

Queensland Electricity Pricing

The Queensland Productivity Commission is at present conducting two enquiries into pricing in the Electricity Industry.

- (a) A broad public enquiry into electricity prices and the 44c F.I.T.
- (b) A specific enquiry into a fair price for exported solar energy.

Having read the issues papers and the terms of reference I am of the opinion that a wrong approach is being taken with these enquiries.

How can these two enquiries be separated into two when they are so interdependent?

I will treat this submission as a submission for both enquiries. I will also write my submission in a way which makes it a submission to the Government as well because the points I will raise will need close co-ordination with Government policy making. I suggest this enquiry cannot be done without continuing consultation with the government in order to determine what policy is possibly acceptable to the government. If such continuing consultation is done surely the chances of the final recommendations being acceptable to the government for implementation is greatly enhanced. Without this consultation there is less chance the recommendations will be implemented and the recommendations will be wasted.

Both enquiries are aimed at determining appropriate prices at the present time without reference to the changes which will take place in the industry over say the next 15 years except to say that reviews will be necessary over time.

I think this approach is totally wrong. Instead I suggest you should start by looking at what sort of an electricity industry we can expect to have in say 2030 and then adopt gradual changes in the pricing mechanism over that period aimed at encouraging the transition to the new electricity system in 2030. It is useless to determine a fair price at present without any consideration of where we are going in the future. There must be a long term goal or objective and present pricing policy must encourage the transition to the future objective.

What will our electricity system look like in 2030?

The present Labour Government to their credit is advocating the following policies in relation to the Electricity System and the adoption of Renewable Energy.

- (a) 50% renewable energy by 2030.
- (b) 1 million rooftop Solar Systems by 2020.
- (c) A fair price for exported Renewable energy.

(d) Trial large scale Renewable Energy auctions to support private investment and jobs.

This to me all sounds like sensible policy but I do not think it goes far enough to encourage private investment and job creation because there is no mention of phasing out obsolete Coal Fired Power Stations at the same time.

To really ensure the renewable policies are taken seriously there also needs to be a policy of no new Coal Fired Power construction and the gradual phasing out of the present Coal Fired Power Stations over time as they reach the end of their economic life. In other words, new Renewable Energy generation has to take priority over the present Coal Generation even though it will mean job losses in the Coal Fired industry but I think the development of distributed Renewable Energy will generate many more jobs than will be lost. Some unions will object but with a gradual transition and knowing the plan for the future they should see the benefits of moving from a dying industry to a rapidly growing distributed industry with a promising regional future especially if retraining is incorporated in the policy.

With a clear policy like this Private enterprise will be more interested in investing in the new distributed renewable Energy System and people in general will see it as a “ Big Story” as advocated by Alex Frankel – “What’s the Story” (The Saturday Paper June13-19,2015) and will be more willing to accept it as a clear Government Policy for their long term benefit.

Why do I think that Renewable Distributed energy will be dominating in 2030?

- (a) The Queensland Government’s policies listed above.
- (b) The growing world view that Coal Fired Generation must be phased out quickly to avoid serious Climate Change which may be adopted as world policy at the Paris Conference next month.
- (c) The financial move to divest from Coal Investments and the British Central Bank’s warning about the high risk of stranded Coal Assets.
- (d) Recent reductions in Thermal Coal use in Europe, China, United States and the reduction in growth in use in India.
- (e) AGL have already acknowledged that Coal Fired Generation will need to be phased out.
- (f) The cost of Coal Fired Power depends on the cost of extracting the coal, the subsidies given by governments, maintenance costs, the health cost of using coal and the cost of pollution and emissions from coal. These are ongoing costs after the initial Capital cost of constructing the power station and will continue for the life of the power station.
- (g) Renewable Energy on the other hand once the Capital cost has been committed only has a maintenance cost as the ongoing costs. Power from the sun, wind, tide or wave is free as far as ongoing costs are concerned. For that reason there cannot be any valid argument about Renewable Energy being the lowest cost source of energy in the long term. If people want to reduce energy costs, renewable energy is the only choice.

