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Thursday, 22 October 2020

Mr Oliver Tridgell
Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2000

Dear Mr Tridgell

RE: Transparency of unserved energy calculation – ERC0279

ERM Power Retail Pty Ltd (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (the Commission) Transparency of unserved energy calculation rule change Consultation Paper (the Paper).

About ERM Power

ERM Power (ERM) is a subsidiary of Shell Energy Australia Pty Ltd (Shell Energy). ERM is one of Australia's leading commercial and industrial electricity retailers, providing large businesses with end to end energy management, from electricity retailing to integrated solutions that improve energy productivity. Market-leading customer satisfaction has fuelled ERM Power's growth, and today the Company is the second largest electricity provider to commercial businesses and industrials in Australia by load[1]. ERM also operates 662 megawatts of low emission, gas-fired peaking power stations in Western Australia and Queensland, supporting the industry's transition to renewables.

http://www.ermpower.com.au
https://www.shell.com.au/business-customers/shell-energy-australia.html

General comments

ERM Power is generally supportive of the intent of the rule change request as submitted by the National Electricity Market's (NEM) Reliability Panel (the Panel). We have previously made submissions to the Panel's review of the Definition of Unserved Energy and agree with the Panel's view that the definition of unserved energy for the purposes of the reliability standard is broadly fit for purpose for the existing NEM environment. We also support the Panel's view that improvement opportunities exist with regards to the following;

- transparency of the unserved energy (USE) calculation
- clarity of the framework that underpins the calculation.

Whilst supporting the intent of the rule change proposals, we do however have concerns with the wording of the rule changes as proposed and provide alternative wording for the Commission's consideration as well as reasons for our proposed changes.

We agree with the proposed assessment framework for this rule change request as out in the Paper.

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

Transparency of the unserved energy calculation

Currently, the historical (actual) USE outcome is calculated by the Australian Energy Market Operator (AEMO) and reported to the Panel on an annual financial year basis. The rule change request proposes to require AEMO to provide more information on how it calculates the historical USE value.

We agree with the Panel's view that currently the National Electricity Rules (the Rules) do not set out a particular methodology or prescriptive determination with regards to the calculation of USE and this results in a lack of transparency for all stakeholders with regards to the calculation of the historical USE values. We also agree with the Panels view that;

> *This can lead to confusion about exactly what the unserved energy value represents, and may lead to market participants making inappropriate decisions.*[2]

Following consideration of submissions to the Panel's review of the Definition of Unserved Energy, the Panel in their rule change submission considered that;

> *To promote understanding of, and confidence in AEMO's calculation of unserved energy, the Panel proposes that AEMO should clearly set out how it calculates unserved energy. This would describe:*
>
> - *how AEMO calculates wholesale unserved energy for the purposes of the reliability standard*
> - *which type of demand it uses*
> - *the implication of using the chosen type of demand on the calculation.*
>
> *The Panel considers that all unserved energy information and reports should be publicly available given the impact of unserved energy on investments that are passed through to energy consumers, the level of public interest in the reliability standard and system reliability generally.*[3]

The Panel has proposed that Clause 3.9.3D of the rules be amended to require AEMO to set out, through the reliability standards implementation guideline (RSIG), the method for calculating unserved energy in accordance with Clause 3.9.3C, including calculation of the amount of energy demanded in the relevant region. ERM Power supports the intent of the Panels rule change submission in this area. We believe the additional transparency will remove the potential for inconsistency in application of the calculation and improve clarity in the calculation methodology for stakeholders.

The Panel also considered that there should be greater transparency with regards to reporting of actual (historical) USE reporting by AEMO. Whilst actual USE outcomes are provided by AEMO to the Panel and forms part of the Panel's Annual Market Performance Review report, these reports do not contain details of actual USE outcomes on a per event basis, the reports provide only the annual total of actual USE as advised by AEMO. We consider that additional improvements to Clause 4.8.15 are also required and this will be discussed further later in our submission.

