has a large bank of batteries in the basement to store three days worth of power.

Section 2.2 of the issues paper identifies the need to develop a clear set of objectives for a solar export pricing policy. QRC endorses the need to address the policy objectives gap. The issues paper calls out one of the possible objectives of a solar export pricing as including "*solar industry development and job creation*". QRC suggests that the solar industry needs to be cautious of claims around job creation in the face of the reality of the PV product which is largely imported and creates jobs only in sales, marketing and installation. These jobs are all based on servicing the growth in the solar PV industry and are not operational in nature.

As an example, one of Australia's largest solar farms, the 340-hectare Clare Solar development in the Burdekin will create 200 jobs in the construction phase, but only five ongoing jobs once the project is operational. QRC suggests that there needs to be caution in talking about job creation in an industry where a capital investment of $400 million generates just five direct operational jobs.

The other issue which section 2.2 of the issues paper could usefully consider in developing a clear policy objective for solar export pricing would be to consider the interaction between solar PV and solar hot water. In the interests of improving environmental outcomes, which is the final dot point in section 2.2, QRC suggests that the role of encouraging the update of solar hot water should be considered as part of the policy objectives for Queensland. It hardly seems logical to cross subsidise the installation of PV capacity if that expensive electricity is then being used behind the electricity metre to run an inefficient electric hot water system.

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QRC suggests that currently solar feed-in pricing in Queensland would fail to satisfy the OECD principles for regulatory quality set down in Box 2.1 of the issues paper. Currently solar pricing in Queensland is based on a set of unclear policy goals that are difficult to measure so it is unclear whether they are effectively being met. As a result of this uncertainty, it is not clear that the benefits (economic, social and environmental) outweigh the substantial costs of the policy. The current solar feed-in pricing fails to be simple, clear or practical to electricity customers and it is not clear at all that the pricing policy is consistent with other regulations and policies.

Queensland has an opportunity to be a world leader in solar technologies. We have a world-class research community, we have a widely dispersed population which is well suited to a decentralised source of electricity generation, we have high levels of solar irradiation and we already have one of the largest rates of residential take-up of solar, with PV panels on almost 1 in 4 homes. However, we can't be blinded by these opportunities. Solar PV has an important role to play in Queensland's electricity mix, but it needs to be supported by sensible policies that are anchored in careful economic analysis. The debate over a reasonable solar feed-in price for Queensland's existing PV capacity is an important first step in developing a well-integrated energy policy for Queensland. QRC looks forward to reviewing the Commission's contribution to this policy debate.

Thank you again for the opportunity to provide a submission on this inquiry. I can confirm that this submission is not confidential and the Commission is welcome to publish this submission on your website.

The QRC contact on this submission is Andrew Barger, who can be contacted on (07) 3316 2502 or alternatively via email at andrewb@qrc.org.au

Yours sincerely

Michael Roche
Chief Executive

ABN 59 050 486 952
Level 13 133 Mary St Brisbane Queensland 4000
T 07 3295 9560 F 07 3295 9570 E info@qrc.org.au
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