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Friday, 29 March 2019

Mr John Pierce AO
Chairman
Australian Energy Markets Commission
PO Box A2449
Sydney South NSW 1235

Dear Mr Pierce

Medium Term Projected Assessment of Adequacy Transparency and Accuracy Amendments Rule Change Request

The National Electricity Market (NEM) is currently experiencing a significant level of change as it moves from a historical position of primarily fully scheduled generation which collectively offered a high level of known firm generation output to generation sources which are less predictable in output where only semi-scheduling (output capping) of generation output is possible.

This was one of the reasons in April 2017 that the Australian Energy Market Operator (AEMO) commenced a review of the Reliability Standards Implementation Guideline (RSIG) to amend the Medium Term Projected Assessment of System Adequacy (MTPASA) process from a deterministic to a probabilistic analysis process to better model this variability of intermittent generation output both from a larger scale grid-connected and distributed energy resource (rooftop solar PV) perspective. ERM Power Limited (ERM Power) supported this change in the MTPASA process.

The MTPASA has a critical role in the National Electricity Market (NEM) to provide accurate and transparent signals with regards to the supply-demand balance over the medium-term period, to provide data to assist the scheduling of generation and transmission maintenance outages, and the accurate communication of this outage data to the market as a whole.

The National Electricity Rules (the Rules) governing the MTPASA processes remain largely as they were at the time of NEM commencement with only minor changes implemented. Due to the observed changes in market conditions and the changes in the MTPASA analysis process to a probabilistic based model ERM Power believes it is time to amend the MTPASA process to improve the transparency and accuracy of a number of areas of the modelling where we believe the current MTPASA process is deficient. We believe these amendments will provide benefits to participants, consumers, jurisdictions and other parties who use the MTPASA as a source of forecasts of supply, demand and reliability information over the MTPASA timeframe.

Name & Address of the Person making the Request

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About ERM Power

ERM Power is an Australian energy company 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], with operations in every state and the Australian Capital Territory. A growing range of energy solutions products and services are being delivered, including lighting and energy efficiency software and data analytics, to the Company's existing and new customer base. The Company operates 662 megawatts of low emission, gas-fired peaking power stations in Western Australia and Queensland. www.ermpower.com.au

Summary of proposed changes

- Publication of individual scheduled generator (DUID) availability data
- Improvements to accuracy and transparency of demand forecasts used in the MTPASA process
- Transparency of generator forced outage values used in the MTPASA process
- Inclusion of committed generation unit prior to final registration approval in the MTPASA assessment process

Issues to be addressed and description of the proposed rule changes

Publication of individual scheduled generator (DUID) availability data

At the time of NEM commencement there were concerns that the Market would be best served from a competition perspective by limiting all forms of real-time individual generation data as much as possible and that publishing PASA data on an individual generator basis could allow a form of signaling between competing generators. The NEM at that stage was composed of a large number of competing generator businesses with an absence of the current large generation portfolios, typically being vertically integrated "gentailer" structures (gentailers) that dominate the NEM today. We believe this change in market structure has led to an unacceptable level of information asymmetry in MTPASA output information, which if removed would result in efficiency gains for both the NEM and the east coast gas markets.

As the NEM has developed over the intervening period, it has been clearly demonstrated that competition has benefited from increased transparency in generator data. Today, actual real-time individual generator output is transparent to all. This outcome was actually prevented during the original market design consultation on the grounds it may have led to a lessening in competition.

These concerns have been proven to be unfounded with the high visibility of changes in generation output now available in real time, stimulating not just responses from other generators but also from the demand side.

With the consolidation of a significant share of NEM generator capacity into a small number of gentailers, via both direct control and indirect control via information provision requirements in power purchase agreements (PPAs), these large gentailers benefit from a significant information asymmetry advantage with regards to knowledge of generator full and partial outage plans. This is further compounded by the sharing of additional outside market knowledge of outages between the large gentailers due to:

1. Coordination of use and refurbishment of shared strategic spares between same-type generators;
2. Coordination of timing of use of specialist contractor services; and
3. Procurement of large volume outage cover or outage insurance products between large portfolio gentailers.

[1] Based on ERM Power analysis of latest published financial information.