(h) In an article “How cheap can energy storage get” by Ramez Naam in Reneweconomy 10/11/15 he writes about the estimated costs within 15-20years.” Solar Power and Wind Power are each heading towards un-subsidised prices of 2-3c. per kWh in their best areas, and perhaps 4c. per kWh in more typical areas”

What are the main problems with the present Pricing System?

Below is a calculation I did based on the The Queensland Competition Authority Present Rates

Residential Tariff 11									
Charges 2015/16				Adjusted for Carbon Tax abolition					
Annual Usage kWh	Service Charge	No of Days	Annual Service Charge	Usage Charge	Usage Cost	Total Cost	Service Charge % of Total Bill	Total Cost per kWh used	% increase in Total Bill
1100	\$1.1638	365	\$424.79	\$0.2223	\$244.53	\$669.32	63.47%	\$0.6085	14.70%
2100	\$1.1638	365	\$424.79	\$0.2223	\$466.83	\$891.62	47.64%	\$0.4246	6.50%
3100	\$1.1638	365	\$424.79	\$0.2223	\$689.13	\$1,113.92	38.13%	\$0.3593	2.11%
4100	\$1.1638	365	\$424.79	\$0.2223	\$911.43	\$1,336.22	31.79%	\$0.3259	-0.62%
5100	\$1.1638	365	\$424.79	\$0.2223	\$1,133.73	\$1,558.52	27.26%	\$0.3056	-2.49%
6100	\$1.1638	365	\$424.79	\$0.2223	\$1,356.03	\$1,780.82	23.85%	\$0.2919	-3.84%
7100	\$1.1638	365	\$424.79	\$0.2223	\$1,578.33	\$2,003.12	21.21%	\$0.2821	-4.87%
8100	\$1.1638	365	\$424.79	\$0.2223	\$1,800.63	\$2,225.42	19.09%	\$0.2747	-5.68%
Our Actual Bill 1/7/15 to 12/8/15									
189	\$50.04	43			\$42.01	\$92.05	54.36%	\$0.4870	

Over the last three years, the annual service charge on tariff 11 has been increased as shown below.

Residential Customers Tariff 11									
Charges 2013/2014									
Annual Usage kWh	Service Charge	No of Days	Annual Service Charge	Usage Charge	Usage Cost	Total Cost	Service Charge % of Total Bill	Total Cost per kWh used	
1100	\$0.5022	365	\$183.00	\$0.27	294.03	\$477.03	38.4	\$0.4337	
2100	\$0.5022	365	\$183.30	\$0.2673	\$561.33	\$744.63	24.6	\$0.3546	
3100	\$0.5022	365	\$183.30	\$0.2673	\$828.63	\$1,011.93	18.1	\$0.3264	
4100	\$0.5022	365	\$183.30	\$0.2673	\$1,095.93	\$1,279.23	14.3	\$0.3120	
5100	\$0.5022	365	\$183.30	\$0.2673	\$1,363.23	\$1,546.53	11.9	\$0.3032	
6100	\$0.5022	365	\$183.30	\$0.2673	\$1,630.53	\$1,813.83	10.1	\$0.2973	
7100	\$0.5022	365	\$183.30	\$0.2673	\$1,897.83	\$2,081.13	8.8	\$0.2931	
8100	\$0.5022	365	\$183.30	\$0.2673	\$2,165.13	\$2,348.43	7.8	\$0.2899	

As can be seen, the annual service charge has been increased from \$183.30 to \$424.79 which means that if you add the service charge and the usage charge and calculate that as a charge per kWh, for a household using 2100kWh per annum the per kWh cost is \$0.4246 while for a large user of 8100kWh per annum the per kWh cost is \$0.2747.

Is that fair and reasonable and will that promote the transition to Renewable energy by 2030?

No it will not for the following reasons.

