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Mr Ashwin Raj
Manager Energy Networks
Public Utilities Office
Department of Treasury
Locked Bag 11
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Submitted via email to PUOSubmissions@treasury.wa.gov.au

Dear Ashwin

Proposed approach to implement constrained network access

ERM Power Limited (ERM) welcomes the opportunity to provide comment and feedback on the Public Utilities Office (PUO) paper on its *Proposed Approach to Implement Constrained Network Access* (**Paper**). We fully support the PUO in seeking feedback and comment on such a major reform item for the South West Interconnected System (SWIS). ERM provides the below commentary in order to assist the PUO in the development and thinking in relation to network reform.

About ERM Power

ERM Power Limited (ERM) is a listed Australian energy company (EPW) operating electricity sales, generation and energy solutions businesses. The company has grown to become the second largest electricity provider to commercial businesses and industrials in Australia by load[1]. A growing range of energy solutions products and services, including lighting and energy efficiency software and data analytics, are being delivered to the company's existing and new customer base. ERM also sells electricity in several markets in the United States. The Company operates 662 megawatts of low emission, gas-fired power stations in Western Australia and Queensland.

General Comments on the Need for Constrained Access

The PUO has undertaken modelling work to demonstrate the case for constrained access. The modelling results appear to be incomplete, inconsistent between scenarios and do not demonstrate a clear consumer benefit for adopting constrained access for the following reasons:

- The modelling was conducted over two timeframes, 10 years and 60 years. The basis of the period chosen was due to the lifespan of transmission assets. ERM questions the choice of transmission assets as the key criteria for the modelling assessment and believes that the life expectancy of Variable Renewable Energy (VRE) generation is just as critical to any economic assessment. Also, technology associated with electrical power systems is evolving at a rapid pace and technical and economic assumptions chosen today would likely have little validity after 20 years. Given that the life expectancy of a number of VRE generators and potential battery storage projects is less than 25 years, we believe the 60 year period is too long and the modelling assessment should not exceed a 20 year period.

1 Based on ERM Power analysis of published information

- The PUO has acknowledged in its commentary that network augmentation costs will likely be incurred in the future even in a fully constrained network environment to ensure reliable supply to consumers and secure operation of the power system. However, in the modelling, there are no assumptions made on the cost of network augmentation or network support services that would need to be undertaken to meet these objectives. Given the relatively small positive net benefit of adopting a fully constrained network environment, it seems inconceivable that network augmentation costs to meet supply reliability and secure operation of the power system, in particular the need to ensure system strength services where intermittent VRE generation displaces dispatchable synchronous generation, would not impact the business case for adopting a fully constrained network.

- In assessing the costs of maintaining the fully unconstrained network model, an assumption on the cost of network augmentation to deliver a fully unconstrained grid for the 60 year timeframe of approximately $700M is used in the business case. However, little detail is provided regarding actual augmentation requirements in the input assumptions and the modelling fails to consider that the network augmentation costs could be less if the impact of battery and other storage technologies was different to the conservative assumptions contained in the modelling. In addition, network (line and transformer) ratings chosen in assessing the required augmentations can have a significant impact on the level of augmentation required. In the NEM significant savings to consumers has been achieved in the deferral of substantial network augmentation by the use of 5 to 15 minute emergency ratings, real time monitoring of line temperature and wind speed to allow use of dynamic line ratings as opposed to the traditionally used continuous network ratings and network control schemes. This deferral of network augmentation has occurred even allowing for the connection of large volumes of new generation sources. It is uncertain from the information provided what network ratings was applied in determining the level of network augmentation. We believe the modelling needs to better consider the likely impact of new technologies and the use of emergency or dynamic network ratings as a benefit to reducing network augmentation costs. Further to this, the EY report appears to indicate that network constraints do not commence binding until 2028 and significant changes in actual generation commissioning and consumer demand can reasonably be expected in the intervening period. To assist a better understanding of the network augmentation needs, we request that additional information be provided with regards to the proposed timing and physical location of the capital spend for network augmentation in the model.

- We have concerns that the results of the modelling most recently released by EY are overstating the benefits of the constrained access scenario over the partially and fully unconstrained access scenarios. Key reasons for this conclusion are the modelling does not factor in low demand scenarios. The EY report acknowledges uptake of rooftop solar PVs combined with battery storage would reduce the values of grid supplied maximum demand, yet this fact is not reflected in the modelling. In addition, the weightings applied to the model outcomes in both the base and high demand cases are skewed towards the relatively high demand scenarios which fails to take into account little or no realised value for lower demand outcomes. That is, EY has taken into account a 10% and 50% POE situation but to provide a balanced view of future possibilities it should have also taken into account a 90% POE case. . Therefore we submit that not taking into account the real possibility of much lower demand outcome than those contained within the current modelling leads to an overstatement of the benefits of the constrained access model.

- We are concerned that system costs have not currently been included in the analysis. New system models and dispatch systems associated with implementing the constrained network access model are an additional cost to the market which will be passed through to consumers and we believe should be factored into the analysis.