Whilst arguments could be raised that in some way outage information on an individual DUID basis could be viewed, particularly by some larger participants, as information that is of a commercially sensitive nature, it must also be acknowledged that by doing so this seeks to maintain the status quo where small generators, retailers, market intermediaries and consumers currently have a much lower level of information compared to these larger gentailers with regards to which generator will be out of service or limited in capacity.

Given the range of generator marginal costs and bidding structures apparent in today's NEM, and the impact that different generators may have acting as a gatekeeper on interconnector flows, it is critical to understand not just that an outage is scheduled, but which generator is actually scheduled out of service due to the different impact that can manifest in market outcomes. This may also have implications for reliability of supply, as generators with different operational characteristics, i.e. baseload operation, create differing requirements for replacement generation and fuel supply arrangements to support this replacement generation. Sourcing additional fuel supply requirements would also be more cost efficient when this requirement is better understood well in advance of the need. Improving transparency in this area will allow generators to more effectively consider and plan the timing of unit outages based on an improved understanding of the potential market impact of each individual unit outage shown in the MTPASA.

Currently, these smaller generators, retailers, market intermediaries and larger market-facing consumers expend resources analysing MTPASA information to determine which generator may be planning an outage, sometimes with only limited success. This is an inefficient use of resources. As the process has less than 100% accuracy, this increased risk that the actual generator out of service may be different to that forecast is passed through to counterparties and ultimately consumers in the form of a higher risk premium in wholesale and retail contract prices. It also impacts pricing in the gas markets where significant changes to fuel requirements for replacement generation at only short notice may be required once the actual planned generator outage is known.

We believe this would provide efficiency benefits to the market as a whole, both from an improvement in accuracy perspective and a reallocation of analyst resources to other beneficial endeavours.

We believe that this change could be implemented via a simple change to clause 3.7.2 (f) (5);

> (5) aggregate and individual scheduled generating unit PASA availability for each region;

Improvements to accuracy and transparency of demand forecasts used in the MTPASA process

Currently rule 3.7.2 requires that AEMO calculates and publish the "forecasts of the 10% probability of exceedence (POE) *peak load*, and most probable *peak load*". The most probable *peak load* is generally referred to as the 50% POE *peak load* forecast. These forecasts are then utilised by AEMO in their probabilistic modelling process to forecast the potential for unserved energy (USE) to occur on a daily and cumulative basis within the MTPASA timeframe.

Whilst actual demand outcomes can vary from 0 to 100% POE, AEMO only uses the 10% and 50% POE forecasts in the MTPASA modelling processes. The 10% POE USE outcomes are allocated an approximate 30% probability of occurrence and the 50% POE USE outcomes are allocated an approximate 70% probability of occurrence in calculating expected USE over the MTPASA timeframe. This is a conservative assumption since 50% POE outcomes tend to have positive USE outcomes in a number of scenarios, while 90% POE outcomes would be zero or close to zero in all scenarios. As a result of assigning a 70% probability to 50% POE outcomes, 50% POE outcomes are being assigned a higher probability than would be implied by their likelihood of occurring, this will result in an inflated expected USE outcome overall. The proposed change in addition to improving the accuracy of forecast of USE from the MTPASA process will also align the MTPASA methodology with the ESOO modelling methodology where 90% POE demand forecasts are included in the modelling process.

Compounding this methodology introduced error, as discussed during the Australian Energy Market Commission's (AEMC) Reliability Frameworks Review, overall AEMO demand forecasts have, over time, tended to exhibit an over forecasting bias in some, but not all regions with most regions falling short of their respective 50% POE forecasts under high temperature (exceeding 90th and 95th percentile of historical) outcomes over the last two summer periods.

In addition, currently, demand forecasts are usually updated only on a yearly basis, generally in May in line with the planning process updates for the Electricity Statement of Opportunities (ESOO). This results in an outcome where the last review of potential weather conditions and demand outcomes for the summer period may have occurred some 6 to 8 months distant from the current summer period. This is of particular concern with regards to the potential for contracting of medium notice emergency reserves under the Medium-Notice Reliability and Emergency Reserve Trader (RERT) provisions of the Rules.

Overall, we believe these factors are resulting in inflated forecasts of potential USE outcomes from the MTPASA process. This compounding conservative outcome will result in forecasts that NEM supply reliability is lower than is actually the case, which in turn will result in increased direct and indirect costs for consumers in the event this triggers market intervention in the form of emergency reserve procurement by AEMO.