- (a) The Queensland Competition Authority in their Fact Sheet “ Residential electricity prices from 1/7/2014 – updated 24th. July 2014” state the following. “ A tariff 11 bill has two charges – a daily service charge and a usage charge. The daily service charge is intended to cover the fixed retail and

network costs of supplying the customer. The usage charge covers the cost of the electricity used by the customer and variable network costs". They use the argument that the previous fixed service charge of 50c was only about half of the actual fixed cost per customer in 2013/14 (98.3c) to justify a 66.1% increase. The question is why have these fixed costs supposedly increased. By Regulation, the Network operators are allowed to recover their costs of investment in the distribution network. Because they dramatically overestimated the Peak Electricity Demand largely caused by the installation of airconditioners (a bad business decision) they invested in excessive capacity in the network which to some extent has never been used and this is what cause the increase in fixed costs to the customer. Not only that, they are also allowed a Rate of Return on their investment greatly in excess of their cost of capital by regulation. How many businesses are by regulation allowed to pass on to their customers the cost of bad business decisions? This is the cause of the high fixed service charge and the bad business decision was compounded by the QCA supported by the Liberal National Party. The Solar bonus scheme is not the cause of our high electricity charges.

- (b) The low energy user (and that includes the households with Solar power who have reduced their energy usage from the Grid) is paying 54% more per kWh than the high energy user. The high energy user with his airconditioning which caused the "Bad Business Decision" is most to blame for the increased service charge but he is rewarded with a much lower per kWh charge. That is totally unfair.
- (c) There is no incentive to reduce energy consumption with the high fixed charge because the lower your electricity usage the higher the per kWh charge. This is totally the reverse of the way the charges should be formulated.
- (d) The higher fixed charge means that low income people need to be given a subsidy by the government to enable them to survive because no matter how frugal they are in their electricity usage the fixed charge which constitutes 40-60% of their total charge will not reduce. This results in an inefficient" money go round" for the government.
- (e) The only reason for the high fixed charges imposed by the Queensland Competition Authority is to allow the distributors to recover the costs of the "Bad Business Decision" so in fact this activity protects an inefficient monopoly. This is not competition; it is blocking competition from Rooftop solar because no matter how much a Solar Power producer reduces his imports from the grid he is still faced with a high fixed charge.
- (f) The only effect this high fixed charge will have is to encourage the people with Solar Power on the 8c. F.I.T.(and those without a F.I.T.) to install a big enough Battery Storage System to go completely off the grid to avoid the Fixed Charge. If the government allows that. By encouraging this behavior, the Distributors are destroying their own business. Instead they should be encouraging people to remain on the grid with a lower fixed charge. The grid is still needed because not all houses and units can install solar, but it has to be modified to a microgrid with storage combining locally produced electricity with large scale distantly located Renewable Generation to reduce peak demand and save network investment.

An example of our own Solar Power and Solar Hot water System for analysis of pricing policies.

We installed a Kaneka 1.44kW thin film Solar system and SMA Sunny Boy Inverter in September 2009 at a cost to us of \$6100.00.

We also installed a Solarhart Solar Hot Water system in July 2011 at a cost to us of \$4000.00

For the last 2 years our household has included my nephew from China while he has studied for a Master's Degree at QUT. Before that we were a two person household but we had implemented all the electricity saving methods previously recommended by the Government and have been a low electricity usage household.

