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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 "Issues Paper, Transmission Frameworks Review", 18 August 2010, 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 five wind farms totalling over 500 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
- 141MW, Capital Wind Farm east of Canberra near Bungendore, NSW.

In addition, Infigen Energy, with its partner Suntech, has been successfully shortlisted for the Photovoltaic segment of the Commonwealth's Solar Flagships Program.

Infigen Energy also owns and operates wind energy facilities in Germany and the United States, taking its aggregate wind energy business interests to 2,194 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 Issues Paper and makes the following submission focusing on the ten questions posed in the Issues Paper.

Question 1 Application of the NEO

Do frameworks governing electricity transmission allow for the minimisation of total system costs and for overall efficient outcomes in accordance with the NEO? What evidence, if any, is there to demonstrate that this is or is not the case.

Response:

While arguably outside of the scope of this review, Infigen is of the view that the National Electricity Objective (NEO), as it is presently stated, is somewhat dated and should be revised to include national interest policy objectives that encourage sustainable electricity generation and/or greenhouse gas reductions in the operation of the NEM. We believe this is inherent in the promotion of "efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers".

As noted in AEMC's Issues Paper, through the inclusion of a price on carbon and other greenhouse gas emissions, "broadly, these policies and proposals aim to change the underlying economics of generation, by encouraging investment in new plant with lower

carbon intensity than the bulk of the existing generation fleet. This would have the effect of altering the dispatch, and therefore utilisation, of existing generators.”

In our view, these additional objectives are supported by broader community expectations, as well as by both major political parties and present Government policy.

With regards to the specific question as to whether existing transmission frameworks allow for the minimization of total system costs, Infigen’s experience connecting five different wind farms to the National Electricity Grid would cause us to firmly respond in the negative. In fact, there are quite a few aspects of the current generation connection process which in our experience not only allows, but almost encourages, excessive costs and delays in the connection process for new generators. It is worth noting that all costs associated with electricity generation, including costs for new generator connections, are ultimately borne by the end user or consumer. It is therefore, in the best interests of consumers for there to be effective controls to minimise generator connection costs to avoid these being built into generator bid prices. Even more importantly, excessive delays and costs in new Renewable Energy (RE) generator connections may result in some projects not proceeding, resulting in reduced generation competition, inevitably resulting in higher prices for consumers. Further discussion on this topic appears in our response to Question #8.

Infigen notes that independent research by the UNSW has shown that the integration of wind driven electricity generation into the NEM has resulted in a significant reduction in the average pool price of electricity in SA where pool prices were found to be 11% lower during higher wind speed periods.¹ Therefore, the market benefits of increased wind (and other RE generation) are self-evident as such generation acts as “price takers” in the wholesale electricity market.

As outlined later in this submission, grid connections for Renewable Energy (RE) generators are slow, excessively expensive and very difficult to negotiate. If RE projects do not proceed in a cost effective or timely manner, the inevitable result will be that insufficient RE generation will be connected to meet mandatory production targets resulting in a substantial increase in Renewable Energy Certificate (REC) prices from the present level of around \$40/MWh today up toward the tax effective penalty rate of over \$90/MWh. Such an outcome would clearly not be in the best interests of electricity customers.

Therefore, on the basis of the above experience, the connection of wind (and other RE) generation should be more actively encouraged, even under the current NEO, as to do otherwise will result in more expensive and inefficient outcomes for electricity customers.

Infigen therefore respectfully suggests that the AEMC should make revising Transmission Frameworks to facilitate RE (and other new generator entrant) grid connections a priority focus for this Review.

Question 2 The role of transmission

Is there a need to consider the appropriate future role of transmission in providing services to the competitive sectors of the NEM? What evidence, if any, is there to suggest that the

¹ *The Integration of Wind Generation within the South Australian Region of the Australian National Electricity Market* - CEEM/EERH Working Paper - Nicholas Cutler, Iain MacGill, Hugh Outhred, November, 2009

existing service provided to facilitate the market, or the definition of this service, is inappropriate or insufficient?

Response:

Infigen agrees that Chapter 5 of the Rules places some obligations on NSPs to provide network to support effective generation connection. Specifically, Rule S5.1.2.1 states - *Network Service Providers must plan, design, maintain and operate their transmission networks and distribution networks **to allow the transfer of power from generating units to Customers with all facilities or equipment associated with the power system in service** and may be required by a Registered Participant under a connection agreement to continue to allow the transfer of power with certain facilities or plant associated with the power system out of service, whether or not accompanied by the occurrence of certain faults (called credible contingency events).* However, there are numerous examples of generators being constrained under "system normal" network conditions today (e.g. Generation on the Eyre Peninsula in South Australia). Therefore, there is ample evidence to suggest that this particular aspect of the Rules is not being strictly adhered to or enforced.

