Submission No 142

SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

Organisation: Essential Energy

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Committee of Environment and Planning
Parliament of New South Wales
Macquarie Street
Sydney NSW 2000

Dear Committee Members

Essential Energy submission to the inquiry into sustainability of energy supply and resource in NSW

Essential Energy welcomes the opportunity to provide a submission to the inquiry into the sustainability of energy supply and resource in NSW.

There is no doubt that the energy market is in transition and that there is the potential for inequitable outcomes to arise as a result of these changes to the market. The way people consume and produce energy will change with technology improvements, changes to customer preferences and the imperative to decarbonise the economy.

Essential Energy operates in regional and remote areas across the state, and has a particular interest in ensuring that the needs and challenges facing regional communities are considered and appropriate arrangements are put in place to mitigate impacts from the changing energy market.

One way that regional communities can be supported through the energy transition is through the provision of energy through stand-alone power systems (SAPS) instead of through traditional poles and wires infrastructure. These systems have the potential to improve the reliability of supply to edge-of-grid customers while also reducing network charge for the entire customer base. The regulatory arrangements for SAPS are currently under review and should allow for the efficient provision of these systems, where appropriate.

The role of the distribution network is changing, the traditional model of energy flowing from large-scale generators to customers is being challenged by the proliferation of distributed energy resources (DER). Such a transition does, however, necessitate a change in the way the network is managed, as a system designed to accommodate a one-way flow of power from centralised power stations, must now accommodate two-way flows both to and from grid-connected customers.

The proliferation of DER is changing the drivers of cost for networks and the current system for charging customers for using the network no longer reflects this reality. Tariff reform is therefore a key enabler for dynamic network operation and a range of other network and consumer benefits. Tariff reform also has an important role to play in ensuring that network charges are equitable and reflect the true value and costs of network services.

The economic impact of energy charges is significant, with rising energy costs representing a significant risk to businesses and industry throughout our network area. There is estimated to be approximately 677,000 jobs across regional and rural NSW, that all rely to some extent on our distribution network. Reducing network charges, and therefore customer bills, is imperative.

Our response to the specific issues raised in the draft report is attached to this letter. If you have any questions in relation to this submission, please contact Therese Grace, Regulatory Strategy Manager on [redacted] or [redacted]

Yours sincerely

[redacted]

Chantelle Bramley
General Manager, Strategy, Regulation and Corporate Affairs

Essential Energy submission to the inquiry into sustainability of energy supply and resource in NSW

The capacity and economic opportunities of renewable energy

Opportunities for large-scale renewables

The electricity generation sector in Australia and globally is being impacted by the inevitable transition to a much higher proportion of renewables, much of which has come on stream prior to there being sufficient firming capacity (pumped hydro, battery storage, demand management etc) in place to ensure a reliable supply irrespective of the availability of sunshine and wind.

NSW can play a significant role at the COAG Energy Council in support on market-based policies that will help rebuild confidence in the sector and unlock necessary investment. At times of significant change there can be a tendency for governments to set more interventionist policies and seek to control the change. This can lead to unintended consequences and higher than necessary costs for consumers. An example of this is the potential for overbuild of transmission infrastructure and the cost impact of that for NSW consumers.

In a world of increasingly distributed generation, effective utilisation of the distribution network and the grid and consumer benefits that DER can bring, should be carefully balanced against investment in new assets which may not be required in the longer term. Any transmission investment should continue to be assessed through the AER's RIT-T process to allow a transparent and thorough assessment of the costs and benefits to consumers.

Distributed energy resources

At the smaller scale, customers are exercising choice by installing solar and batteries on their premises. This will only continue - Essential Energy, as a distribution network service provider, is keen to facilitate the energy choices of small and large consumers and help them achieve the benefits that new technology can bring.

Essential Energy is at the forefront of the energy transition as more DER connects to our network. Currently we have:

- More than 140,000 residential and small business customers with small scale renewable energy generation systems, mainly solar, connected to Essential Energy's network.
- Just under 1,500MW of installed renewable capacity on our network.
- The potential ability for close to 60% of peak demand to be served by renewables, if conditions are favourable. This is relative to the peak demand of just over 2500MW recorded in January 2019.

