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Submission re: Energy Transformation Strategy: Proposed Changes to the Electricity Networks Access Code

Thank you for the opportunity to comment on the proposed changes to the Access Code, and the consultation paper on these changes.

I support the very positive improvements to the Access Code proposed.

I comment in this submission on some aspects that I consider need more consideration and attention, or more prescriptive wording, than has been proposed in the Access Code draft so far.

I am pleased that the proposed changes address to a certain degree, a number of the matters I raised in my December 2017 submission to the ERA[1] on Western Power's initial AA4 proposal at that time. Please also consider that submission for additional detail on matters that are relevant to the current Access Code changes consultation and my comments in this submission.

New section 6A

I strongly support the addition of this section to the access code. There is considerable opportunity to use alternative options to help avoid more costly network expenditure and still maintain the services customers need. To do so would be in the long-term interest of customers.

This new section should encourage Western Power to develop the internal capability to efficiently identify and make use of alternative options to deliver better value to customers and become mature in such practice.

The two Queensland network service providers Energex and Ergon (under Energy Queensland) have been using alternative options for years and are relatively mature in this regard, as are their alternative options service providers. Between them, these two network companies employ 20 full-time staff for their (alternative options) demand management programs (source – my 2019 email correspondence with them), in addition to the contractors involved in delivering the programs. See the websites below for more information.[2]

Recommended addition to section 6A.2

I recommend that the following additional requirements be added to section 6A.2 of the draft proposed Access Code, regarding what a network opportunity map must include:

> For each identified network constraint that needs to be addressed, describe in the network opportunity map, sufficiently in advance of when the constraint needs to be addressed:

[1] https://www.erawa.com.au/cproot/18520/2/Mr%20Noel,%20Schubert.pdf
[2] Ergon, Energex Demand Management Plans online , Ergon demand management website , Energex demand management website

- The type/classification of the constraint (e.g. thermal, voltage, stability)
- Whether it is a “generation constraint” (occurs due to increased/growing generation output) or a “load constraint” (occurs due to increased/growing load)[3] in the relevant area
- The typical circumstances of: why the constraint occurs, when it occurs, how often it occurs, the typical duration of each instance and the cumulative hours of occurrence per annum,

so that interested parties can understand sufficient detail about the constraint to be able to consider possible solutions in an informed manner.

Proponents of projects and solutions regularly state that they do not have enough information from Western Power to identify opportunities for new projects, and solutions to address network needs. The network opportunity map’s objective should be to meet that information need.

Improving access to the network

Western Power's existing processes and charges are often a barrier to connection of new generators and loads. Proponents often complain about the processes and charges. For example, Western Power offers the first one-hour meeting free of charge to discuss and outline the process required to connect a new generator. After that, Western Power charges for meetings based on the time of Western Power personnel attending the meeting. An engineer from one very large customer said to me "Western Power charges $1500 for a one-hour meeting!", implying that they considered this to be very unreasonable, especially when many meetings are required for a large connection project.

Western Power benefits from the connection of new proponents' generators and loads, and so you would expect that Western Power would be trying to encourage and facilitate their connection, like any other company trying to sell its services or products: "Welcome, come in. How can we help you to connect your project?" The opposite seems to be a common experience of many proponents. A survey of proponents would reveal many such areas of concern.

I suggest that consideration be given to requiring Western Power, through the Access Code, to provide reasonable guidance and assistance at no, or low, cost to genuine project proponents to facilitate their project's connection to the network (without doing their work for them) - as part of a general obligation to provide reasonable network services that are in the interest of both parties.

Ideally Western Power's approach should be what would occur in a hypothetical scenario in which the proponent has a choice of competitor network providers to connect to, and Western Power is trying to obtain the proponent's business. How would Western Power treat proponents in such a scenario?

Network utilisation

I recommend that Western Power be required to report annually on the annual average utilisation (‘average load’ divided by circuit or feeder ‘rated capacity’), and its trend, for transmission circuits and distribution feeders. Western Power tends to report the ‘peak utilisation’ (peak load divided by

[3] Generation constraints may be helped by adding more load in the affected area at the required times, and conversely load constraints may be helped by adding more local generation in the affected area for the required times.

rated capacity) for such circuits and this is not a good indicator of utilisation as generally determined for assets in many businesses.