Our Solar System Costs and Benefits																					
														Period	Cumulative		Period				
														Solar	kWh	kWh	kWh	Period			
Bill Period	Days	Peak	Off peak			Service					Ambulance	Helicopter	Total Bill	Bonus Kt	Rate	Credit	Generated	Exported	Home use	rate	Saving
24/11/09 to 30/6/10	219	461	\$0.1713	\$ 78.97	576	\$0.1029	\$ 59.27	\$ 47.43	\$ 13.96	\$ 49.30	\$ 6.00	\$ 254.93	1182	\$0.52	\$ 614.64	5048	2768	270	\$0.1713	\$ 46.25	
1/07/10 to 30/6/11	365	785	\$0.1941	\$ 152.37	1052	\$0.1166	\$122.67	\$ 89.60	\$ 37.17	\$123.26	\$ 12.00	\$ 537.06	1521	\$0.52	\$ 790.92	2127	1709	418	\$0.1941	\$ 81.13	
1/7/11 to 30/6/12	366	939	\$0.2069	\$ 194.28	87	\$0.1821	\$ 67.57	\$ 95.74	\$ 34.12		\$ 12.00	\$ 345.18	1709	\$0.52	\$ 888.67	2176	1681	495	\$0.2069	\$ 102.42	
1/7/12 to 30/6/13	365	903	\$0.2307	\$ 208.32	25	\$0.1559	\$ 3.89	\$ 82.93	\$ 31.91		\$ 12.00	\$ 354.73	1760	\$0.52	\$ 915.20	2162	1732	430	\$0.2307	\$ 99.20	
1/7/13 to 30/6/14	365	1321	\$0.2673	\$ 353.10	26	\$0.1805	\$ 4.69	\$183.27	\$ 48.00		\$ 12.00	\$ 513.47	1667	\$0.52	\$ 866.84	2258	1668	735	\$0.2673	\$ 196.47	
1/7/14 to 30/6/15	365	1429	\$0.2537	\$ 369.03	31	\$0.1845	\$ 5.77	\$304.45	\$ 68.09		\$ 12.00	\$ 767.44	1554	\$0.52	\$ 808.08	2190	1553	637	\$0.2537	\$ 163.64	
1/7/15 to 12/8/15	43	189	\$0.2223	\$ 42.01	8	\$0.1887	\$ 1.51	\$ 50.04	\$ 19.06		\$ 3.00	\$ 212.70	258	\$0.52	\$ 134.16	13115	9657	58	\$0.2223	\$ 12.89	
Totals	2088	6027		\$2,754.15	3602		\$265.37	\$853.46	\$252.31	\$172.56	\$ 69.00	\$5,758.32	9651		\$5,018.51	13115	9657	3043		\$ 702.00	
Total savings since PV installed \$5018.51 + \$702.00 = \$5720.51 on total cost of Solar PV and Hot Water of \$10100.00																					
At Present Rates including 44c Bonus payback of our investment will take approximately another 4 Years for the system																					

Since then the Solar PV System has generated 13115 kWh of Electricity and we have exported 9657kWh and imported 6027kWh and used of our own generation about 3043 kWh of electricity in just over 6 years. We receive a Solar Bonus of 44c per kWh exported and AGL pay us a further 8c per kWh. We estimate it will take about another 4 years for our investment to be returned.

From the last AGL bill which showed the information in May 2014 each kWh of electricity represents about 0.8403kg.CO2.

Therefore we have saved 2557kg CO2 from using our own electricity and our neighbours have saved 8115kg CO2 from our exporting Renewable Energy to them. Our usage from the grid amounts to 5064kg CO2. So we in effect have generated no net CO2 from our energy usage. That is our contribution to our neighbourhood and the environment in general.

Because we invested to reduce our emissions, our usage rate from the grid is now usually less than 1500kWh per annum so as you can see from the above table for the period July-August 2015 we effectively paid 48.7c per kWh we used from the grid.

We and others like us who have invested in Solar Power and receive the 44c F.I.T. have been accused of living off our neighbours who do not have Solar Power. I cannot see that when we pay