Such a transition does, however, necessitate a change in the way the network is managed, as a system designed to accommodate a one-way flow of power from centralised power stations, must now accommodate two-way flows both to and from grid-connected customers. Similarly, increasing numbers of larger, renewable generators are also connecting at the distribution level. This mid-scale generation has increased significantly and has also necessitated a change in how connections are managed.

Emerging trends in energy supply and exports, including investment and other financial arrangements

Customers have more choice about their energy supply

The electricity sector in Australia and globally has been historically characterised by monopoly service providers, high levels of government ownership and limited customer choice. These characteristics are changing rapidly with the privatisation of large parts of the industry, the blurring of the traditional segregation of generation, transmission, distribution and retail and, most critically, the dramatic increase in the choices available to customers.

It is now possible for many customers, particularly in rural and regional areas to disconnect from the network, or 'go off grid'. Many customers that remain connected to the network are consuming less from it following investment in solar panels and, increasingly, batteries. The trend of reduced cost and increased efficiency of solar panels experienced over the last 30 years is likely to continue, and a similar trajectory in cost and efficiency should be anticipated for batteries.

In addition, customers will have more opportunity to engage with the energy market as they move from passive consumers to 'prosumers' that both consume energy but also provide energy services back into the market. New reforms such as the proposed demand response mechanism will see customers participate in the wholesale market and extract value from their consumption decisions. It is important that any reforms of this kind consider consumer protections and should have appropriate consumer safeguards in place.

Networks charges should reflect the true cost and value of services

Tariff reform is a key enabler for dynamic network operation and a range of other network and consumer benefits. The drivers of costs for distribution networks are changing as the way our customers use the network changes. For example, the proliferation of DER on our network may require upgrades to the network that are unrelated to increases in peak demand. As the number of customers with embedded generation increases, other issues such as how we apportion access to the network will also require consideration.

The electricity network is a scarce resource and access to the network should be considered – current "first come first served" arrangements may not be fit-for-purpose over the longer term. This is currently under consideration at transmission level but will impact on distribution networks and customers with DER.

There is currently no mechanism available for distribution networks to appropriately allocate the costs imposed by solar exports. This is because the under clause 6.1.4 of the National Electricity Rules (NER), DNSPs are prohibited from charging use of system charges for the export of electricity generated by the user into the distribution network.

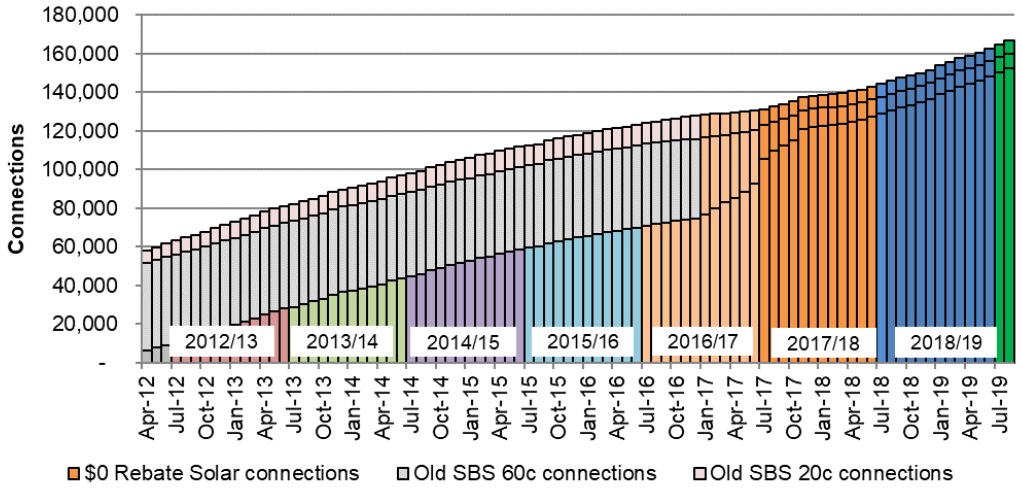
Given these changes Essential Energy supports a re-examination of the services provided by the distribution network and how we can appropriately value these services. This may mean rewarding customers where their DER contributes to the network (for example, by reducing peak demand) but also charging customers for the costs imposed by increased solar penetration on the network (for example, by causing voltage issues). The equity dimension of tariff reform is discussed in more detail below.

