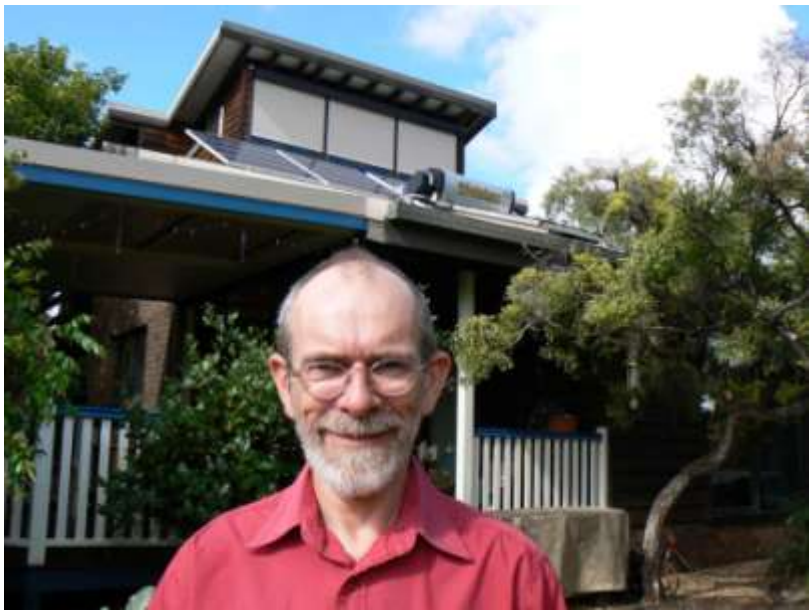
Submission to Queensland Competition Authority Issues Paper

Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland



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Dear QCA

I am an engineer who has worked in the field of renewable energy and energy efficiency for the past 30 years, across many areas. These include solar and wind power systems, solar water heating, energy efficiency building design and energy auditing. My work has involved research at UQ, QUT and Griffith Universities, practical design and installation, technical training, community education and policy review and development on behalf of groups such as the Australian Solar Energy Society and the Alternative Technology Association.

Having read the Issues Paper regarding Solar Feed-in Tariffs for Queensland, I must express with dismay my view that the process of "Estimating a Fair and reasonable Solar Feed-in Tariff for Queensland" as commissioned by the LNP State Government is fundamentally flawed. This is clearly demonstrated by the following:

1. **Terms of Reference are themselves far too limiting and therefore unfair.** This is because it appears to restrict the outcome of the review to one form of metering, namely gross metering. Even the QCA seems to come to this conclusion and the Issues Paper state on page 16, (a) " As a result, a net metering arrangement may be inconsistent with a number of elements of the terms of reference, including (a) there must be no consequential increase in electricity prices in Queensland, (b) a premium rate should not impose a disproportionate burden on other energy consumers without small renewable generation, and (c) feed-in tariff policy should not interfere with the regulation of distribution tariffs." . These are surely restrictive requirements that make a mockery of the goal of a "fair and reasonable tariff" being achieved. Hence it would appear that the process is highly politically motivated to achieve an outcome the Government desires rather than one that is "fair and reasonable".
2. **The social and environmental cost savings of solar PV are ignored.** - On page 5, 2.1 Reasons for this review, the Issues Paper states "This raises concerns about the equity of the (Solar Bonus) Scheme because electricity customers who may not be able to afford (or who choose not to invest in) a PV solar installation are force to pay the solar feed-in tariff to those customers who choose to install PV solar panels, ***without receiving any benefit in return***" (author's emphasis). **Clearly this is NOT the case.** Solar PV provides societal benefits by avoiding or minimising environmental and social costs to society from our use of fossil fuels. Nowhere in the issues paper are these costs considered or any attempt made to quantify them. This author, using data from comprehensive studies of the external costs of coal mining and electricity in the United States (Epstein et al, 2011), has estimated the external costs of coal-fired electricity generation in Queensland are likely to be in the order of 18 cents per kilowatt-hour, or an annual cost to Queensland of $6billion (Berrill, 2012:36). This equates to $1300 per year for each and every Queenslander. This is likely to be a conservative estimate of external costs for Queensland given the world class environmental assets we stand to lose such as the Great Barrier Reef and the Daintree Wet Tropics area.
3. **The Government has chosen to implement electricity tariff policy that is at odds with a free market, competitive approach** whereby the electricity tariff structure and charges reflect the full cost to society of generation and supply of electricity at any time of day. It should include

the cost of upgrading of aging network infrastructure and power plants to meet peak demand. This would require time of use tariffs as suggested by COAG guidelines. It should also require the inclusion of environmental and social costs other than just a carbon pollution cost. This is because the costs to society of our use of fossil fuels are not confined to just global warming. See appendix 2.

4. **Subsidies to the fossil fuel industry in Queensland, including for electricity generation, are very large** and have been estimated from a review of the past 5 years of Budget Papers by this author at over $6.9billion or about $1.4 billion per year. Another $13 billion was forecast to be spent by Government in coming years. This equates to about $300 per person per year. These subsidies far outweigh funding to support the development and deployment of clean renewable energy and energy efficiency technologies, which were estimated at $900 million over the same time. This includes the support for solar PV via the Solar Bonus Scheme (Berrill, 2012:40). The Issues Paper fails to mention or quantify these market distorting subsidies or to include these in the cost of electricity generation.

What is a Fair and Reasonable Price and Metering Arrangement?