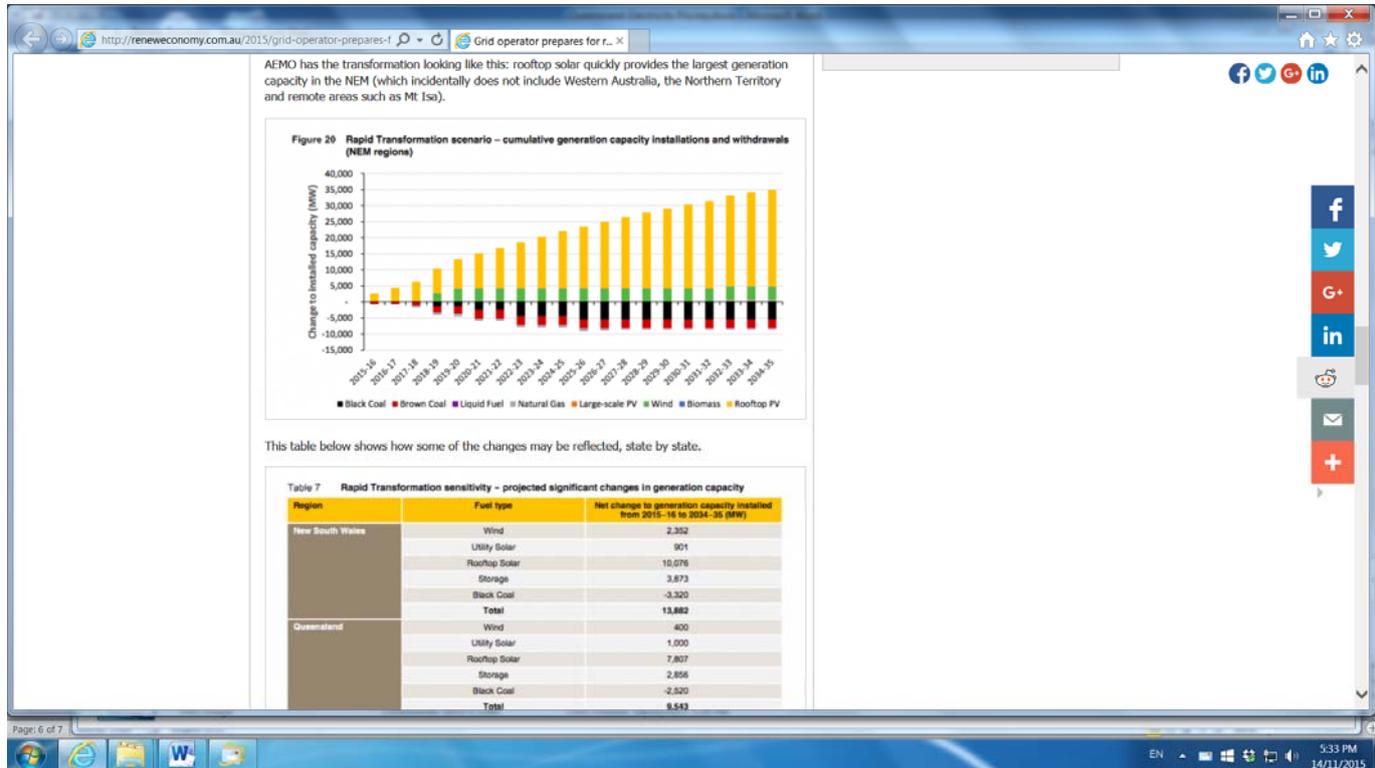
virtually as much per kWh for the grid electricity we use from the grid as we get for our exports. Our neighbours who do not have Solar Power will probably only pay the average 32c per kWh without having invested any of their own money. We are in effect paying a high price for our electricity from the grid to subsidise the large electricity users (who have not invested in Solar Power) who can pay as little as 27.5c per kWh for the electricity they use. We are being blamed for the “Bad Business Decision” of the networks. This is the effect of the high Fixed Charge.

What do I think the Productivity Commission and the Queensland Government need to consider when designing electricity price policy?

Change of Culture away from Solar bashing to encouraging Solar.

- (a) Stop the attack on owners of Solar Systems typified by the previous Liberal Government and instead emphasise that Solar Power is to the benefit of all people in Queensland. Do not create a “ divide and rule policy”. We , the people who installed a Solar System early, did it to save money in the long run but also to be good citizens and do all we could to reduce the effect of rising CO2 levels in our atmosphere but instead we have been vilified and begrudged even a payback on our investment.
- (b) Move the blame for the high electricity costs to the rightful owners, the network operators backed up by the regulators and the QCA.
- (c) “ Rooftop Solar reduces midday demand by up to 3GW: RMIT Study “as reported by Giles Parkinson on 8/9/15 in Solar Choice News
“ The highest peaks all occurred between 2009 and 2011, and in the middle of the day or mid afternoon. These peaks are now covered by Rooftop Solar, which in most states has pushed the average peak into the evening. This is one of the unsung, and unrewarded, benefits of Rooftop Solar PV.”
Battery Backup can further reduce the evening peak and reduce the wholesale price of electricity so it will be of benefit to everyone.
- (d) Publicly disband The Queensland Competition Authority to provide good symbolic change away from the Liberal Party anti Solar campaign and the QCA’s biased support for the existing Coal Generators and the inefficient Distribution network and clearly indicate to the Productivity Commission to seriously consider the replacement over time of the generation and distribution network with Renewable Energy generation and Microgrids backed up by storage in some form.
- (e) “ Grid operator prepares for rapid uptake of solar and storage” Reneweconomy 12/11/15
“ The Australian Energy Market Operator has adapted its network planning to take into account a rapid uptake of Rooftop Solar, battery storage and electric vehicles in the coming years.”