The Panel has also proposed a Chapter 11 transitional measure to allow AEMO to update the RSIG in this area without consultation with stakeholders. We do not support this proposal and recommend instead that for the initial update of the RSIG the Commission requires a single round of consultation prior to AEMO updating the RSIG to allow stakeholder input. It needs to be noted that whilst updating of the RSIG is subject to the Rules consultation procedure (Clause 8.9), there can be a 4 year period between review of the RSIG and the areas of the RSIG that will, or more importantly will not be subject to consultation, are set by AEMO.

[2] Reliability Panel Rule Change Request – Transparency of Unserved Energy page 4
[3] Reliability Panel Rule Change Request – Transparency of Unserved Energy page 7

As the rule change request does not seek to implement a particular methodology or prescriptive determination with regards to the calculation of USE in the Rules, we consider that the initial update of the RSIG in this area should be via an amended rule consultation process similar to how other small changes to other NEM process documents, methodologies or guidelines have been implemented.

Clarity of the unserved energy framework

The Panels has proposed that amendments be made to Clause 3.9.3C of the Rules to remove any ambiguity in how the Clause should be interpreted. The Panel has suggested the addition of a purpose statement or principle for the definition of unserved energy, to assist with its interpretation, as opposed to being more prescriptive in the Clause. The Panel has proposed the following wording;

> "a *power system reliability* incident is to include only those incidents that AEMO considers would have been avoided through additional investment in *generation* and/or *inter-regional transmission elements*."[4]

The Panel considers that this "principle" will help to address interpretation. However, it also considers that further clarifications are required to improve transparency of Clause 3.9.3C.

ERM Power supports the intent of the Panels proposed addition of a "principle" to the rules, however, we are concerned that the "principle" as defined in the rule change request could result in all instances of involuntary load shedding being classified as USE, as in the extreme, all instances of involuntary load shedding could reasonably be expected to be prevented by additional investment in generation and/or inter-regional transmission elements, including what could be inefficient investment.

By way of an example, a multiple circuit super highway of 500 or 750 kV transmission network extending from central Queensland to Victoria via key locations in southern Queensland, New South Wales and Victoria could lower the risk of USE occurring to close to zero, however, it is questionable if this would be an efficient outcome for consumers who would currently bear the significant costs of such an investment. Similarly, the construction of significant scheduled generation capability in each region underwritten by a levy on market customers, might also be seen as an inefficient investment and delay or prevent efficient investment. We note that such outcomes could fail to meet the "Efficient investment in, and operation of, energy resources" assessment criteria.

We also note that a series of interrelated cascading single credible contingency events over a one to 2 hour time period, whilst remote, could combine to result in a large USE event as each of these could be determined not to meet the requirements of subclause 3.9.3C(b)(2) as the defined term *"outages"* in subclause 3.9.3C(b)(1)(i) does not specify if this includes a series of interrelated but time distant cascading unplanned outages. The original intent of this rule may have been that where a simultaneous credible contingency event occurred simultaneously with a planned outage(s) of a generator or inter-regional transmission element any involuntary load shedding would be included in the USE calculation but not included if it occurred simultaneously with other pre-existing unplanned outages. This would be on the basis that it would be reasonable to expect that, based on publicly available market information[5] regarding these planned outages, the market should have planned for the potential of such an event to occur. However if it were to occur simultaneously with another pre-existing unplanned outage(s) then it would not be included in the USE calculation as this would be a multiple contingency event and it is unreasonable to expect the market to plan for the wide range of multiple contingency events that could potentially occur on an economically efficient basis.

It is unclear to ERM Power that the market should be expected to plan for low probability events, and we question if it would in fact be an efficient outcome to ensure that sufficient spare generation, demand side response or inter-regional transmission network capability existed for low probability events.

[4] Reliability Panel Rule Change Request – Transparency of Unserved Energy page 9

[5] Network Outage Schedule, Short Term PASA, Medium Term PASA, Energy Adequacy Assessment Projection Electricity and Gas Statements of Opportunities.

Yet the proposed principle as worded would suggest that is the case. We consider the proposed principle is misaligned with the Panels consideration in setting the reliability standard and reliability settings.

