SEIA NSW Submission to the Senate Environment and Communications References Committee Inquiry into Electricity Network Companies

16th December 2014

Thank you for the opportunity to make a submission to the Inquiry.

SEIA NSW is an association representing solar PV installers and retailers whose main engagement is in the residential and small to medium commercial PV market.

Rooftop Solar PV is currently the most cost effective way for Australian families and businesses to produce some or all of their own energy, on site, at the place of consumption.

The content of this submission will be related to the following points in the issues paper provided with your invitation:

(d) to ascertain whether state-owned network companies have prioritised their focus on future privatisation proceeds above the interests of energy users;

(h) how the regulatory structure & system could be improved;

(i) whether the arrangements for the connection and pricing of network services is discriminating against households and businesses that are involved in their own electricity production;

(k) any other related matter.

## SEIA NSW & the Networks:

SEIA NSW has developed a working relationship with the three Distribution Network Service Providers (DNSPs) in NSW over the last 6 years. Presenters from Essential Energy, Ausgrid & Endeavour Energy regularly attend our NSW meetings to keep our members abreast of the network issues that develop, and SEIA NSW members value the opportunity to discuss technical & regulatory issues directly with the DNSP staff.

In 2014 SEIA NSW was invited to attend a committee meeting hosted by The NSW Department of Trade and Investment, tasked with reviewing the NSW Service & Installation Rules, in which Section 8 covers the connection of “Small Scale Parallel Customer Generation (Via Inverters). SEIA was able to propose to the committee a number of small changes to the connection requirements that will improve and make more flexible the connection process for Solar PV system designer / installers. SEIA NSW is most appreciative of the opportunity to put forward proposed changes, and it seems that all those

requested have been approved by the committee; the full implementation of the revised document is yet to occur. We look forward to its implementation.

SEIA NSW is strongly supportive of any level of co-operation with the DNSPs, on technical and administrative issues. Our industries' futures are interdependent and collaboration on developing a way forward for mutual benefit should be encouraged.

## CT Metering Upgrades – Room for Improvement:

The network connections process has been refined in recent years, and technical issues such as voltage rise issues are picked up at early stages of the connection application process, by PV installer / designers providing site-specific calculations for the DNSP. At the completion of a PV system installation the typical one-way meter is replaced with a "grid interactive" meter.

One issue arises from the need to upgrade metering equipment to "grid interactive" metering, capable of recording energy exported to the distribution network. This metering work is most commonly performed in residential solar PV installations by a "Level 2" electrician, who is permitted to work on metering equipment. This is done routinely, and quickly, typically within a few days of the PV installation.

In commercial installations however, where a network connection of greater than 100 amps per phase is in place, Current Transformer (CT) metering is employed. When upgrading to "grid interactive" CT metering, a level 2 electrician is not authorised to perform the work. Any appropriately qualified metering service provider can be utilised to perform the work, however in regional areas in the Essential Energy area, it obviously makes sense to engage the metering services department of Essential Energy as they are local and have technicians covering the area.

The Essential Energy process for requesting a CT metering upgrade to "grid interactive" currently requires a Certificate of Compliance of Electrical Work (CCEW) to have been lodged covering the installation of the PV system, prior to Essential Energy "CT Metering Services" making an offer to provide the CT metering work. The PV installer then accepts the offer, and the metering upgrade is then scheduled. In many instances it is necessary to schedule an "Outage" to allow the metering upgrade to occur. Note that no-one can know the final cost of the CT metering upgrade until the PV system is installed, which leads the PV retailer to estimate the metering costs, and include these costs in their supply contract.

CT metering & Outages are handled by different departments within Essential Energy, and as a result, it can take weeks to months to co-ordinate an outage and CT metering upgrade. This is time consuming, stressful and costly for the PV supplier /installer & the customer, who cannot turn on the PV installation until the correct metering is in place.

A marked improvement would be the ability to request a CT metering upgrade quotation at the time of the initial grid connection application. If the network was more concerned with the interests of energy users, it would implement policy changes to streamline the CT metering upgrade offer.

## CT metering example provided by a SEIA NSW member:

The following is presented as anecdotal evidence of the Distributed Network Service Provider (DNSP) making it difficult to connect (and therefore activate) a commercial solar system.

Recent experience of attempting to co-ordinate with the DNSP to upgrade and connect new meters to a customer who has installed a solar system has proved extremely difficult. The DNSP has failed to specify the requirements or process for arranging a metering upgrade required for connection of a solar system to the electricity grid.