The average utilisation of many network elements is very low and this would focus attention on increasing the average utilisation, to defer the need for network augmentation and lower network costs. In a number of cases the average utilisation of transmission circuits is less than 20 per cent, and it is not much better for many more circuits.

Network outage planning

1. What mechanisms will exist under the revised Access Code to ensure that Western Power's planned network outages are scheduled such that they are economically efficient overall for the market, and not just at Western Power's convenience resulting in a more costly overall outcome? For example, higher overall supply costs can occur when planned network outages cause low-cost wind generation output to be foregone compared to the outage being scheduled for a different time, taking into account forecast wind output and the effect on all market costs.

Generator performance standards

How do the Access Code requirements ensure that Western Power and/or AEMO generator performance standard requirements are no more onerous, and therefore costly, than necessary? Should there be a comparison with what is accepted in other jurisdictions - in Australia and/or overseas, or should independent technical review be carried out on what is being prescribed?

Stand-alone Power Systems (SPS)

I support the use of SPS's to supply remote customers instead of rebuilding the network, where this choice provides a better outcome over the whole lifetime of the alternative approaches.

This is a very positive initiative. However, it does raise the question of how do you determine when SPS's are a better choice? Western Power uses sophisticated processes to select candidate customers and make this choice.

One factor in this analysis is the future costs of replacement SPS components, and maintenance of these systems - in remote locations which adds to the costs. Maintenance costs are likely to increase as the SPS's age and components fail, although the real cost of some components may decrease over time.

Valid assumptions need to be used in this analysis for these future costs which are largely unknown due to a lack of historical experience using SPS's. It is important that these costs are not being underestimated at present due to this lack of long-term experience and nor should they be overestimated.

SPS sizing and capital cost

How does Western Power ensure that the right size SPS is designed and installed for each customer?

I understand that Western Power or its contractors are not doing a detailed energy audit of each candidate SPS customer's facilities to identify opportunities to acceptably manage the customer's electrical energy consumption and peak demand. This introduces a risk that the SPS's will be over-sized and cost more than necessary. A lack of interval meter data for customers has been a factor in not being able to analyse the optimum SPS size and consider alternative options.

A variety of more energy-efficient appliances and equipment are available that could reduce the customer's energy consumption and peak demand, which both determine the size or capacity of SPS components required.

Some examples of these energy-efficient appliances are:

- Inverter refrigerators and freezers
- Heat pump storage hot water systems or solar hot water systems
- LED lighting
- Variable speed motor drives for pumps and other applications
- Soft starters to limit the starting current of larger motors, such as for compressors
- Inverter reverse-cycle air conditioners.

It may be more cost-effective and economically efficient to supply the customer with the latest high-energy-efficiency end-use products (e.g. appliances, and an energy management system integrated with the SPS) than to install a larger SPS (more PV panels, larger inverter, larger battery, larger backup diesel generator) to cope with the customer's current un-optimised demand profile.

I understand that SPS's cost around $250,000 each on average, and so are expensive per kWh supplied and per peak kW/kVA capacity.

Managing the customer's consumption and peak demand is likely to be cheaper than installing a larger SPS, and this can be done without adversely affecting the customer's lifestyle.

As these SPS customers are still charged standard retail tariffs for their electricity, ideally the customer should have some other effective incentive to manage their demand in the absence of SPS-cost-based charges for their electricity.

Question

Given that the intent of the Access Code changes is for Western Power to be able to include the capital cost of SPS's in its asset base and so earn a regulated return on them, what mechanism will exist to ensure that Western Power has an effective incentive to 'right-size' SPS selection and not over-invest in higher cost SPS's than is necessary or economically efficient?

I consider it important that an effective incentive or requirement is provided up front for Western Power to help customers manage their demand profile, and so right-size SPS's, rather than relying on the ERA to review the economic efficiency of Western Power's SPS sizing choices ex post.