While it is recognised that it is difficult to quantify fully the benefits and costs of roof-top PV to the electricity network and society, the current Queensland feed-in tariff rate of 8 cents per kilowatt-hour (c/kWh) does not in any way reflect environmental and social benefits to society (SKM/MMA, 2011). As highlighted above, these could be 18c/kWh or more.

At the very minimum, as argued by the Australian Solar Council and others, roof-top solar PV systems energy output should be paid on a "one for one" basis, whereby each unit of energy generated by PV systems is accepted as having the same dollar value as a unit of energy supplied from retailers to consumers. This would at least more fully reflect the social and environmental benefits that solar PV brings. From my many interactions with Queenslander's in public forums that I have presented at over many years, I believe most people would feel this is a fair rate as they strongly support solar PV.

Gross and Net Metering schemes have advantages and disadvantages as discussed in the Issues Paper. However, an important aspect overlooked in this discussion is the ability of Government to measure the success or otherwise of energy policy initiatives. The current system of net metering provides no useful information to Government to set and refine energy policy. PV system performance is only deemed and energy efficiency policy cannot measure energy savings in homes and businesses with net metering as only imported energy is measured, not total demand. So the effects on total demand of energy saving measures may not be seen.

Gross metering of both PV system output and household / business demand allows:

- **Full assessment of PV system output over time and therefore measurement of environmental benefits such as greenhouse gas savings,**
- **Full assessment of electricity consumption within homes or businesses and therefore measurement of the environmental benefits of energy saving measures.**

Net metering does not provide this information directly and requires use of the PV system's inverter kWh meter and the Energex/Ergon import/export meter to determine system performance and on-site demand.

Any metering scheme should be combined with time of use tariff metering of demand to encourage PV system owners to consume as much of their PV generation on site, thus reducing pressure on networks, reducing local peak demand and network and transmission systems energy losses.

However, given the politicised nature of this review of solar feed-in tariff, I find it hard to believe that a "fair and reasonable value" will be assigned to electricity generated from roof-top solar PV systems.

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References

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Rockstrom, J. et al(2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. Stockholm Resilience Centre paper published in Ecology and Society Vo. 14, Issue 2. http://www.stockholmresilience.org/planetary-boundaries

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Appendix 1 - External Costs of Coal-Fired Electricity over Life Cycle

Mean values from Study by Epstein, P. et al (2011). Full cost accounting for the life cycle of coal. Published in Annals of the New York Academy of Science: Ecological Economics Reviews

Life Cycle	Externalities	External Cost (c/kWh)
Mining	Subsidies – electricity/water/fuel rebates Reduced Prop. Values Displacement of other industries / Jobs / long term earnings – Agri/Tourism Econ. Boom/bust cycle of commodities Mortalities/Morbidity workers / community Trauma surrounding communities Accidents and Fatalities – workers/ transport /subsidence Hospitalisation costs Heavy metals and contaminated land / rivers /estuaries / GBR Loss of habitat and species Air pollution Acid mine drainage Methane emissions Rehabilitation and monitoring	4.4
Transportation - 70% of rail traffic is for Coal (USA)	Subsidies Rail and road repairs Accidents and Fatalities Hospitalisation costs Greenhouse Gas emissions Air pollution Vegetation damage	0.09
Combustion	Mortality/Morbidity Hospitalisation costs Greenhouse Gas emissions Other Air pollutants (NOx, mercury, arsenic, selenium , Ozone and particulates) Infrastructure deterioration – acid rain Rail and road repairs Water and Marine pollution Soil contamination, coal ash and other wastes Freshwater use	12.7
Abandoned Mines and Waste Disposal	Heavy metal health impacts – contamination, trauma following spills, tailing dam failure	0.44
Transmission	Energy losses Ecosystem disturbance Vulnerability of grid to climate change events	0.01

Appendix 2 – Planetary Boundaries and Fossil Fuel Use

Stockholm Resilience Centre is a think-tank of inter-disciplinary scientists that are redefining sustainability in terms of planetary boundaries that could act to limit further human activity on Earth. These are boundaries that they suggest we should avoid transgressing.

"The scientists first identified the Earth System processes and potential biophysical thresholds, which, if crossed, could generate unacceptable environmental change for humanity. They then proposed the boundaries that should be respected in order to reduce the risk of crossing these thresholds."

"The study suggests that three of these boundaries (climate change, biological diversity and nitrogen input to the biosphere) may already have been transgressed. In addition, it emphasizes that the boundaries are strongly connected — crossing one boundary may seriously threaten the ability to stay within safe levels of the others." (Rockstrom, J. et al(2009).

The table below lists human actions that interact with the nine Earth System processes and may cause thresholds to be crossed. Those where fossil fuel use contributes to changes to planetary processes on which life depend are shown in this table. **The table highlights that our use of fossil fuels is contributing to potentially many boundaries being crossed, not just global climate change.**

Human Actions and Fossil Fuel Use (Rockstrom, 2009)

Boundaries being Transgressed	**Proven Causes**
Climate Change	**Fossil fuel use**
Ocean Acidification	**Fossil fuel use**
Stratospheric Ozone	CFCs
Biogeochemical Nitrogen & Phosphorus	**Fossil fuel use** & Agricultural practices
Freshwater Use	**Fossil fuel use via Climate Change**
Land Use System Changes	Diet and City Expansion
Biological Biodiversity Loss	Removal of habitat
Chemical Pollution	**Fossil fuel use**
Atmospheric Aerosol Loading	**Fossil fuel use**