Infigen considers that obligations placed upon NSPs should be in accordance with the NEO in that they should provide cost effective services to all NEM participants that ultimately minimise the cost of electricity to the consumer. This requires cost effective asset specification, design and utilisation. The present market arrangements do not promote these factors, but instead encourage over-design of many assets or components, under utilisation of other assets, and asset cost maximisation to increase both regulated and unregulated revenues to NSPs.

Infigen also believes that consistency of standards (both design and reliability) should apply over the entire NEM. While it is entirely appropriate that NSPs provide inputs to setting standards and design practices, they should not be allowed to control the process, because of the inherent conflict of interest this represents. Allowing NSPs to control the process of setting standards and design practices enables the present perverse pricing arrangements which potentially encourages over design, under utilisation, and over statement of asset costs as previously mentioned.

Infigen notes that present pricing arrangements place limited obligations on NSPs in respect to the provision of shared network services to generators, which is understood. However, in cases where the generator pays for "access" to the shared network, or funds shared network augmentations to facilitate access, the generator should have a right to access such services. The generator should also have financial recourse should the NSP fail to provide access to these generator funded services.

Infigen agrees that transmission services can be provided either through investment in networks or through the use of operational (non-network) measures and that it is appropriate to carefully consider the respective roles of TNSPs and the AEMO, as system operator, in the provision or procurement of transmission services. Ultimately the most cost effective net present value means of obtaining the service should be implemented. Infigen believes that the selection of the appropriate means of providing the service should be undertaken by an independent party such as the AER.

Finally, Infigen strongly believes that separate State-based technical regulations and/or generation license requirements should be disallowed, or at the very least, actively discouraged. Such state based rules are inevitably different, and therefore, in direct conflict

with the National Electricity Rules and the entire concept of a National Electricity Market. State based licensing requirements, such as ESCoSA's "License Conditions for Wind Generators" are in direct conflict with the NEO as they are arbitrary, expensive and unnecessary and will inherently result in inefficient, costly, and potentially unfeasible network connections for generators with some of the lowest marginal costs of power production. Infigen believes that a "level playing field" approach should apply across the NEM and that barriers to market entry for certain generation technologies should not apply.

Question 3 Transmission planning

Does the current transmission planning framework appropriately reflect the needs and intention of the market (including generators, loads and demand side response)? Will this adequately provide reliable information to TNSPs on where and when to invest, or when to defer or avoid investment, in an uncertain planning environment, or is there a case that additional market-based signals might be beneficial?

Response:

Infigen acknowledges that there is an inherent disparity in time frames between generator connection and network augmentation which makes coordinated development somewhat problematic. This is exacerbated by a lack of coordinated generation planning within the market which makes timely transmission investment more difficult.

Infigen agrees that monopoly transmission businesses should have appropriate regulatory incentives and obligations to ensure efficient and timely investment in response to changing demand for transmission services over the medium to long term. However, Infigen acknowledges that the present un-coordinated approach to generation development within the NEM will make this difficult.

However, Infigen believes that present information and price signals already provide significant financial incentives for generators (and loads) to make efficient generator location decisions by trading off costs, such as, plant type/technology, proximity to fuel source, and fuel type with transmission connection costs, network losses, likelihood of constraints being imposed, and costs imposed on the shared transmission network. Forecasting MLFs and potential constraints is already problematic as they are directly dependent on the future location of generation (and load) within the NEM which is difficult as it essentially involves predicting the future. Adding additional market disincentives will make investment decisions, which are already quite complicated, more challenging by adding another layer of risk factors to be forecast and economic impact estimated (with undoubtedly, a large degree of uncertainty).

Question 4 Promoting efficient transmission investment

Will existing frameworks, including the recently introduced RIT-T, provide for efficient and timely investment in the shared transmission network?

Response:

The NEM was introduced when some excess capacity existed in the system which has now been largely utilised. To date, there has been limited experience with market frameworks for transmission investment, however from Infigen's perspective the history of the NEM has shown:

- Developments, particularly inter-regional which are "market benefit" based, are extremely difficult to justify;
- There is no real cost control over reliability investments as present market encourages "gold plated" design and costs;
- No effective control over costs associated and extent of negotiated services provided by monopoly NSPs; and
- There is no incentive for NSPs to promote, or even examine, low cost investments that provide market benefits but result in little, or no, additional revenues for NSPs

The revised RIT-T is largely based on "reliability" and system security criteria which favour new transmission lines being built to carry generation from large, "baseload", generators rather than smaller, dispersed, variable generation such as wind energy and solar energy. Infigen considers that building new, or augmented, interconnectors to enable lower marginal cost and relatively low greenhouse gas emitting generation to connect and access the market is unlikely to occur even under the present RIT-T.