Chapter 7 – Pricing methods and tariff structure statements

The ETIU and the Energy Transformation Taskforce have recognised the need to improve price signals to users and end-users of electricity to incentivise more efficient responses from them. The DER roadmap has "tariffs and investment signals" as one of its four themes. The roadmap states:

> Current electricity tariffs are contributing to inefficient and inequitable outcomes for customers, and the power system.

The roadmap goes to some length to outline the problems with current retail tariffs and has actions to address tariff deficiencies.

For many customers, particularly residential and small business customers, the network tariffs currently charged to retailers (for those customers) still have the same old tariff structures as the retail tariffs had when the network tariffs were first introduced. Around 98% of residential

customers are still on flat, kWh energy-based retail and network tariffs (with non-time-varying prices) because that is all that the older electro-mechanical meters could support.

Flat energy-based tariffs, and even some time-of-use energy-based tariffs, are a key contributor to significant inefficiencies in retailer and customer investment decisions and consumption profiles. They cause significant cross subsidies from those who don't have rooftop PV systems or air conditioners to those who do. This results in inefficient outcomes and higher costs of supply for other customers. These tariffs have also caused Western Power and Synergy to lose more revenue than the cost reductions resulting from wide-spread customer adoption of rooftop PV.

For economically efficient outcomes, network tariff structures should ideally be based on the main cost drivers of network costs so that retailers and customers see these cost signals and can respond efficiently. The absence of good price signals has caused inefficient outcomes - that the Energy Transformation Strategy recognises and is now having to manage.

Coincident kVA demand - an individual customer's demand at the time of the annual peak demand of the network elements supplying that customer - is the main long-term driver of network costs. It determines the capacity required and so the capital cost of the network elements that must be built and maintained in order to supply that customer at that time.

Energy consumption (kWh transported by the network) has little direct relationship to the costs of network services provision and so ideally should be phased out as a component of network tariffs. There is no sound basis for including energy charges in network tariffs other than for customers with electro-mechanical meters that can only measure cumulative energy consumption (kWh) rather than half-hourly kWh consumption from which half-hourly demand (kVA) can be derived. Yet many network tariffs are still based on cumulative energy consumption for customers with electronic meters that are capable of measuring and recording half-hourly consumption. Around 500,000 (half of) residential customers already have electronic meters that are recording their half-hourly consumption, but this is not downloaded and used for network and retail tariffs that could be based on it.

On the other hand, it is good that network tariffs for large commercial and industrial customers are already demand-based – based on their kVA anytime maximum demand or contract maximum demand.

These tariffs would be even more efficient if their demand charges were time-based (based on peak demand times - that matter to the network), rather than charging for anytime demand. I recommend that time-based demand charges be introduced for these tariffs. Making them time-based would encourage customers to shift their maximum demand away from network peak demand times that drive network expenditure, to other times when there is spare network capacity. This would defer network expenditure and improve network utilisation. Please refer to pages 5 - 7 of my December 2017 submission to the ERA [4] for more detail on this.

Recommended addition to the proposed Pricing Objective

I support changes to chapter 7 of the Access Code to improve network tariffs, but I still question whether the proposed Access Code requirements are sufficient. Will they ensure that the network tariffs are structured in future to be properly cost-reflective, to achieve effective, economically-efficient responses from users and end-users?

[4] https://www.erawa.com.au/cproot/18520/2/Mr%20Noel,%20Schubert.pdf

Quoting from the proposed pricing objective - section 7.3, do the proposed changes to the Access Code require "that the reference tariffs that a service provider charges in respect of its provision of reference services should reflect the service provider's efficient costs of providing those reference services" to individual customers?

In the National Electricity Market (NEM), in November 2014, the AEMC made a new rule to require distribution network businesses to set prices that reflect the efficient cost of providing network services to individual consumers. Further information on the reasons for this and the process that led to this rule change are given on their web page [5]. I recommend that ETIU consider this NEM rule change and the need for it apply to WA networks to ensure network tariffs are more efficient.