Two examples are presented below of the time taken from completion of the solar system installation to the activation of the solar system. Scheduling of upgrades to the metering in both cases was not able to commence until after the solar system had been fully installed and the Certificate of Compliance (CCEW) issued to verify the completion of installation.

**Example 1:**
A commercial customer who had installed a solar system (greater than 30 kWp) required a metering upgrade. It took over 5 months for the metering upgrade to be completed by the DNSP.

**Example 2:**
Another commercial customer in the same region who had installed a solar system (greater than 30 kWp) required a metering upgrade. It took over 4 months for the metering upgrade to be completed by the DNSP.

The process for connection of a solar system (once installed) to the electricity grid is not clear and seems to change from case to case.

Delays of 4 to 5 months in connecting a solar system that is already installed are difficult to fathom unless the organization responsible for approving the connection (the DNSP) is against a solar system being installed.

## PV Proposals Can Trigger Tariff Changes:

When assessing a particular business site for a PV installation, it is necessary to understand the volume of energy consumed, and the energy consumption patterns at the site. Solar PV is most competitive with conventional supply electricity, and provides the most benefit for the consumer & network operator when PV production is aligned with on-site demand for electricity. Energy is most likely to be consumed on-site, reducing purchases from “the grid”, at the same time as minimising exported energy to the grid. PV can be seen as a negative load.

It is commonplace for a solar designer to ask a potential customer to obtain the “half hourly interval data” from their electricity retailer, so analysis can be done, and an appropriately sized and located PV system can be designed.

Many small to medium businesses are on a bundled tariff, where they pay a flat-rate or time–of-use tariff for the energy, together with fixed charges. Eg. $0.33c / kWh plus $2.60 per day.

As users consume more energy, typically above 160MWh per year, they tend to be on a demand tariff, where the customer pays a price for the peak demand event for the month – i.e. the half hour period with the highest demand in kVA.

An example of a demand tariff may be:

- low energy charges ($0.0492 c / kWh)
- low network energy charges ($0.047329 c /kWh)
- high demand charges ($14.2316 / kVA / month)
- access charge ($40.00 per month)
- metering charge ($95 per month)
- other standing charges ($25.00 per month)
- small market participation fees
- small LRET & SRES charges

A customer on a bundled flat rate or Time of Use tariff will receive a greater saving from a solar PV system, compared to a customer on a demand tariff. This is because solar PV essentially slows down the meter recording imports from the grid. A customer on a demand tariff pays very little for how much the meter spins, and considerably more for the peak demand event for the month. If the peak demand event happens to occur at a time when the sun isn't shining, then a PV system will make little difference to that large component of the bill. A bundled tariff customer however, gains by slowing down the meter, as the vast majority of the charges are in how much energy is used.

SEIA members report that marketing to small commercial customers on bundled tariffs will be more successful, as a result of the greater savings, faster payback, and the greater Return on Investment inherent in the PV system proposals.

It is not uncommon to find commercial electricity users, consuming greater than 160Mwh per year, still on a legacy bundled tariff. Anecdotal evidence suggests it is so commonplace to be uncanny, that when "half-hourly" interval data is requested from the customer's energy retailer, the retailer notifies the network provider of the high energy consumption of the site, and the retailer is then obliged to offer a demand based tariff; the PV proposal triggers a tariff change.

Solar installers have been known to advise potential clients that when talking to your energy retailer requesting interval data don't mention solar, just say you're doing an energy audit, in the hope of not triggering a tariff change.

If the commercial customer ends up on a demand tariff, it could typically extend the payback period of a PV system by a number of years, dependent on the tariff structure, rates & fixed charges, potentially stopping the solar proposal in its tracks.

## An example of tariff impacts on solar PV, from a SEIA NSW member:

Increased network and connection fees are discouraging households and businesses from installing renewable energy generation systems to reduce their electricity costs.

In our business, we study hundreds of electricity bills each year to provide an estimate of the likely savings for a customer investigating the possibility of installing a solar system.

There is no such thing as a 'typical' or 'average' power bill. There are variations in tariffs and other charges, such as network and connection charges dependent on:

- electricity retailer; and
- total electricity consumption per year.

Some of these variations appear completely arbitrary.

For example, an accommodation provider with a monthly electricity bill of approximately $4,000 to $7,000 had a breakdown in billing costs (in percentage terms) as follows:

| Charge Type | Percentage of bill |
|---|---|
| **Network services** | 10% |
| **Consumption (per kWh)** | 44% |
| **Peak Demand** | 46% |

Another accommodation provider in the same region serviced by the same Distribution Network Service Provider (DNSP) and supplied by the same electricity retailer with a monthly electricity bill of approximately $3,000 to $5,500 had a breakdown in billing costs (in percentage terms) as follows:

| Charge Type | Percentage of bill |
|---|---|
| **Network & Connection** | 19% |
| **Consumption (per kWh)** | 81% |
| **Peak Demand** | Not itemized* |

* Peak demand was charged (and itemized) by the customer's previous retailer.

