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Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235
by E-mail: www.aemc.gov.au

Re: AEMC Transmission Frameworks Review, Project Number: EPR0019

Infigen Energy welcomes the opportunity to make a submission to the AEMC "Directions Paper, Transmission Frameworks Review", Project Number EPR0019.

Infigen Energy is Australia's leading specialist renewable energy business. Infigen Energy is also the largest wind farm owner and operator in Australia with six wind farms totalling over 556 MW in generating capacity. These wind farms include the:

- 279 MW, Lake Bonney Stage 1, 2 & 3 Wind Farms near Millicent, SA;
- 89MW, Alinta Wind Farm near Geraldton, WA; and
- 190MW, Capital and Woodlawn Wind Farms east of Canberra near Bungendore, NSW.

Infigen Energy also owns and operates wind energy facilities in the United States, taking its aggregate wind energy business interests to over 2,000 MW. Infigen Energy is listed on the ASX exchange, and more information about the company is available on our website www.Infigenenergy.com.

Infigen Energy ("Infigen") has reviewed the Directions Paper and makes the following submission focusing on the five workstreams identified paying particular attention to the Connections, and to a lesser extent, Congestion, workstreams as we consider these provide the largest opportunity for significant improvements in cost and efficiency.

Nature of Access

Infigen Energy considers that, with the exception of congestion issues which will be covered later, many of the issues raised in this workstream, while valid to various degrees, are going to be very difficult, complex and time consuming to attempt to resolve. For example, with respect to a financial access rights regime, it is stated,

> "However, the Commission further notes that such schemes are complex and may be costly to implement. The introduction of financial access rights would represent a major change to the NEM market arrangements…(p. 38)"

Infigen Energy agrees with this statement, and would suggest that there are a number of specific issues which are easier to define and more straight forward to resolve as will be discussed later in this submission.

Network Charging

It is stated on page 39, that one of the main issues to be resolved for this workstream is the fact that,

> "…generators, unlike demand customers, do not see any signal of the costs they impose on the shared network through their locational decision."

Infigen Energy considers that this statement overlooks several important points. As stated further down the page, transmission losses and the risk of constraints are factors that influence the locational decisions by generators. This is certainly true; these factors are "seen" and seriously considered in developing generation projects. An MLF of .825, as is the case for the Wattle Point wind farm, results in this generation plant losing over 17% of its electricity revenue. As any company would consider a 17% loss of revenue to be a noticeable cost signal, it is not entirely accurate to state that generators do not "see" locational cost signals today. The prospect of generation being constrained off the network for a significant amount of time is another material disincentive with regards to project location decisions. Therefore, we do not consider that a new and complex arrangement of generator charging with a "large number of design issues" is warranted.

Congestion

As was noted by the Commission in the Directions Paper, Infigen Energy was one of numerous companies that opposed the introduction of congestion pricing. Infigen Energy agrees with the Commission that a significant drawback to this approach is the detrimental impact on contracting and managing the additional basis risk. The complexity of this scheme and its implications on contracting are far more likely to outweigh the benefits.

As an alternative, Infigen Energy would propose that the Commission consider some discrete measures to manage, and reduce, network congestion as described below.

Infigen agrees with the statement in the Directions Paper that one of the key issues in this area is that,

> "Generators may choose to fund augmentations to the shared transmission network in order to reduce congestion and the risk of constraints. However, generators receive no exclusive 'right' to the use of such augmentations, and the benefits of the reinforcement may accrue to other generators." (p. 23)

It goes without saying that funding an augmentation that may benefit one's competitors, in this case other generators, does not provide a very attractive investment opportunity. Therefore, generators will be understandably wary of undertaking such investments. Likewise, NSPs have little, or no, incentive to invest in augmentations that relieve generation constraints. While there are incentives for NSPs to maintain transmission *availability*, such as the Service Target Performance Incentive Scheme (STPIS) discussed on page 55, there are no similar incentives for NSPs to maximise the transmission *capacity* of their network and/or make augmentations to resolve generator constraints. In fact, one could argue there is a disincentive, as a greater return will be achieved by duplicating an entire transmission line than undertaking a modest augmentation.