For network tariffs to properly reflect the efficient cost of providing network services to individual customers, the tariffs would at least need to be time-based, and should also be based on the individual customer's coincident demand because that is the predominant driver of each customer's individual contribution to network costs, as discussed above.

Consultation re tariffs

Section 5.2(b) has been amended in the proposed draft Access Code to refer to 'customers' (i.e. end-use customers and users) rather than just users, so that types of reference services are based on services likely to be sought by (or the benefit of which is likely to be sought by) a significant number of end-use customers.

Retailers and customers may not necessarily seek network tariff structures that are economically efficient - based on network cost drivers. A requirement for the tariffs to be structured to be economically efficient, and in a way that customers are able to respond to, should take precedence over structures that retailers or end-use customers may favour or seek, if the latter are not economically efficient.

Tariff structures should not be designed and offered based on a "popularity" basis. For example, retailers and customers may favour flat energy-based (kWh) tariffs and seek such tariffs to continue for customers with meters capable of supporting more cost-reflective tariffs. Flat energy-based tariffs are not economically efficient and so should be phased, out as meter installations allow, for more economically-efficient tariff structures even if time-varying tariffs are less popular. Time-varying tariffs will result in lower supply costs over time from better retailer and customer responses and decisions, and so are more economically efficient. They will benefit end-use customers more than continuing on flat energy-based tariffs, consistent with the proposed Code Objective.

Ideally network and retail tariff structures for each individual customer should be as economically efficient in structure as the customer's meters are capable of supporting.

Network tariffs are charged to retailers for each customer, and so could be structured as efficiently as possible to apply to the retailer based on the customer's meter capability, even if the retailer does not adopt that retail tariff structure and pass these signals on to the customer. Of course, it is most efficient if the retail tariffs also include the efficient price structure and signals.

Charging the most cost-reflective tariff structure to retailers would incentivise them to act efficiently, or at least take on the risk of not doing so, rather than the network service provider bearing the risk of inefficient retailer and/or customer response.

[5] https://www.aemc.gov.au/rule-changes/distribution-network-pricing-arrangements

Recommendations

I recommend that:

1. Network tariffs (charged to retailers) be as cost-reflectively structured as each customer's meter can support irrespective of the retail tariff charged to the customer.
2. The words "to individual customers" be added to the end of the pricing objective in section 7.3 of the Access Code, to match what is required by the NEM distribution pricing rule discussed above.
3. The relevant sections of the current draft of the proposed Access Code be checked again to see whether any of the requirements are still a barrier to implementing the most cost-reflectively-structured network tariffs.
4. Transmission tariffs also be required to be included in the proposed Tariff Structure Statement (TSS) so that this helps to incentivise improvements to these tariffs. The extra scrutiny through the TSS process should incentivise a move towards transmission network tariff demand charges being made time-based, to reflect times that matter to the network rather than the charges applying anytime (including times when there is ample spare network capacity available and the network is underutilised).

New Access Code Objective

I support the revision of the Code Objective to focus on the long-term interests of consumers. It is an important improvement.

I note that the wording of the objective in the proposed amended Access Code draft, in section 2.1, is slightly different to that given in the consultation paper on page 28 which is:

> "The objective of this Code ("Code objective") is to promote efficient investment in, and efficient operation and use of services of networks in Western Australia for the long-term interests of consumers in relation to: ...."

The objective will be read and interpreted by many people over time. It needs to be clear and unambiguous.

I suggest that the consultation paper's wording (above) is better than that in the proposed Access Code draft but, for the former's punctuation to be correct, it needs a comma after ".... services of" (comma) so that both "... efficient investment in" and "efficient operation and use of services of" apply to the next word "networks". Without the comma "... efficient investment in" has no subject (networks) because the subject only applies to "efficient operation and use of services of".

I suspect that the version of code objective in the proposed Access Code draft attempted to fix this by adding other words, but I think they make the objective less clear.

Thank you for the opportunity to comment. I would be pleased to be able to elaborate in a 1-on-1 meeting on any aspects of this submission, to provide additional explanation to support my comments.

Yours sincerely,

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