To correct these observed deficiencies in the current MTPASA process we propose the following changes to rule 3.7.2:

> (c) The following medium term PASA inputs are to be prepared by AEMO:
>
> (1) forecast load information for each region which is:
>
> (i) at a minimum the 10% and 90% probability of exceedence daily peak load, most probable daily peak load and time of the peak on the basis of past trends, day type and special events including all forecast scheduled load and other load except for pumped storage loads;
>
> (1A) the forecast load information referred to in subparagraph (1) is to be reviewed and updated by AEMO on at least a monthly basis with specific regard to current forecasts for weather conditions in the near term 3 month period;
>
> (f) AEMO must prepare and publish the following information in respect of each day (unless otherwise specified in subparagraphs (1) to (6)) covered by the medium term PASA in accordance with clause 3.13.4(a):
>
> (1) forecasts of the 10% and 90% probability of exceedence peak load, and most probable peak load, excluding the relevant aggregated MW allowance referred to in subparagraph (2), and adjusted to make allowance for scheduled load;
>
> (2) the aggregated MW allowance (if any) to be made by AEMO for generation from non-scheduled generating systems in each of the forecasts of the 10% and 90% probability of exceedence peak load and most probable peak load referred to in subparagraph (1);
>
> (3) in respect of each of the forecasts of the 10% and 90% probability of exceedence peak load and most probable peak load referred to in subparagraph (1), a value that is the sum of that forecast and the relevant aggregated MW allowance referred to in subparagraph (2);

In addition to the rule changes above which move to address the current accuracy deficiencies in the MTPASA process, a significant issue exists with regards to the transparency and ease of use of demand data provided by AEMO. AEMO currently publishes demand forecast information in various formats, including but not limited to;

- Native sent out or native as generated
- Operational sent out or operational as generated

- Scheduled as sent out or scheduled as generated

In real time AEMO publishes demand data on both an operational as generated and scheduled as generated basis to meet the requirements of clause 3.13.4(x). In the MTPASA, participants have observed a number of changes between operational and scheduled demand and on a basis of generated or sent out in how forecast demand data is presented by AEMO.

Currently, forecast demand data is supplied by AEMO on an operational sent out basis which then requires the addition of separate estimated generator auxiliary load data to derive the value closest to the real time operational as generated data. This results in a degree of opacity leading to inaccuracy with regards to independent comparison of forecast and actual data and potential confusion for parties less conversant with AEMO's data publication processes where the party may only compare the operational sent out forecast to published actual outcomes resulting in an inaccurate comparison. This is further compounded as discussed above, due to the fact that the basis of the MTPASA forecasts have historically have been subject to change.

In the interest of the provision of consistent and transparent information we propose the following new rule which would align the published MTPASA demand forecasts with AEMO's real time actual demand information:

> 3.7.2 (h) forecast data supplied under clause 3.7.2(f) is to be supplied in a format consistent with the provision of real time actual demand data supplied in accordance with clause 3.13.4(x).

Transparency of generator forced outage values used in the MTPASA process

In the probabilistic MTPASA process, AEMO utilises generator availability values which have been adjusted for probabilistically determined unplanned (forced) outages. We support the use of these values, however, outputs from the MTPASA process currently provide no transparency with regards to the level of variability in available generation capacity being assumed in the modelling despite the fact that this data exists and we understand is used internally by AEMO. We believe there would be transparency benefits for parties who value such information to understand the regional adjusted scheduled generator availability values being calculated by AEMO during the MTPASA modelling process. Inclusion of daily maximum and minimum regional adjusted scheduled generator availability data in the published MTPASA output data would assist participants to better understand the impact on forecast USE of these adjusted availability profiles which in turn would allow participants to better schedule planned outages.

In the interests of the provision of transparency in this area we proposed the following new subclause:

> 3.7.2(f)(5C) the adjusted maximum and minimum aggregate scheduled generating unit PASA availability for each region following adjustment for the inclusion of scheduled generator probabilistic forced outage data; and

This will also necessitate a small amendment to subclause 3.7.2(f)(5B) to remove the word "and" from the end of the subclause.