The result is that existing constraints on generation continue with little prospect for resolution even if relatively inexpensive augmentation alternatives exist. Such a situation is clearly in contradiction with the National Electricity Objective (NEO) for the following reasons:

- As pointed out in Section 6.2, congestion "may constrain low cost generation off the system, to be replaced by higher cost plant."
- "In order to mitigate the risks associated with congestion, generators may engage in behaviour that leads to further inefficiencies in the market" such as disorderly bidding (as discussed in Section 6.2.2).
- NSPs operating the network below its capacity and not undertaking modest augmentations to resolve generation constraints is obviously not maximising the efficiency of the network.

Therefore, Infigen Energy would suggest that further work focus on how generators and/or NSPs could be encouraged to relieve existing constraints on generation. Providing generators with a firm access arrangement for augmentations they fund would be one suggestion as noted in the Directions Paper. Requiring other NEM participants to partially reimburse the costs of the generator funded augmentation in proportion to the benefit they receive from the augmentation would be another suggestion. Strictly prohibiting generator funded augmentations from becoming regulated assets of the NSP until such time as the funding generator is fully reimbursed---including a fair cost of capital should also be considered. Such initiatives would certainly improve the business case for generators undertaking self-funded augmentations of the network to relieve generator constraints.

It is clear that such augmentations would probably be better developed, built and operated by the NSP as part of their regulated asset base. However, as previously noted, there is little incentive for this to occur. Providing adequate incentives for NSPs to operate and utilise their network at its maximum capacity and to undertake augmentations to reduce, or eliminate, generation constraints is not an easy problem to resolve. Perhaps a "Capacity Component" of the STPIS where NSPs are assessed and rewarded for maximising capacity and utilisation, and reducing volumes of generation constraint for existing connections would be an option to consider.

Planning

With regards to planning, Infigen would just like to reinforce one point recognised by the Commission in this workstream.

As we noted in our response to the Issues Paper, along with many other companies, there is very little confidence that the RIT-T will result in timely, beneficial and efficient network investments in the NEM particularly for new interconnectors. The reasons for this lack of confidence are cited throughout the Discussion Paper, so it is not necessary to reiterate them. While the RIT-T is relatively new, the lack of success of its predecessor and the lack of significant changes incorporated into the RIT-T contribute to the industry's lack of confidence in the present scheme. Therefore, we concur with the Commission's view that there are aspects of the RIT-T that require further consideration and in particular, the effectiveness with which competition benefits are quantified in the assessment process.

Connections

Infigen Energy considers that this workstream has the greatest potential for significant cost savings and efficiency improvements for the NEM.

Some of the most important issues are discussed below:

1) Lack of transparency with regards to costs

Section 8.2.1 specifies the requirements of Clause 6A of the Rules including:

- Identification and information on reasonable costs
- Demonstration that the charges are cost reflective

In Infigen Energy's experience, NSPs do not adhere to this aspect of the rules and have refused to provide cost breakdowns, preferring instead to essentially provide a bottom line cost of the connection works as a "take it, or leave it" proposition. Needless to say, without any cost breakdowns, there is no ability to even discuss whether the charges are "reasonable" or "cost reflective". In addition, there is no ability to identify or exclude items that are unnecessary for the connection of the generator, but have been added by the NSP for their own reasons (i.e. 'gold plating') and paid for by the generator. Infigen Energy is not alone in this regard, as the Discussion Paper notes on page 87 that many stakeholders noted a lack of transparency of the costs associated with negotiated connection services.

2) Lack of transparency with regards to technical requirements

The NSP is obligated to provide transparent technical standards for contestable connection assets in sufficient detail that the generator can verify the standards are not above and beyond what is required by the Rules and so the generator can run a competitive tendering process for the construction of the assets. In practice, this does not typically occur as some NSPs refuse to provide "open source" documents specifying the technical standards, particularly for substations. There are at least three reasons for an NSP to adopt such a policy in contradiction to the Rules:

1) Providing such documentation would enable the generator to identify technical requirements and specifications over and above what is required to connect and object to such over-specification. Self imposed "standards" by the NSPs are common and can be very expensive for the generator to meet.
2) The NSP would likely lose such a competitive tendering process thereby forgoing an opportunity for additional revenue and project management fees.[1]
3) The NSP would lose the ability to layout and over-build the substation, for example, in the exact way they prefer

[1] It is worth noting that most NSPs do not construct these connection assets themselves. They typically hire contractors; in some cases, the same contractors the generator would prefer to hire directly to eliminate project management and other fees NSPs typically "flow through" the contractor to the generator.