The status of and forecasts for energy and resource markets

Recent trends

As noted above, Essential Energy has seen large amounts of DER connect to our network. As at the end of August 2019 there were 166,660 solar connections to Essential Energy's network, with a total panel capacity of 738MW. This includes residential and small commercial/industrial applications.

The chart shows the customers that were originally connected through the Solar Bonus Scheme (SBS), both the 60c and 20c schemes. The SBS ceased Dec 2016, with all customers moving to $0 rebate scheme.



This trend is expected to continue and government policies such as the existing Federal Small-scale Renewable Energy Scheme and the recent NSW government "Empowering Homes" program continue to incentivise the installation of solar PV and batteries in homes. The costs of the systems also continue to decline. Therefore, we expect the installation of these resources on our network to continue.

The proliferation of DER on the network will change how the network is used. We note that in South Australia the time of minimum demand has moved from overnight to the middle of the day. Taken together, this installed solar PV capacity can generate around 1,000MW - more than any single generator in the region. The uptake of solar PV is also expected to accelerate, by 2024 AEMO forecast that solar PV alone will be enough to supply all South Australia's energy needs, during low demand periods.

The distribution network in this state has designed a new distribution network tariff to "soak up" the exports from solar between the hours of 12 noon to 3pm. This is because the distribution network has a finite capacity to host these power flows before technical operating limits are breached which can lead to 'high voltage' and other issues. The new time of use tariff seeks to provide an incentive for customers to consumer energy when solar output is high.

These issues are different from how the network has previously been managed. Until recently, ever-increasing customer demand required that more network capacity was built, primarily to meet increased residential air-conditioning loads on relatively few very hot days in summer.

While this has not occurred in NSW yet, and is not likely to over the medium-term, the South Australian example is instructive in considering how to operate a network with a high penetration of rooftop solar and a low minimum demand during peak solar output.

More uncertainty makes planning more challenging

To face the challenges posed by DER, distribution networks will need to undertake expenditure to prepare for the 'network of the future'. That is, expenditure to increase visibility on network conditions and build capability to plan and operate the network in a more dynamic way. This type of anticipatory expenditure can be difficult to justify under the current regulatory framework as the benefits to customers may be difficult to accurately quantify. In response to this, networks will need to undertake extensive customer engagement to explain the issue to customers and to gather feedback on how customers would like them to respond to the challenges and prepare for the future.

Essential Energy has been involved in the Energy Networks Australia (ENA) and AEMO Open Networks Project which is looking at how the energy market can transition to one where there is a Distribution System Operator (DSO) in place. In a DSO world DER can participate in a number of different markets, including the wholesale energy, network services and ancillary services. Price

signals would trade-off the potential uses of the DER and would determine which use of the customer's resources has the highest value to the system as a whole.

The aim of a DSO would be to optimise the use of all resources available to minimise the costs for all customers, while maintaining a secure and reliable power system.

The Open Networks project has examined a series of "no regrets" actions that would be required to enable a DSO market. These actions will provide benefits to customers no matter what the structure of a future DSO world looks like. The no regrets actions generally relate to gaining greater visibility and understanding of the low voltage network. Once visibility is improved, DNSPs will be able to define limits to network capacity in a more dynamic way. This will ensure that network assets are utilised more efficiently.

Effects on regional communities, water security, the environment and public health

Improving electricity supply for edge-of-grid customers

Essential Energy serves many communities in remote, regional and hard-to-access areas of the state. As such, there is great potential for us to reduce network charges for all our customers by finding new ways to provide our high cost-to-serve customers with a reliable energy supply. Essential Energy has been closely involved with the Australian Energy Market Commission's (AEMC) *Review of the regulatory frameworks for stand-alone power systems*.