The below diagram is from the article.



The Queensland distributors should be instructed to prepare for this transformation and stop spending money on the network for the peaks which will never happened for any extended period.

Instead the money should be spent on creating Microgrids with storage to facilitate the move to Renewable Energy.

(f) In the Carbon and Energy Markets report "Rising Electricity prices in Queensland :Evidence and Reasons for Actions"it shows the Queensland Government's total pecuniary benefits less Community Service Obligation payments rose from \$46 million in 2007/2008 to \$970 million in 2011/12. I have no current figures for this but with the increase in Fixed Charges in recent years I would think that figure is now higher.

Some of that money could be used to transition the network to a Microgrid with Storage for Renewable Energy and at the same time create a net increase in employment.

(g) The Katter Party and other Country members of parliament should be pleased with the regional development associated with a distributed, renewable energy based, microgrid's ability to generate jobs, investment and development in regional Queensland so consultation with these members

about the transition to a distributed renewable energy system over 15 years should minimise the disruptive effect of the cultural change.

The 44c. Solar Bonus Scheme

From my own point of view, the 20 year time period for the 44c F.I.T Solar Bonus may be too long to be fair. As you can see above, even though our early system was more expensive than current systems, we still expect to get payback in about 10 years. It can also be seen that the Solar Bonus scheme was much more important in deciding the payback period than the savings in imported electricity costs.

If we accept that investing in Solar Power will be of benefit to the whole community in the long run by reducing power costs, reducing pollution, reducing emissions of CO2 and reducing health risks associated with coal fired power then pricing policies should be formulated to transition to Solar (or other Renewable power) over a suitable timeperiod.

I think the main factor in deciding the pricing level and time period for a Feed-in-Tariff should be to decide what pricing and time period will provide a payback period which will encourage private investors to invest in Solar Power.

In our own case, 10 years payback period should be fair and acceptable instead of the present scheme of 20 years. But to offset the loss of 10 years of the 44c. F.I.T. scheme I suggest an offer should be made to those at present under this scheme to change the present provision that if a property which is presently entitled to the 44c. F.I.T. is sold, the new owner will not continue with the scheme. Instead I suggest something along the following lines.

- (a) First decide what is an appropriate time period for the present 44c scheme participants to allow a fair and reasonable payback period and encourage people to invest in Solar Power. As our example above may not be representative of the majority of the people presently on the scheme consultation should probably be conducted with such organisations as the Australian Solar Council, Solar Citizens, Alternative Technology Association and any other relevant body to arrive at a fair payback period.
- (b) Once a fair payback period has been determined, then an offer can be made to present participants in the 44c scheme for them to accept a reduction of the 20 year scheme to whatever the fair payback period is determined to be starting from the date of installation of their Solar Power system.
- (c) In exchange the people who accept this offer will be allowed to transfer the right to the continuation of the 44c scheme to the new houseowner if the property is sold and the 44c scheme will then continue for the new owner until a date is reached 10 years (or whatever is the fair payback period) from the original installation .
- (d) The reason I think that present people on the 44c scheme might be willing to accept this offer is that at present Real Estate values of a house with Solar Power installed do not reflect the value of the

Solar Power system because the Solar Bonus is lost once the property is sold. So if this system was introduced, I think houses with Solar Power would be valued higher to reflect the value of the Solar Power benefits. It would also be a way of ensuring that the person who invested in Solar Power would receive a fair return on his investment even if for some unexpected reasons he was forced to sell his house before he has reached payback on his investment.

- (e) This system would be more fair in the eyes of people who have not invested their own money in a Solar Power System because like all investments, everyone expects a fair return on their investment.

A Fair F.I.T. for people who invested in Solar Power after the 44c scheme was closed.