It should be noted that even if some regulatory authority, such as the AER, were to force an NSP to provide such open source technical documentation, the generator would still face two significant challenges. First, the generator still lacks the negotiating leverage to avoid complying with self-imposed requirements NSPs can dictate over and above what is necessary for the generator to connect under the Rules. Second, there is the possibility of the NSP becoming "less cooperative" should they lose the tendering process. While the NSP always agrees that a contestable asset can be built (and operated) by the generator, in theory; it is the industry's experience that pursuing such a course can result in one's connection application process slowing to a crawl. On the other hand, choosing the NSP to build the connection assets (without a competitive tendering process) will result in a (relatively) faster progression of one's connection investigation and application process.

3) Higher cost inputs for generator funded extensions

For regulated prescribed assets, NSPs have agreed inputs, or building blocks, with regards to their allowable costs. For example, the weighted average cost of capital (WACC), operation and maintenance costs for given assets, rates of return, etc. are all agreed with the AER. However, for generator funded assets, NSPs often propose different inputs into the cost estimates to build and operate connection assets. Higher WACCs, higher O&M costs on a percentage basis, and higher rates of return are just a few examples of more generous inputs demanded by some NSPs. In addition, substantially shorter depreciation times are sometimes stipulated resulting in much higher depreciation payments from the generator. The generator can effectively pay for a connection asset twice---using a depreciation schedule with a much shorter time period than specified by the Australian Tax Office or the AER in determining NSP revenues.

The rationale for this is not clear as having connection assets built for free, by the generator, does not appear to be a riskier proposition for an NSP necessitating a higher WACC or higher rates of return.

4) 'Gold Plating' of Connection Assets

As stated on page 87, generators and users are presented with connection options by TNSPs that are beyond the technical requirements and/or not fit for purpose.

It is understood and accepted that generators are required to pay the shallow connection costs necessary to connect their generator in accordance with the Rules. However, the NSPs typically add many additional requirements and "nice to have" features that the NSP desires, but are not required under the Rules. These additional costs, which are often substantial, are of course paid for by the generator. The entire connection asset is then typically "gifted" to the NSP. The conflict of interest involved when one company can specify whatever they want to be built for them, to be paid for by another party, in what is effectively a unilateral negotiation without any effective dispute resolution process, is obvious.

The generator should, and does, pay for what is necessary to connect their generator to the grid. However, any additional equipment desired by the NSP, but not required by the Rules, should be added to the NSP's regulated asset base, if justifiable, and not paid for by the generator. This would include equipment that addresses current network problems or provisions for future developments unrelated to the generator's connection. This is important

as it is not uncommon for a generator to be forced to procure equipment to remedy existing network issues or to improve network reliability as part of the connection process.

One example of this situation is “meshed” vs “T” connections into an existing power line. In most cases, a simple T connection will meet all the technical requirements of the Rules and would suffice to connect a generator. However, some NSPs flatly refuse to consider T connections and specify far more expensive meshed connections for all large generators. Meshed connections have definite advantages for the network operator as they provide more control and decrease network outages for customers. However, it is not the responsibility of a new generator to increase the reliability of the network; this is clearly the NSP’s role. Therefore, in such circumstances, it is clear that the NSP should fund, as part of their regulated asset base, the increased cost of a meshed connection over a simple T. Of course, there is a risk that the AER will not concur that the reliability benefits of the meshed connection are worth the additional cost. However, in such cases, there is even more rationale as to why a generator should not be required to pay for such an “upgrade”.

The lack of commercial and technical transparency noted previously is, of course, a contributory factor to this situation.

5) Unilateral nature of the connection negotiations

Infigen Energy agrees with the Commission that the lack of clarity and definition around funded augmentations and extensions in the Rules is an issue. While important, Infigen Energy considers the lack of enforcement and the lack of any effective dispute resolution mechanism to be a far more significant issue. As the Commission noted on page 86,

> “A strong view has emerged from submission on the limited bargaining power of generators and users negotiating with TNSPs during the connection process.”