The PUO has determined that the constrained network access model is the best option for the SWIS. This appears to be driven by pressure from renewable projects to connect to the grid at lowest possible costs regardless of their impact on the existing power system and the lack of funding, as regulated assets are paid for by consumers to

build out constraints. It should be noted that existing criteria to connect generators and the lack of consumer funded capital for expanding the network do not form a good basis for adopting the constrained network access model, given that the modelling for the benefits claimed in the business case to adopt the constrained network access model is questionable. It is worth noting that in the most recent Integrated System Plan (ISP) released by AEMO for the National Electricity Market (NEM), there are various projects that have been recommended to support the construction and implementation of VRE generation projects in the NEM. Most of these projects centre around the building out of transmission constraints where a demonstrated net benefit to consumers is identified. In its recent COAG Energy Council Meeting Communique for 10 August 2018, the COAG Council requested that the Energy Security Board report to the December meeting on how identified transmission projects from AEMO's ISP could be implemented and delivered as soon as practicable with efficient outcomes for consumers. Why is the WEM rushing into adopting the constrained network access model when other jurisdictions are looking to build out constraints where this is economically efficient to do so.

In addition to the above, the modelling as it currently stands demonstrates that network congestion is not forecast to commence until 2028 in the constrained scenario and 2031 in the partially constrained scenario. Given the long lead time until network constraints start binding, the business case to adopt a fully constrained or unconstrained access environment should be properly developed and considered over a longer time frame, instead of being rushed through due to the desire to get legislation into place to meet a deadline that from a market efficiency perspective has little meaning, other than it coincides with a new access period due to commence in 2022. It is anticipated that the PUO's assumptions regarding potential generation mix modelling outcomes would play a significant part in identifying the potential future generation plant in the WEM and would also inform this reform measure on whether the constrained network access model is what is really needed. This work can continue while AEMO modifies existing or builds a new dispatch engine that can cope with dispatching facilities in the current partially constrained model until such time the decision to switch to a fully constrained environment or a fully unconstrained environment is made.

ERM believes the issue at hand is not that generators can't efficiently connect but they choose not to as it is deemed too expensive for those projects to pay for their full network connection costs, instead preferring to have the costs they impose on the power system offset by existing market participants or transferred to consumers, in effect transferring part of their investment risks to others. In addition, it is suggested that AEMO's existing systems cannot efficiently cope with dispatching in the current partially constrained environment. We contend that AEMO can build new systems, based on the NEM dispatch engine that should be able to dispatch facilities in a partially constrained world, including the co-optimised dispatch of ancillary services, without having to resort to changing the current access arrangements. Noting that new rules and a new dispatch engine may be required in any event to implement a more robust scheme to allow for dispatch based on co-optimised energy and ancillary services in the near term pending a longer more strategic review of the access requirements for the SWIS.

The modelling conducted thus far has indicated that the current partially constrained world may not be the most economically efficient over 60 years, however, this may not be the case over a shorter timeframe. In addition the current partially constrained dispatch model may only be a temporary outcome until a fully informed decision regarding the future network access model is made. Who is to say that all the renewable projects which are trying to connect or that those assumed in the modelling will in fact actually connect or connect in the location assumed and become viable projects in the SWIS. Without a viable offtake agreement, funding of the project may be difficult, and in a constrained network access model, dispatch of its energy would not be guaranteed. These matters are important to the current discussion. To base a decision on the concept of changing the network access environment and disrupting the existing Market to encourage new intermittent VRE generation build may be a "red herring". The change could lead to the early retirement of dispatchable generation resources and have an impact on future financial contracting levels given that to date VRE generation has been reluctant to enter into firm dispatch interval volume contracts, preferring instead to only contract for "as generated" metered load volumes.

Capacity Allocation and Constrained Access

The networks reform workstream covers two reform projects, constrained network access, the subject of the PUO's Paper and the allocation of capacity credits in a constrained network access environment. While this Paper covers how it deals with the energy equation, it does not consider the capacity equation. The PUO has previously discussed the allocation of capacity credits in a constrained network access environment but it has not provided an updated view of its proposed methodology. This aspect of the reform needs to be discussed in conjunction with the energy equation to enable market participants to form a more holistic full view of the impact of the network access reforms.

PUO's High Level Approach

Notwithstanding the comments above, should the PUO continue down the path of implementing a fully constrained network access model, it is imperative that the transitional assistance scheme does not just cover energy imbalances and capacity allocation imbalances. It must also consider financial and other assistance arising out of the potential for contractual disputes or penalties for existing generators given that the reason for entering the market in the first instance was that firm access usually resulted in the allocation of a set number of capacity credits for which bilateral contracts were then entered into. There is still the potential that a market participant is made worse off and cannot then meet its obligations under third party contracts. If this should result, the PUO needs to ensure that the transitional assistance scheme provides a remedy for this.

Further to the above comments, the PUO and AEMO need to be aligned in their approach, such that the results which the PUO currently observe through its modelling to showcase the impact on the market and market participants are translated correctly into real time market operations. The reality of real time market operations is it can differ significantly from modelled outcomes and it is important that the transition from modelling to reality is not distorted due to some unforeseen variable, which then results in a significant distortionary outcome.

Please don't hesitate to contact me should you wish to discuss any aspect of the above submission.

Yours sincerely

Wendy Ng
Commercial Manager WA