- (a) In a similar way to the above, I think the main factor in determining a fair F.I.T. for exported electricity should be based on a tariff which will result in a payback period which is seen to be fair and which will encourage private people to invest in Solar Power.
- (b) If we agree that the inclusion of battery backup in a Solar Power System over the longer run will reduce the evening peak load on the network and be of benefit to the community as a whole, this should also be factored into the calculation.
- (c) Again the payback period of a suitable system should be determined by consultation and once the payback period is determined, the rate of F.I.T. can be calculated to achieve the aim of encouraging private individuals to invest in Solar Power.
- (d) Again the F.I.T. should be limited in time to the number of years determined for the payback period from the date of installation and the F.I.T. contract should be transferable to a new owner to reflect the value of the Solar Power System in the real estate value of the house and to ensure the person who invested in the system has a better chance to recover his investment if the property is unexpectedly sold.

Why encourage private investment in Solar Power and Battery Backup?

Because in Queensland, the Government owns the majority of generators and the electricity distribution networks, if you can encourage private individuals to invest in Solar Power and Battery Backup, this saves the government from the cost of installing much of the new Generation and Distributed Renewable Energy Microgrid with large scale backup (Battery, Compressed Air, Pumped Hydro, Solar Generated Hydrogen or any other efficient system) required for the integrated grid to operate efficiently.

The government is trying to encourage Private Investment to generate more jobs. Well Private Investment can not only comes from a small number of large projects, it can also come from a large number of small projects (Solar installation on private homes and small businesses). Both can generate huge numbers of

jobs distributed all over Queensland which by nature has a competitive advantage in Solar Energy because it comes free from the sun of which we have plenty in Queensland (The Sunshine State).

Transitioning from present electricity pricing structure to the pricing structure expected in 2030

Energy efficiency has been acknowledged as a low cost method of greatly reducing our pollution and emissions of Greenhouse Gasses.

For this reason it is vitally important that our electricity pricing system should encourage energy efficiency.

A system where the per kWh price of electricity (including both Usage and Fixed charge) charged to the low electricity, energy efficient ,user is higher than that charged to the large, energy inefficient, user discourages energy efficiency.

The present system of charging a usage rate and a separate Fixed Service Charge may not lead to a clear understanding of what electricity usage costs. For instance if you ask the average person “ What is your cost per kWh of electricity” most will probably answer about 22.23c (the present usage charge) they will tend to forget the fixed service charge or if they remember will include a service charge of \$1.1638 per day, an insignificant amount in most people’s minds as is commonly used in advertising to promote supposedly low cost items. (ie. Less than the cost of a cup of coffee per day). If you on the other hand ask me , I will reply about 50c per kWh.

The QCA used a similar method to hide the true cost of their increases in the Fixed Service Charge.

For this reason , I suggest that over time a move should be made to have only one charge for electricity including both the fixed and variable components to give a clearer indication of the true cost of electricity and in this way encourage energy efficiency.

My suggestions for the transition period of 15 years are therefore as follows.

- (a) Firstly, estimate the cost per kWh in 2030 of generating electricity using a Renewable energy based generation system with both publicly owned and privately owned generation and storage. The Australian Energy Market Operator’s scenario may be a good starting point.
- (b) Secondly estimate the cost per kWh in 2030 of the publicly owned distribution network , retail costs ,publicly owned storage and microgrid required to enable the efficient integration of the public and private generation and storage systems. CSIRO and others have done a large amount of research into this question.
- (c) Combine these two costs to arrive at an estimate of cost per kWh of 2030 electricity supply.

- (d) Gradually over the 15 year period adjust the present electricity tariffs towards the goal of the 2030 estimated price taking into account the ideas I have advanced above which should produce a lower cost electricity system.
- (e) I am suggesting a gradual change in to avoid major disruption and to allow the Queensland Government to finance the building of the new publicly owned Microgrid and storage system from the income they currently receive from their Electricity Network but at the same time gradually reducing that income to a level which gives a fair return on their investment by 2030.
- (f) The gradual change should however be focused on reducing the current Fixed Service Charge as quickly as possible as that is doing the greatest damage to the efficient operation of the electricity pricing system.
- (g) Promote the long term benefits of this idea to the Queensland public as a “Big Story” so well that not only the ordinary electricity consumers but even the present electricity system participants and the Liberal National Party will not be game to put up resistance to the change.

Thank you for reading my submission.

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Date: 16th. November, 2015