The breakdown of monthly electricity charges of these 2 businesses are provided as examples of the disparity in network and connection (and other) charges.

The higher the percentage of network and connection charges in an electricity bill the less financial benefit a customer receives for installing a renewable energy generation system. In the two examples above, the first business is able to benefit far more from the installation of a solar system than the second.

For residential customers, the electricity bill is simplified. Normally, there are only 2 types of charges:

- consumption charges; and
- network and connection charges.

As is the case with commercial customers, the financial benefits are far greater for large users of electricity at home than small users because the percentage of the total electricity bill from network and connection charges is far greater for customers with low consumption than it is for customers with high consumption. i.e. The network and connection charges are very similar for residential customers regardless of whether the average consumption is 1 kWh/day or 100 kWh/day. In reality, network and connection charges for customers with low

consumption can make up approximately 50% of the total bill whereas for large users of electricity, network and connection charges can make up as little as 10% of the total bill.

## How can the regulatory structure & system be improved?

Demand for grid sourced electricity is falling, and the electricity distribution network is undergoing a radical transformation as a result of energy efficiency measures, the growing proliferation of rooftop PV, soon to be combined with battery storage. The first grid-hybrid systems with battery storage are being installed now, with the impact of electric vehicles soon to come. EVs will bring demand to the networks, but also bring down the cost of battery storage, making grid-defection a real possibility for many Australians in the coming decade.

To survive, the DNSP's are going to need to drastically update their business model from a distributor of energy from a central location, to a facilitator of embedded energy distribution at a local level. The current rules under the Australian Energy Regulator do not have a provision for local energy charges for the DNSPs. Consumers need to be able to buy and sell energy from each other. A vibrant market for distributed energy could develop, providing a revenue stream for DNSPs in an otherwise shrinking market.

To assist in giving every opportunity to the DNSPs to investigate all business models at their disposal, to reduce any potential write-downs of what are essentially public assets, it is imperative that real-world trials of Peer to Peer Energy Trading are undertaken as soon as practically possible.

Peer to Peer Energy Trading is a derivative of Virtual Net Metering, Virtual Private Wire, Local Energy Charging etc, but is essentially the ability for one customer on the network to be able to sell energy to another customer on the network, with the DNSP charging for a local energy transaction.

The details of how this system will evolve will have critical implications for the energy system in Australia and the valuation of electricity networks, pre or post privatisation. There is a place for federal government guidance & support, and the sooner it is implemented, the better for all – consumers, networks & the renewable energy industry.

## Peer to Peer Energy Trading:

**Concept:**

- Distributed generators (predominantly solar PV customers) able to sell excess energy to other customers via the local network distribution system.
- Value of exported energy set by buyers and sellers in an online market.
- Sale of energy brokered by existing energy retailers, as an accounting reconciliation at billing cycle intervals, using interval meter data.
- Network (DNSPs) to charge a Local Use of System charge (LUOS).

- Energy retailer to charge brokerage /kWh for accounting.
- Potential for development of concept to live online energy trading using “Smart Meter” technology.
- In principle support of concept from Solar Energy Industry Association (SEIA) NSW, together with the Australian Solar Council (ASC).

## Benefits:

- Freeing up of distributed energy market; increased competition in exported energy market.
- Likely to be achievable with existing NET or Gross “interval” grid-interactive metering; (143,000 Gross metered systems under the NSW Solar Bonus Scheme, seeking value in December 2016 & 77,000 NET metered systems, growing daily).
- Encourages short distance energy flows, reducing energy losses.
- Distributed energy market is the only growing market segment; increasing energy flows into the future, leading to increased revenue stream for DNSPs.
- Retailer gains competitive edge & brokerage on a growing energy market; opportunity for reduced customer churn rates.
- Market for exported energy from embedded energy storage systems, as they come on line.

## Challenges:

- Rule change necessary with the AER – currently being formulated by City of Sydney / University of Technology Sydney (for lodgement in 2015).
- A simple pilot project, with a small number of customers, all contracted to the same interested energy retailer.
- Network Service Providers to be intimately involved in pilot projects, preferably prior to any network sale /lease.

Should you require a SEIA representative to appear at the Senate Inquiry, or provide any assistance with regard to Peer to Peer Energy Trading, please do not hesitate to contact us at your convenience.

Yours Sincerely,

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