The Panel in setting the reliability standard explicitly considers the efficient costs of meeting the reliability standard. In doing so the Panel notes;

> *The more investment in capacity (e.g. more generation, demand-side resources or network assets) and/or more stringent operating conditions is required, all of which impose costs on parties, and ultimately consumers. For example, having more generation being operated more stringently (i.e. having more generation being operated to meet a higher standard of reliability) creates higher per unit costs of electricity. These costs will be reflected in consumer prices.*[6]

We note the Panel in its Final Report[7] had proposed a further addition to the proposed wording of the Principle to be included in Clause 3.9.3C with regards to a test that considers the economic efficiency of the proposed principle.

> *An event should only be included if the market should have planned for such an event.*[8]

The Panel further clarified their views on what the market should and should not be expected to plan for;

> *As noted above, up to seven days ahead, the LOR2 reserve level has recently been expanded to not just include the largest identified single credible contingency event, but also to take into account forecast deviations such as in wind or demand forecasts. While historically it was said that the market would be expected to plan for one single credible contingency at a time, more recently, due to changes occurring in the power system, the market now also plans for large deviations in forecasts, including for example, changes in demand. As a result, it can be said that the market is expected to plan for the above, including for example, changes in demand resulting from changes in solar PV generation or from wind forecast changes, rather than just single credible contingencies.*[9]

ERM Power considers that the proposed principle to be added to Clause 3.9.3C should be amended to align more closely with the "Efficient investment in, and operation of, energy resources" assessment criteria. ERM proposes the following wording for additional subclause 3.9.3C(c) for the Commissions consideration.

> For the purpose of paragraph (b), a power system reliability incident is to include only those incidents that AEMO considers would have been avoided through additional efficient investment in *generation*, *demand response* and/or *inter-regional transmission elements* and on the basis that the market should have planned for such an event

With regards to the proposed rule change, based on details set out in the Panel's Final Report, [10] we consider that the defined terms *generation*, *demand response* and *inter-regional transmission elements* should all be viewed "as an asset", rather than "as a concept" as this would provide an improved level of transparency for stakeholders as to its intent.

As discussed above, the Panel also considered that there should be greater transparency with regards to the reporting of actual (historical) USE by AEMO. We agree with the Panels view with regards to the reporting of actual USE which should include sufficient details of why AEMO has categorised any involuntary load shedding event as a USE or non-USE event.

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[6] Reliability Panel Review – Definition of Unserved Energy Final Report page 13
[7] Reliability Panel Review – Definition of Unserved Energy Final Report
[8] Reliability Panel Review – Definition of Unserved Energy Final Report page 21
[9] Reliability Panel Review – Definition of Unserved Energy Final Report page 21
[10] Reliability Panel Review – Definition of Unserved Energy Final Report

As part of the rule change process we consider that a further addition to Clause 4.8.15 is warranted. We suggest the following wording for additional subclause 4.8.15(cb)

> With respect to a report that has been prepared by AEMO in accordance with clause 4.8.15(a)(1) that relates to an operating incident involving an event where AEMO issues a *clause 4.8.9 instruction* for *load shedding*, the report must include details of the *load shedding* instructions on a *trading interval* basis and the reasons for determining that the load shedding event is an *unserved energy* event as determined in accordance with clause 3.9.3C

Further to this, we recommend that any report prepared by AEMO in accordance with subclause 4.8.15(cb) would be subject to review and inclusion by the reliability panel as part of the Annual Market Review report prepared in accordance with clause 8.8.1.

The Panel also proposes to make it clearer that the intent of subclause 3.9.3C(b) is to:

- include unserved energy that results from power system reliability incidents, including those caused by the examples of events provided in the clause
- exclude unserved energy that results from power system security events, including those caused by the examples of events provided in the clause.

ERM Power is supportive of the intent of the proposed amendments to subclause 3.9.3C(b) as set out in the rule change request. We also appreciate and agree with the summary around the intent of the Panels rule change request provided by the Commission in the Paper.

> *To help explain this concept, the proposed changes would, for example:*
>
> - *make it clearer that simply running out of generation on a hot day, even without any particular incident, would be included as it would be a power system reliability incident and consistent with the proposed principle discussed above*
> - *make it clearer that the distinction is between a wholesale reliability (generation and inter-regional transmission element) issue and other types of interruptions (such as failure of other transmission and distribution network elements)*
> - *make it clearer than events with multiple causes could be classified as both power system reliability and security and accounted for accordingly in the calculation (the former would be included, the latter excluded).*[11]

With regards to this last point regarding the classification of event which had multiple causes, we believe greater clarity should be set out regarding this in the Final Determination.

