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Dear Peter,

Submission to the Consultation on the Transmission Annual Planning Report (TAPR) Guideline

AEMO welcomes the opportunity to provide input to the AER's consultation on the TAPR Guideline.

AEMO is the independent National Electricity Market (NEM) and Western Australian Wholesale Electricity Market (WEM) market and systems operator, and the NEM National Electricity Transmission Planner, with primary responsibility to manage and maintain power system security and reliability. This role is undertaken within the legislated policy and market frameworks of the day and in adherence to the National Gas and Electricity Objectives and Rules.

AEMO has an interest in the development of a TAPR Guideline as well as its effectiveness. As the planner and procurer of transmission services in Victoria, AEMO produces an Annual Planning Report (APR) that is designed to identify future investment opportunities by outlining future limitations on the network and the potential projects that may address those limitations. When considering improvements to the APR process it is important to ensure this overarching objective is upheld.

AEMO supports clear and consistent provision of information from network service providers (NSPs) across the NEM, particularly when there are multiple NSPs responsible for planning and deciding which investments progress in their respective jurisdiction. We also support a planning process that remains fit-for-purpose to meet stakeholder needs, especially as changes are rapidly occurring and are projected to occur in the NEM.

AEMO therefore recommends that the TAPR Guideline must not inadvertently limit the evolution of APRs and instead focus on the objective of the report and its value to stakeholders. The right balance must be sought between transparency and value so that flexibility is maintained and the process remains relevant over time. The value of any additional information must also be measured against the cost of compliance and administrative requirements of publishing that information. Further, the interaction of the TAPR with other planning processes such as the Regulatory Investment Test for Transmission (RIT-T) and Integrated System Plan (ISP) must also be considered to ensure complementary information, rather than duplication, is provided across the NEM's planning process.

AEMO's submission below is presented in two sections. Our first section responds to the AER's list of information to be published in the Guideline with additional suggestions that AEMO believes would enhance the ability to identify efficient investment opportunities. Our second section incorporates AEMO's views on the longer-term objective of the TAPR, with consideration of its link to the national planning process, namely the ISP, as well as other links to joint planning and how the Rules need to accommodate such interdependencies so that the investment planning process enables efficient and coordinated investment in the long-term interests of consumers.

If you would like to discuss any aspect of our submission in more detail please contact Reena Kwong (reena.kwong@aemo.com.au).

Yours sincerely,



David Swift

Executive General Manager, Planning and Forecasting

1. Information to be published in the Transmission Annual Planning Reports

The main objective of the TAPR is to identify the need for potential investment opportunities, based on emerging network limitations, for network and non-network service providers. This means that the information published in the TAPRs must be relevant, clear and consistently provided across each of the network service providers' reports for the need to be appropriately addressed.

The AER have proposed a substantial amount of specific information to be published in the Guideline relating to transmission connection points, transmission lines and emerging limitations. Keeping the objective of the TAPR in mind, AEMO seeks to understand from the AER the reason certain information referring to transmission connection points and transmission lines¹, some of which is already published through other mechanisms, is required for the TAPR. There may be value in publishing some of the proposed information for potential investors through the TAPR, but only for those assets where network limitations are identified. AEMO has highlighted these in Table 1 of our Attachment.

Additionally, AEMO notes that the AER's Consultation Paper proposes the TAPR must outline the *preferred network solution* to address the network limitations identified. As aforementioned, the purpose of the TAPR is to provide preliminary indication of network limitations and potential options which are to be investigated in further detail through a RIT-T or other economic justification process where relevant. The AER's proposal therefore appears to pre-empt the outcome of the first RIT-T report, the Project Assessment Draft Report (PADR) and does not align with the primary objective of the TAPR. AEMO therefore suggests that this information is best left for the RIT-T or separate economic justification process that is distinct from the TAPR.

AEMO also believes the AER need to provide justification on the value of providing historic information, for example historic load forecasts, and how it would assist in meeting the objective of the TAPR and its stakeholders' needs. AEMO is of the view that with the rapidly changing environment, providing historic information will not add significant value to enabling more informed investment decision making. Additionally, this requirement should align with the principles of existing TAPR requirements, such as those outlined in Clause 5.12.2 of the NER which requests forward-looking information, rather than historic.