We strongly support the inclusion of stand-alone power systems in the regulatory framework and the ability of distribution networks to transition identified customers to supply via a SAPS. The use of SAPS in parts of our network has many important benefits. Replacing traditional network infrastructure with SAPS is likely to increase the reliability of supply for customers. In terms of monetary benefits, we have estimated that over the next 10 years SAPS may be an efficient solution for up to 2,000 of our customers with overall benefits (avoided expenditure minus capital costs of SAPS) of around $120 million over 20 years. There are also significant benefits to be gained through reduced bushfire risk, estimated to be around $1 million per annum over 20 years.

The NSW Government will have an important role in implementing elements of the new regulatory framework, including changes to jurisdictional reliability standards to include these systems an extension of other schemes such as the Guaranteed Service Level scheme. These are the practical changes that are required to integrate SAPS into the relevant jurisdictional instruments.

It is also important that the implementation of any recommendations arising from the AEMC review are proportionate and fit-for-purpose for NSW customers. The NSW Government has an important role in advocating for issues in this area that are specific to the state. For example, the interaction between SAPS provision and the competitive retail market may be of interest in a NSW context, as other networks operating in regional and remote areas have regulated retail prices, for example Ergon in Queensland.

Essential Energy has some concerns that the proposed regulatory framework outlined by the AEMC would not lead to the most efficient outcomes for customers, particularly in regional and rural areas. The AEMC has determined that distribution networks would be prevented from owning SAPS generation assets, and instead would have to contract with third-party providers for this service.

Essential Energy is concerned that flexibility is required in certain circumstances of SAPS provision, in particular if there are small numbers of customers involved, if the SAPS was located in a remote or hard to access area and the customer provides informed consent. In this limited range of circumstances, DNSPs should have the option to provide a SAPS as an integrated solution where a competitive market is unlikely to develop. This would lead to the best customer outcomes in terms of reliability and customer experience while also being most efficient supply option - thereby reducing network charges for all customers.

Opportunities to support sustainable economic development in regional and other communities likely to be affected by the changing energy and resource markets, including the role of government policies

Network charges and equity

The many changes occurring in the energy sector are sure to create 'winners' and 'losers' as the market reshapes, reforms and evolves.

One important issue is that of the equity of network charges in a world with a high proliferation of DER. Recent analysis by the St Vincent de Paul Society in Victoria, provides evidence of a significant gap between the electricity bills paid by customers with solar and those without.[1] The report expresses concern that non-DER customers are bearing a disproportionate share of the cost of supplying energy. This presents a real equity issue as solar customers are more likely to be homeowners and therefore asset rich relative to non-solar households.

In addition, solar exports may be imposing costs on the network that are not recovered by the customers that are creating these costs. Solar exports can provide value to the network in terms of peak shaving and avoiding the need to upgrade the network. However, there are instances where two-way energy flows on the distribution network are creating voltage issues which require investment to solve.

As noted above, Essential Energy considers tariff reform to be a key enabler to the dynamic operation of the network. Tariff reform also has an important role to play in ensuring that network charges are equitable and reflect the true value and costs of network services.

Reducing electricity prices is a key enabler of economic activity

It is important to recognise that Essential Energy is an enabler of economic activity. The production and consumption in our communities, rely on the efficient distribution of electricity across the network, and they are a multiple of the direct cost of providing the service.

The economic impact of energy charges is significant, with rising energy costs representing a significant risk to businesses and industry throughout our network area. There are more than 667,00 people employed across regional and rural NSW, that all rely to some extent on our distribution network.

Electricity affordability remains a key challenge for households and businesses in NSW. There is no question lower energy prices across regional, rural and remote parts of the State are in the best interests of our customers and your local residents.

[1] St Vincent de Paul Society, Victoria, *Options for an equitable Distributed Energy Resource future – A Discussion Paper,* August 2019, p5.