For example, consider an example where it is a hot day and there is an LOR2 in place. Independently of that, bushfires lead to the loss of multiple intra-regional transmission lines, which would be classified as a power system security issue. After these tripped intra-regional transmission lines and all load which can be safely restored is achieved, the LOR2 has deteriorated and turned into an LOR3. This could then trigger the continuation of load shedding if the system becomes insecure. Assuming that initial load shedding is classified as a power system security event, it would be excluded. Assuming that the subsequent load shedding is classified as a reliability event, it would be included.

[11] AEMC Rule Change – Transparency of Unserved Energy Consultation Paper page 17

Alternatively, demand is above average but not very high, a simultaneous failure of both lines of a double circuit inter-regional transmission line occurs leading to under frequency load shedding in the importing region. Assuming that this initial underfrequency load shedding is classified as a power system security event, it would be excluded. Following this, due to the cause of failure, only one circuit of the inter-regional network is able to be safely returned to service. If demand had further increase such that following restoration of the single circuit of the inter-regional transmission AEMO declared a LOR3 condition which required some level of involuntary load shedding to continue, in this case assuming that the subsequent load shedding is classified as a reliability USE event, it would be included.

As can be seen from just these two examples, there can be a wide range of scenarios under which involuntary load shedding can be classified as reliability USE or otherwise. ERM Power believes that the amended "principle" as set out in our submission should provide clearer guidance with regards to AEMO's classification of an event as reliability USE, in particular, the requirement that the market should have been able to plan for such an event.

In addition, our additional proposed change to Clause 4.8.15 would require AEMO to provide details of their reasoning to classify or not classify the involuntary load shedding as reliability USE. We are concerned that the changes to subclause 3.9.3C(b) as proposed in the Panel's rule change request do not achieve the Panel's intent as set out in the Final Report.[12]

We support the Panels decision in the rule change request to maintain the distinction of the classification of USE based on generation and interconnection inadequacy only and note the considerable detail provided by the Panel regarding this.[13] We note that this distinction remains clear in the Panel's proposed amendments to subclause 3.9.3C(b).

As discussed previously in our submission, we are concerned that the proposed amendment to subclause 3.9.3C(b)(1) fails to provide adequate clarity with regards to the defined term "*outage*". We consider that greater clarity is required in the rules to indicate the clear intent of subclause 3.9.3C(b)(1)(i). In considering the question regarding the intent of this subclause we believe the Commission should be guided by the principle "that the market should have been able to plan for such an event". We consider that it is unreasonable and economically inefficient to expect the market to plan for the wide range of time distant multiple but singularly occurring contingency events that could potentially occur. We propose the following additional rule change to subclause 3.9.3C(b)(1)(i) for the Commission's consideration;

> a single *credible contingency event* on a *generating unit* or an *inter-regional transmission element*, that may occur concurrently with *generating unit* or *inter-regional transmission element* planned *outages*; or

In this case the ordinary meaning of the word "planned" would apply.

This would make it clear that where multiple but singularly occurring contingency events occurred, the provisions of subclause 3.9.3C(b)(2) apply.

Consistency of calculation methodology of forecast and actual unserved energy

Currently, neither the rules or the RSIG require that the methodology for calculating forecast USE aligns with the methodology for calculating actual (historical) USE. ERM Power recommends that the Commission consider an additional amendment to 3.9.3D to require that the method of calculating forecast USE is consistent with the methodology for calculating actual USE.