Finally, as the transmission planning arrangements in Victoria are different to the rest of the NEM, certain information required in the Guideline, as proposed by the AER, will need to be obtained from the relevant Declared Transmission System Operator (DTSO) for the VAPR produced by AEMO. This is particularly the case for information relevant to asset maintenance and operation². Therefore to accommodate the Victorian arrangements and to provide clarity to all parties involved, the Guidelines or Rules should explicitly state that this information is to be provided to AEMO by the relevant DTSO for incorporation in the VAPR.

Table 1 attached outlines AEMO's views in more detail on the AER's proposed information requirements with the following suggestions:

- Where further clarity is required;
- Where duplication may exist as information requested is published through existing mechanisms; and

¹ Listed in Section 4.1 and 4.2 of the Consultation Paper

² For example, primary plant asset age, conductor type and year of installation.

- Where the prioritisation or publication of certain information may be more relevant for the purposes of the TAPR and its stakeholders.

These suggestions will ensure the TAPR's objective is maintained and its stakeholders' needs are continued to be met.

Additional information to be published in TAPRs

In the past, the primary driver for investment needs was the requirement to support growing demand. However, the current and transforming energy market has started to change that driver for investment to meet the increasing supply side, particularly of small-scale and utility-scale renewable generation. This means that the information of relevance to the APRs should not be limited to load limitations and unserved energy but should also include information relevant to driving informed and efficient co-optimised generation and transmission investment.

As such, AEMO proposes that the following information should be reflected in the Guideline to assist in providing appropriate locational signals for efficient generation investment:

- Available network capacity on all major network elements (e.g. transmission lines and transformers);
- Fault levels and system strength information at terminal stations, which will be required to be calculated by AEMO in consultation with TNSPs from 1 July 2018 when the new clause 4.6.1 becomes effective;

The above points can enhance the quality of information provided in TAPRs, particularly in current and future scenarios where a larger portion of the NEM's generation capacity is sourced from intermittent renewable generation. This information may best be represented via a map, in a similar manner to AEMO's Interactive Map that is published and updated each year to complement the VAPR.

Additionally, as the number of generators applying to connect to the networks increases and the need for more coordinated investment to drive efficient outcomes for consumers becomes more important, AEMO believes there would be benefits in the TAPR publishing information on impending generation connections. This would allow prospective investors to identify where there may be an opportunity to share, with other new generation, the cost of a new terminal station which may be required to accommodate multiple connections. Avoiding the need for individual terminal stations for each new generation connection would reduce the cost for each generator involved, allow a more coordinated and resilient system to be developed, and importantly reduce the final cost to consumers.

AEMO is aware that there are a number of existing resources in the public domain with information on potential generation connections. However, so that potential investors obtain the right information that is consistent across regions, it would benefit those stakeholders for this information to be published in the one location that is via the TAPRs.

AEMO acknowledges that there can be confidentiality issues related to connection information for some participants and some components of information. To overcome such confidentiality issues, AEMO believes aggregated information and perhaps visual representation of new connections on a map along with appropriate obligations in the Rules would suffice.

In Victoria, through our interactive map, AEMO currently publishes information on existing generators (by resource type) and recently committed generator connections projects³.

³ These refer to projects that have signed Use of System Agreements with AEMO.

Therefore this information, in conjunction with the additional information on potential generation connections would initiate the coordination required to ensure the development of efficient investment for all generation connections.

AEMO welcomes further discussion with the AER and other stakeholders on the above suggestions and their benefits.

2. The investment planning process going forward

There are a number of reporting and assessment mechanisms that form part of the NEM's investment planning process which are all inter-related. Any developments made now to the TAPR and its Guideline must consider the future requirements of the investment planning process as a whole, rather than the TAPR as a distinct report. This will ensure the changes made are practical and relevant to the current and emerging energy market.

Through AEMO's National Transmission Planner function and in accordance with clause 5.20.2 of the NER, we publish network development required from a national perspective in the National Transmission Network Development Plan (NTNDP). Each transmission network business must consider in their TAPR the information and proposed development published in the NTNDP, as per clause 5.12 of the NER.