Inclusion of committed generation unit prior to final registration approval in the MTPASA assessment process

Currently clause 3.7.2 requires that only a *Scheduled Generator* who has been approved for registration by AEMO are required to submit MTPASA inputs in accordance with subclause 3.7.2(d). In addition, AEMO is required to provide an *unconstrained intermittent generation forecast* (UIGF) only for each registered *semi-scheduled generating unit* for each day in accordance with subclause 3.7.2(c)(4). It is currently unclear with regards to MTPASA obligations which requirements apply to an *intending participant* registered in accordance with clause 2.7.

This proposed rule change will require AEMO to consult on the process for allocation of a preliminary classification for a committed generating unit as well as the generic PASA availability profile for a *scheduled generating unit* and the unconstrained intermittent generation forecast for a *semi-scheduled generating unit* to be included in the *reliability standards implementation guidelines*. This consultation process would also provide benefits to the ESOO where currently committed generating units are included in the ESOO assessment process where the process for their inclusion is not transparent.

Whilst the current outcomes may have been satisfactory in a NEM where large amounts of generation reserve was available, changes in the NEM where the amount of surplus generation reserve is now considerably lower and forecast to reduce further, the omission of committed generation progressing through the lengthy registration process from the MTPASA analysis will result in in inaccurate assessment of the future supply vs demand reliability balance and an overestimation of expected USE across the assessment period.

This deficiency in the current MTPASA process has the potential to result in triggering of market intervention in the form of the RERT, in particular the long-notice RERT where a procurement contract may be signed currently nine (and based on the Enhanced RERT rule change Draft Determination twelve) months in advance, where based on the MTPASA modelling process the Reliability Standard is forecast to be exceeded in any rolling twelve month period. This omission of generation from the MTPASA assessment process that is currently under construction and expected to commence generation output within the MTPASA assessment timeframe will result in additional and unnecessary costs to consumers.

To remove this deficiency, we proposed the amendment to subclause 3.7.2 (c) which would require AEMO to provide a preliminary classification of a committed generating unit, as defined by AEMO in the Reliability Standards Implementation Guidelines, as one of a scheduled generating unit, a semi-scheduled generating unit or a non-scheduled generating unit following consultation with the generating unit project proponent. For a scheduled generating unit, AEMO would be required to prepare and use in the MTPASA assessment a generic PASA availability profile on the same basis as that provided by a registered participant in accordance with subclause 3.7.2(d)(1).

For a semi-scheduled generating unit, AEMO would be required to prepare and use in the MTPASA assessment a UIGF on the same basis as that provided by AEMO in accordance with subclause 3.7.2(c)(4).

Whilst AEMO will be required to implement this committed generation information in the MTPASA, it is worth noting that this information is currently maintained, updated and used by AEMO for updating the Generation Information Page and in the ESOO assessment process.

The benefits of this proposed rule change will result in lower costs to consumers; both from lower direct costs through reduce costs of RERT and from improvement in accuracy in investment signals to existing and potential NEM participants.

To correct this observed deficiency in the current MTPASA assessment process we propose the following additional rule 3.7.2(c)(5)

> 3.7.2(c)(5) following consultation with the generating unit project proponent allocate a preliminary classification for a committed generating unit, as defined by AEMO in the *reliability standards implementation guidelines*, as either a *scheduled generating unit*, a *semi-scheduled generating unit* or *non-scheduled generating unit;*
>
> 3.7.2(c)(5)(i) where a committed generating unit has been allocated a preliminary classification as a *scheduled generating unit*, AEMO shall use a generic PASA availability profile for that generation type as defined in the *reliability standards implementation guidelines*; or

3.7.2(c)(5)(ii) where a committed generating unit has been allocated a preliminary classification as a *semi-scheduled generating unit*, AEMO shall use a generic *unconstrained intermittent generation forecast* for that generation type as defined in the *reliability standards implementation guidelines*;

Potential impacts of the proposed change to the rules on those likely to be affected

All four rules changes primarily impact AEMO's internal systems. In the case of all the proposed rules we understand that AEMO currently compiles and uses all the relevant data either in its MTPASA process or in complimentary processes such as the ESOO.

Generators currently submit MTPASA information to AEMO on an individual generating unit basis. As such, no additional information submission by generators is required. The only change that would be required would be the release of this information in the normal AEMO MTPASA process. This would incur a one-off data table change by AEMO and similar one-off changes in participants' systems to include and analyse the new data for which we believe the costs would be relatively minor.