[12] Reliability Panel Review – Definition of Unserved Energy Final Report

[13] Reliability Panel Review – Definition of Unserved Energy Final Report page 54

Currently, and as proposed by our amended change to Clause 3.9.3C, the calculation of actual USE is based on a wholesale reliability event due to lack of generation, demand response or inter-regional transmission network element capacity which includes the loss of a generating unit or interconnector transmission element as a result of a credible contingency event. The Panel noted in their Final Report to the Review of Definition if unserved energy that;

> *However, when it comes to wholesale-level reliability, the NER explicitly links the concept of unserved energy to the reliability standard, and explicitly defines it. In this context, unserved energy is applied to measure any supply interruptions consumers experience from* ***generation and interconnection inadequacy only****. That is, the amount of customer demand that cannot be supplied within a region of the NEM due to a shortage of generation, demand-side participation, or interconnector capacity. In other words, it is the amount of wholesale unserved energy that is relevant for the purposes of reporting on the reliability standard.*[14]

With regards to constraints imposed due to the loss of intra-regional transmission network elements. The Panel in their Final Report[15] were clear that any loss of supply due to constraints, including constraints invoked following an intra-regional transmission network element outage event, was to be excluded from the USE calculation.

> *The Panel considers it would be inappropriate to include in unserved energy calculation the loss of supply that is a result of intra-regional transmission constraints*[16]

The Final Report[17] then set out considerable detail regarding the reasoning for the Panel's decision.

ERM Power is aware that AEMO includes in its modelling for the Electricity Statement of Opportunities, the Energy Adequacy Assessment Projection and the Medium Term Projected Assessment of System Adequacy reliability assessment calculation unplanned outages of intra-regional transmission network elements, this then results in an higher forecast USE outcome. We understand the modelling also includes simultaneous outages of multiple generators. However, it is unclear how many of these simultaneous unplanned outages of multiple generators are as a result of a simultaneous instantaneous generator failure – a unit trip, which would fall under the definition of a multiple credible contingency event, a single non-credible contingency event or multiple non-credible contingency events on a generating unit or an inter-regional transmission element, which would be defined as a power system security event and not included as actual USE.

As argued for by this rule change the methodology by which USE is calculated is not currently defined in the Rules or the RSIG and as indicated above, neither the rules or the RSIG require that the methodology for calculating forecast USE aligns with the methodology for calculating actual (historical) USE and AEMO is able to forecast the potential for USE occurring based on its own determinations. We consider that the method of calculating forecast USE must be consistent with the methodology for calculating actual USE. Allowing different calculation methodologies for forecast and actual USE will in our view lead to widespread confusion about exactly what the forecast unserved energy value represents, and may lead to market participants, regulatory authorities and jurisdictions making inefficient decisions regarding the retailer reliability obligation reliability instruments, procurement of reliability and emergency reserve (RERT) contracts or unnecessary government intervention in the NEM resulting in increased and unnecessary costs to consumers.

We propose the following additional change to 3.9.3D in the form of a new subclause 3.9.3D(b)(7)

Consistency in methodology for the calculation of forecast *unserved energy* with the calculation of actual *unserved energy*.

[14] Reliability Panel Review – Definition of Unserved Energy Final Report page 11
[15] Reliability Panel Review – Definition of Unserved Energy Final Report
[16] Reliability Panel Review – Definition of Unserved Energy Final Report page 54
[17] Reliability Panel Review – Definition of Unserved Energy Final Report

The insertion of the new subclause will also result in the following changes to 3.9.3(D)(b) (5) and (6)

(5) the treatment of extreme weather events; ~~and~~

(6) network constraints; and

Lastly, we note the Commission has previously advised the intent to treat this rule change proposal as a non-controversial rule change on the basis it is unlikely to have a significant effect on the national electricity market. This would result in the rule change process proceeding straight to a Final determination. As demonstrated by the number of reviews, proposed rule changes and implemented rule changes over the last 2 years, the classification of involuntary load shedding as reliability USE and its impact on the wider question of power system reliability in general has the potential to significantly alter the efficient operation of the NEM.

ERM Power has raised a number of what we believe are valid concerns with this proposed rule change in our submission, in addition, the number of reviews and proposed rule changes in the regulatory area requiring detailed submissions following the release of the Paper has resulted in this rule change proposal "flying under the radar" for the majority of stakeholders. We request that the Commission reconsider its decision to move straight to a Final Determination and instead issue a Draft Determination to enable further consultation first.

ERM Power would appreciate the opportunity to further discuss the issues raised in our submission with the Commission. Please contact Ron Logan 0427 002 956 or rlogan@ermpower.com.au with regards to this.

Yours sincerely,

[signed]

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