In June 2017, Australia's Chief scientist, Dr. Alan Finkel, concluded a review of the Future Security of the National Electricity Market ("the Finkel Review")⁴. Finkel Recommendation 5.1 noted that AEMO should develop an integrated plan in consultation with transmission network services providers (TNSPs) and relevant stakeholders by mid-2018. In order to implement this Finkel recommendation, AEMO did not publish a 2017 NTNDP but is instead publishing its inaugural Integrated System Plan (ISP) in the near future. The ISP will incorporate all aspects of an NTNDP as well as additional information relating to renewable energy zones (REZs) specifically recommended by Finkel in Chapter 5 of his review. As such, the 2019 TAPRs should reflect the assumptions used and the needs identified for the development proposed in the 2018 ISP.

Another element of the investment planning process that is linked to information published in the TAPRs and the ISP is the RIT-T. Currently, these RIT-Ts are subject to a detailed cost-benefit analysis undertaken to justify a potential investment solution in response to investment opportunities or needs identified through the individual jurisdictions' APRs. With the new ISP in place, consideration on the nature and extent of justification required for projects subject to a RIT-T assessment by an individual TNSP also needs to be reviewed⁵.

The significance of joint planning between distribution and transmission businesses is increasing as a result of the changes occurring to the power system. Joint planning is required where a solution to address a need identified at one network level impacts the other level. For example, the increase in distributed energy resources over recent years impacting the distribution network and the investments required to maintain system security and

⁴ Finkel et al., Independent Review into the future security of the National Electricity Market. Available at: <https://www.energy.gov.au/publications/independent-review-future-security-national-electricity-market-blueprint-future>.

⁵ AEMO acknowledges that the AER is currently part-way through its RIT Application Guidelines review, therefore this Consultation must also take into account the finalisation of the RIT review.

reliability. As such there must be consideration on the greater interdependency between transmission planning and distribution planning⁶ so that their respective reports are cognisant of each other and publish consistent information.

The development of guidelines for the TAPR must also be aligned with the requirements for co-optimised development of transmission and generation, which the AEMC is currently reviewing⁷. Any work in developing the TAPR Guideline at present should recognise the need to comprehensively revisit the Guideline and its purpose once this important work by the AEMC is completed.

With the above in mind, the longer-term structure of the investment planning process needs to be reviewed in order for investment in the NEM to occur in a coordinated and efficient manner going forward. It is imperative that the individual reporting processes and assessments complement and align with each other. This includes the information required to inform each report or process as well as the timing that each report is to be published so that the NEM's longer-term strategic plan can be delivered efficiently.

To give effect to any longer-term changes to the overall investment planning process, consideration must be given to potential amendments required to the NER to clarify and accommodate any interdependencies within the planning process. This said, it is important to ensure the right balance is achieved between clarity of any obligation and over-prescription so that existing and potential market participants are able to respond effectively to investment opportunities identified through the various individual planning processes.

⁶ That is, the Distribution Annual Planning Reports (DAPRs) and its System Limitations Template