This is probably the single largest issue with regards to new connections. While there are a few shortcomings in the Rules that should be addressed, ***generators have no effective means to force NSPs to follow the existing Rules.*** Therefore, improvements to the Rules surrounding new connections are unlikely, by themselves, to significantly improve the current situation.

The previous four items are all handled, for the most part, reasonably well by the existing Rules. However, this has not stopped some NSPs from declining to adhere to aspects of the Rules.

During discussions with the AER management, it was stated that the existing dispute resolution process is almost never utilised and for good reason----it is not effective. Even the AER officers consider that taking a dispute to them would be very unlikely to improve a generator’s connection outcome irrespective of whether the generator “won” the particular dispute. The AER agrees that the dispute resolution process is very slow, and the likely reaction of the NSP to a generator initiating this process would decrease the chances of a successful generation connection.

Slow and unnecessarily expensive grid connections for new generators are clearly contradicting the NEO. New generators increase competition increasing the efficiency of the market. The costs of unnecessarily expensive connections will eventually be borne by

customers, which is also not an efficient outcome. As the rate of new generator connections rapidly rises with the expanded Renewable Energy Target, and potentially a carbon price, the scale and cost of this problem will inevitably increase significantly. Therefore, Infigen considers that the Connection workstream is likely to be the most significant of the Transmission Network Frameworks Review.

Potential Ideas for Further Consideration

Infigen Energy would like to nominate the following ideas and suggestions for the Commission's consideration.

Explicit definition within the Rules of a "funded augmentation" and "funded extension"

Infigen would suggest that the lack of clarity and definition identified by the Commission be resolved by incorporation of these new "services" into the Rules. A funded augmentation would be augmentations to the shared network---a deep connection augmentation, while a funded extension would be shallow connection works associated with a new user or new generator.

The commercial and technical transparency requirements would be explicitly stated in the Rules addressing items #1 and #2 above. In addition, the commercial inputs for construction and operation of these funded assets would be stipulated to be agreed and published by the AER for each NSP. There is no reason why these inputs should not be negotiated and published by the AER, as they are for prescribed services. The commercial inputs (WACC, rate of return, depreciation schedule, etc.) to have a power line built for them should not be determined by the NSP by themselves. This would address item #3 above.

The points made previously regarding generator funded augmentations to relieve congestion should also be considered in the definition and specification of these services including a firm access right for the generator funding such augmentations and extensions. An important part of the specification of these services would be the detailed description of the mechanism by which they could be transitioned to prescribed services and added to the NSP's regulated asset base. It is obviously very important that funded augmentations and extensions are only added to an NSP's asset base once the funding party has been fully compensated, including its reasonable cost of capital. There are concerns that protection, communication and other systems paid for by generators or users might make their way into an NSP's regulated asset base over time without compensation being paid to the funding party.

Implementation of a quick, effective dispute resolution mechanism with enforcement capability

As previously stated, rule changes by themselves will not effectively resolve the problems currently encountered by connecting generators (and users). It is the uniform view of generators and users that new connection negotiations are effectively unilateral in nature. As the monopoly service provider, the NSPs have 99% of the negotiating leverage in such negotiations and aspects of the Rules that are inconvenient to the NSP are not necessarily followed.

Therefore, it is necessary that a new dispute mechanism be considered by the Commission to even up the negotiating power of the generator and user during connection negotiations with the monopoly NSP. If a quick and effective dispute resolution mechanism, with "teeth", existed, then bi-lateral connection negotiations might be possible.

As enforcement of the Rules sits with the AER, it may make sense to have the new dispute mechanism exist within that body. However, it would need to be a new, independent, expert mediation body with sufficient technical resources to quickly and effectively make rulings on disputes. If disputes can not be resolved in a matter of a few weeks, then the resolution process will not be effective. In addition, there will need to be explicit protection for generators/users utilising this new mediation process to prevent NSPs taking any punitive actions.

Conclusion

We look forward to the opportunity to participate further in this Review. Please do not hesitate to contact the undersigned, if you have any questions or comments.

Sincerely,

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