Infigen concurs with the AEMC's views on page 24 of the Issues Paper that:

- There are significant challenges in applying the RIT-T to proposed network augmentations that are not required to meet a specific reliability requirement (even though they have many other benefits); and
- It is difficult for some types of market benefits, particularly competition benefits (i.e. enabling lower marginal cost generation which will provide downward pressure on pool prices) to be demonstrated.

Infigen considers that there may be some merit to adopting an independent centralised planning and design approach with multiple NSPs simply bidding for, and providing assets, and, services. This approach is not unlike that used in the Victorian jurisdiction of the NEM. A fundamental premise of this arrangement is that the centralised planner must be independent and accountable.

Infigen supports incentives by the AEMC to provide greater consistency across the NEM, by recommending a national framework for transmission reliability standards, but believe this should be broadened to include:

- Equipment rating and utilisation criteria and methodology
- Plant design and specification
- Augmentation and connection concepts and high level concept designs
- Operating practices

Infigen also supports the use of the Last Resort Planning Power (LRPP) vested in the AEMC as a mechanism for triggering cost-benefit assessments of potential projects when TNSPs are not responding to a material problem in a timely manner. Infigen believes that access to the LRPP should be provided to all interested parties and not only NEM Participants. The fact that Transmission investments to overcome significant congestion are not being undertaken suggests that, the Rules are weak in requiring congestion to be examined and addressed, and congestion costs are not valued appropriately by the Market.

Question 5 Economic regulation of TNSPs

Does the current regime for the economic regulation of transmission lead to efficient network investment? Do the incentives on TNSPs lead to appropriate investment decisions and the efficient delivery of additional network capacity?

Response:

Infigen considers that the present regime of economic regulation does not appear to lead to efficient investment in;

- Alleviating congested networks;
- Inter-regional connections;
- Intra-regional augmentation; and
- Negotiated service provision.

Infigen concurs with the AEMC's comments on page 26 of the Issues Paper that, "TNSPs have a relatively weak incentive to minimize capital expenditure and maximize the value of network services provided, since capital expenditure is rolled into the asset base in perpetuity." Infigen considers that the present system lacks scrutiny and enforcement (reward and penalty), independence, and rewards NSPs that overspend to increase revenues.

Infigen has also found that the NSP's can adopt an approach of delaying their response and asset delivery timeframe to enhance their negotiating position.

Question 6 Network charging for generation and loads

Is a price signal of locational network costs for generators required to promote overall market efficiency? Would there be any consequential impacts on transmission pricing arrangements for load?

Response:

Infigen notes that present TUOS pricing arrangements do not charge generators for use of the shared network. Therefore, there is some basis to the argument that NSP's have limited obligations in providing shared network services to generators.

Even so, Infigen does not consider that additional locational signals are required for generation for the following reasons:

- Shared network costs would only represent a relatively small portion of the overall location decision which is generally dominated by fuel and resource considerations;
- End users will ultimately pay any additional costs levied on generators and it would be in their best interests if those costs were controlled and not included in the generators' bidding process;
- MLFs already provide a very strong locational signal today. For example, the Wattle Point wind farm loses 16% of its pool price revenue today which contradicts the statement on page 27 of the Issues Paper, that, "generators, unlike demand customers, do not see the cost they impose on the shared network through their locational decision". Losing 16% of a plant's revenue (reduced from 18% last year) is

clearly a significant, material cost that generators must consider in their connection and locational decisions;

- Grid connection costs provide another valid locational price signal;
- Existing, and forecast likelihood of grid connection constraints provide a very strong locational signal today. If a proposed generator estimates they will be constrained off the network a significant portion of the time, then there is a strong incentive to consider alternate generation locations, if practical alternatives exist;
- Locational and investment decisions are complicated enough with MLFs, connection costs, and the potential to be constrained off the network. Adding a separate, and arguably redundant, locational network cost signal will serve as a disincentive, and unnecessary complicating factor, for generation investment decisions; and
- Any pricing signal introduced would need to apply to all existing generators for equity, noting that a majority of these generators were located prior to the establishment of the National Electricity Market.

Question 7 Nature of access

Would it be appropriate for generators and load to have the option of obtaining an enhanced level of transmission service? Would this help generators to manage risks around constraints and dispatch uncertainty?

Response:

Infigen believes that the Rules should clearly specify minimum service levels for end users *and generators* regarding system performance and reliability standards that should apply to NSPs consistently within the NEM. Infigen is not opposed to the concept of participants being provided the option to request, and pay for, service levels in excess of the minimum. Infigen considers that service levels should be specified by an independent party, such as the AER, with input from all NEM participants. However, it is critical that such a system not become an effectively unregulated opportunity for NSPs to maximize their revenue for providing a service they should be providing in any case. In addition, such a system should not result in the creation of barriers to entry for new generators to connect where the network has sufficient capacity to make such connections.