⁷ The Coordination of Generation and Transmission Investment Review

ATTACHMENT

Table 1 – AEMO’s comments on the AER’s proposed information

Section 4.1 Transmission connection point	AEMO's comments
Transmission connection points	Clarity is required on type of transmission connection point, i.e. load and/or generation connection points.
Connection point location	<p>Connection point locations are available through AEMO's Interactive Map</p> <p>AEMO suggests the AER provide clarity on the benefits of providing latitude and longitude data in comparison to AEMO's Interactive Map which publishes locations of each transmission connection point, transmission substation and power stations in the NEM. The map also includes all transmission lines and other information such as supply outlook, demand forecast, committed and completed projects.</p>
Customer number and type	Clarity is required on whether <i>total number of customers that are connected by industry, commercial and residential</i> is in reference to load customers
Load forecast	<p>Clarity is required on '<i>forecast daily demand profile</i>'</p> <p>AEMO would like to note that as requested, this information represents a significant amount of data when considering the number of load transmission connection points in the NEM and a daily profile for each over the year (that is, for 365 days).</p> <p>AEMO suggests that publishing profiles of <i>historical maximum and minimum demand days</i> for each connection point. These profiles can be used by stakeholders to forecast their own connection point daily profiles by either using their own forecast or using AEMO's or the DNSP's forecasts.</p> <p>AEMO publishes Victorian connection point forecasts separately from the TAPR therefore clarity is required on whether the TAPR can reference this document to avoid duplication.</p>
Historic primary plant ratings Primary plant asset age / reactive capability / fault rating	<p>Clarity is required on whether this information is to be requested for all primary plant at every transmission connection point.</p> <p>Clarity is already required on the benefit to stakeholders on having all historic primary plant information in the TAPR including disconnectors, circuit breaker ratings and age.</p> <p>AEMO suggests that publication of major components would be of more value to stakeholders at connection points where network limitations have been identified.</p> <p>AEMO also notes that in Victoria, asset information sits with the relevant asset owner and therefore the Guidelines/Rules will need to explicitly state that any requirement for this type of information should be provided to AEMO from each DTSO.</p>
Value of Customer Reliability	<p>Clarity is required on whether this information is to be requested for every connection point</p> <p>AEMO suggests that publishing VCRs at locations where a network limitation has been identified would provide more value to stakeholders rather than for every connection point.</p>
Outages	<p>Clarity is required on whether this information is to be requested for planned and/or unplanned outages as well as how the AER defines '<i>a material impact on the market</i>'</p> <p>AEMO suggests that more value would be provided to stakeholders by publishing unplanned outages that had customer and material market impacts.</p> <p>AEMO also notes that in Victoria, outage information sits with the relevant asset owner and therefore the Guidelines/Rules will need to explicitly state that any requirement for this type of information should be provided to AEMO from each DTSO.</p>

Section 4.2 Transmission line	AEMO's comments
Transmission point location	<p>Clarity is required on whether this refers to every transmission line on the network and the reason latitude and longitude detail is required</p> <p>AEMO suggests that a map of transmission line locations would be of more value to stakeholders for visual clarity, in a similar manner to AEMO's Interactive Map.</p>
Conductor type, rating and year of installation	<p>Clarity is required on whether this is to be requested for all transmission lines on the network and how to best represent transmission lines that have different conductor types between spans.</p> <p>Clarity is also required on the definition of <i>'materially different rating'</i>.</p> <p>AEMO suggests that more value would be given to stakeholders by publishing continuous ratings of transmission lines instead of each conductor type, ratings and the year of installation. This is because a transmission line may contain different types of conductors between spans and installed at different time periods.</p> <p>This information is kept by the asset owners and therefore the Guidelines/Rules will need to explicitly state that in Victoria, DTSOs would need to provide this information to AEMO.</p>
Historical load traces	<p>Historical load traces <i>'to inform the non-network user of how the load has flowed through the network'</i> will include flows under contingencies, outages and load transfers which are not the best source of information to predict future flows and will not reflect future operating conditions due to the expected future generation mix. These traces are also generally more relevant to load driven constraints; most future constraints are driven by new generation connections.</p> <p>AEMO suggests that it would be more beneficial for stakeholders to provide this information during the RIT-T process where a network need has been clearly identified.</p>
Section 4.3 Emerging limitations	AEMO comments
Constraint type and driver	AEMO already publishes this information in its VAPR
Limitation location	Clarity is required on the level of detail requested for consistency across all TAPRs, e.g. by connection point/s impacted, equipment that is constrained
Maximum load at risk per year Expected unserved energy	<p>This is only relevant for constraints caused by increasing load which is unlikely to be the case going forward</p> <p>AEMO suggests that clarity is provided to this request that specifies this information is only required for those constraints caused by increasing demand.</p>
Preferred network solution	<p>Identifying a preferred network solution in the TAPR suggests the TNSP is required to pre-empt a RIT-T outcome. This does not align with the objective of the TAPR.</p> <p>AEMO suggests that it would be more beneficial for stakeholders to provide this information during the RIT-T process where a network need has been clearly identified.</p>
Proposed timing	<p>Clarity is required that <i>proposed timing</i> refers to timing of the forecast constraint based on the current demand forecast and not timing of the preferred network solution</p> <p>AEMO suggests that if it is the AER's intent that <i>proposed timing</i> is in reference to a preferred network solution, then this information would be better suited to the RIT-T process.</p>