With regards to use of the 90% POE demand forecast we understand from AEMO that the MTPASA modelling engine is the same as the modelling engine used in the ESOO forecasts. We also understand that the ESOO modelling utilises 90% POE demand forecast in its assessment process. Given this, conversion of the MTPASA process to also model 90% POE forecast demand outcomes should be relatively straight forward for AEMO to undertake the additional 90% POE forecast demand run at minimal cost.

AEMO currently prepares both operational and scheduled demand data on an "as generated" basis, whilst AEMO then subtracts the estimated generator auxiliary load from this data to use in their MTPASA modelling analysis, we believe there is no barrier to AEMO publishing the original "as generated" data in place of the current "sent out" demand data.

Generator forced outage data is calculated as part of the MT PASA modelling process. The proposed rule change requires that AEMO collates the daily maximum and minimum values and publish this data as part of the MTPASA output file. This would incur a one-off data table change cost by AEMO and similar one-off changes in participants' systems to include and analyse the new data for which we believe the costs would be relatively minor.

AEMO currently maintains, updates and uses committed generation information for updating the Generation Information Page and in the ESOO assessment process, as such the only additional costs for introducing this change will be internal to AEMO to include updated committed generating unit(s) input data for inclusion in the MTPASA assessment process. The rule change will require AEMO to consult on the *reliability standards information guideline* with regards to the methodology for allocation of the preliminary classification of a committed generating unit, the generic PASA availability profile for a *scheduled generating unit* and the unconstrained intermittent generation forecast for a *semi-scheduled generating unit.*

Benefits of proposed changes

ERM Power believes that the proposed changes to the MTPASA process will provide the following benefits with regards to meeting the National Electricity Objective.

Improving transparency and quality of information: The provision of relevant, consistent and transparent information to parties who require and value such information to carry out their responsibilities under the NER and in supporting the efficiency of the NEM. Improvements in transparency and accuracy will allow generators to more effectively consider and plan the timing of unit outages. Transparency can also assist in guiding consumers of electricity in their decisions about when and how much to consume including the consideration of regional location for capital expenditure in new or augmentation of existing production capacity.

Promoting reliability of the power system: A reliable power system is a crucial part of the energy market and the long-term interest of consumers. The provision of improved accuracy of outputs from the process will ensure that provision of new supply initiatives, and/or demand management can be contracted for those periods where they are required and also allow improved fuel procurement outcomes all of which will reduce overall costs of reliability to consumers.

Minimising direct costs: Where forecast shortfalls are indicated contracting of emergency reserves carry direct costs to consumers in terms of availability and activation payments, administrative costs, as well as compensation costs. By increasing the accuracy of the process these direct costs will be minimised to only those periods required to meet reliability requirements.

Minimising market distortions: Minimising distortions on market participants (i.e. market distortions) is important in order to minimise indirect costs, which could be substantial. Over conservative modelling may lead to contracting for emergency reserves when not required which may impact the normal market decision making process for new supply or demand management options.

Regulatory certainty: Clear regulatory responsibilities for AEMO when preparing the MT PASA minimises ambiguity and supports enhanced forecasting capability, thus improving energy reliability.

Conclusion

The Rules governing the MTPASA remain largely as they were at the time of commencement of the NEM. ERM Power has set out what we believe are 4 relatively minor rule changes with regards to improving information transparency and the accuracy of the MTPASA process, that will all be low cost and easy to implement..

The change in early 2018 from a deterministic assessment of supply - demand reliability to a probabilistic assessment has resulted in the inclusion of new factors in the calculation process which remain opaque or have the ability to lead to confusion with regards to any independent comparison of actual to forecast outcomes.

We believe the change in market structure where significant generation is controlled by large vertically-integrated gentailers has led to an unacceptable level of information asymmetry in MTPASA output information where small generators, retailers, market intermediaries and consumers currently have a much lower level of information compared to these larger gentailers with regards to which generator will be out of service or limited in capacity.

The proposed rule changes seek to address the transparency shortfalls identified in the rule change request and improve the accuracy of the supply - demand reliability assessment from the MTPASA modelling process which we contend will lead to significant benefits for both the NEM and the east coast gas markets and flow through to consumers of both electricity and gas. We request that if approved the AEMC consider implementation of the changes from the earliest possible date to release the value arising from these proposed changes to the market as soon as can be achieved.

Please contact me if you would like to discuss this rule change request further.

Yours sincerely,

[signed]

David Guiver

Executive General Manager - Trading

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