Question 8 Connection arrangements

Do current arrangements for the connection of generators and large end-users reflect the needs of the market? To the extent that more fundamental reforms to transmission frameworks are considered under the review, would it be appropriate to revisit the connection arrangements?

Response:

As previously stated, Infigen does not consider that current arrangements for connection of generators meet the needs of the market and that such arrangements should be a focal point for further work by the Committee.

Infigen's experience that it is very difficult to negotiate with, or at times even reason with, monopoly service providers such as NSPs, even for negotiated services. While much has been written about the “bilateral negotiations process” between an NSP and an intending generator, we have yet to experience this phenomenon. NSPs have 99% of the leverage in new connection negotiations, and if a generator is not willing to accept unreasonable demands made by the NSP, even if they are in direct conflict with the National Electricity Rules, then the prevailing attitude is, “You can connect your project to someone else’s network.”

The proposition on page 30 of the Issues Paper that, “End-users are likely to be larger and better resourced, acting as a counterweight to the market power possessed by TNSPs and making commercial negotiation a feasible proposition” is seriously flawed. No matter how large the generation company, the NSP still has the power to demand that its terms and conditions are accepted whether they are in accordance with the National Electricity Rules--- or not. It is made crystal clear during connection discussions, that generators who do not accept the terms, charges, and/or conditions imposed by NSPs will not have their connections progressed. NSPs are aware of their monopoly position and realise that in almost all cases there are no other network connection option.

It is a well known fact in the industry that there is no effective “dispute resolution mechanism” as recognised on page 31 of the Issues Paper. Infigen would be interested in learning of any generation access disputes that were efficiently and effectively handled under present or past arrangements, resulting in a successful grid connection process for the generator. We are not aware of any such outcomes.

In addition as mentioned above, over-design and over-specification (“Gold Plating”) of generator connection assets, typically paid for by the generator and owned by the NSP is pandemic in the NEM. Under the present framework there are no effective control over NSPs who have the potential to view these assets as unregulated and uncontrolled income with a natural incentive to maximise returns from such sources. The potential conflict of interest in such a situation is self-evident. No matter how large the connecting parties (Loads and Generators), they have little recourse in such disputes.

Question 9 Network operation

Are more fundamental reforms required to financial incentives on TNSPs to manage networks efficiently and to maximise operational network capability for the benefit of the market? Should further options for information release and transparency on network availability and outages be considered?

Response:

Infigen agrees that TNSPs should be encouraged to operate their networks in a cost effective and efficient manner. This involves balancing construction/design costs against operational costs appropriately. The present approach is biased towards overdesign to avoid any potential operational issues, although many of these could be managed through more appropriate and cost effective methods.

Infigen considers that,

- More transparency is needed in respect of design justification and outage justification, and the justification of costs "needed" to overcome operational issues;

- Independent auditing of whether NSPs are maintaining and operating network elements to maximise their capacity should be undertaken. Market participants should be able to formally request such audits, and adverse findings should result in significant financial penalties;
- Penalties should apply for unwarranted outages, excess outage durations or poor availability for end users *and generators*. These penalties should come off the NSPs bottom line (NSPs presently like to pass these costs onto the connecting party where connection works involve outages); and
- Incentives should be offered to NSPs for timely and cost effective connection of new generators and loads

Question 10 Dispatch of the market and management of congestion

Is there a need for material congestion to be more efficiently managed in the NEM?

Response:

Infigen agrees that material congestion needs to be addressed both from a network design/augmentation and operational perspective. To facilitate this, the NEM needs to place a value on “congestion” in a similar manner as it does for lost load (‘VoLL’). If an appropriate value was placed on the value of lost generation caused by network constraints, such transparent accounting would facilitate economically justifying augmentations or other work necessary for the removal of serious constraints.

However, as previously stated, Infigen is opposed to congestion charges for generators (or users) as the existence, or likelihood in the future, of such constraints is a strong enough disincentive for locational decisions. In addition, having a “local” or “nodal” price replace the current RRP, adds significant complexity and risk to the generator investment decision that is very unlikely to outweigh the potential advantages of such a system.

Conclusion

Infigen respectfully requests that the AEMC make the issues identified in this submission with regards to the connection of new generators a focus of this Review. We look forward to the opportunity to participate further in this Review, and please do not hesitate to contact the undersigned, or Jonathan Upson (at 03-9674-7173), if you have any questions or comments.

Regards,

Geoff Dutailis
Chief Operating Officer
Infigen Energy