

Rule Change Notice: The Relevant Demand calculation (RC_2019_01)

This notice is given under clause 2.5.7 of the Wholesale Electricity Market Rules (**Market Rules**).

Submitter: Claire Richards – Enel X

Date submitted: 21 June 2019

The Rule Change Proposal

Enel X originally submitted RC_2019_01 to the Rule Change Panel on 29 April 2019. The Rule Change Panel sought clarification on some aspects of the Rule Change Proposal and Enel X provided the requested clarifications on Friday 21 June 2019.

Enel X is seeking to change the way the Relevant Demand of a Demand Side Programme (**DSP**) is calculated. Enel X states that:

- The Relevant Demand level is intended to be an estimate of a DSP's counterfactual demand when the DSP is dispatched. If a DSP is dispatched, it is required to deliver the quantity of capacity it is certified for as a reduction from its Relevant Demand level.
- The current Relevant Demand calculation significantly under-calculates the "curtailability" of loads.
- A DSP's Relevant Demand is currently set at the lesser of:
 - the fifth percentile of the top 200 system peak hours in the previous Capacity Year; and
 - the sum of all Individual Reserve Capacity Requirement (**IRCR**) Contributions of the DSP's associated loads.

In most cases, the fifth percentile calculation results in a lower value than the IRCR calculation and hence sets the DSP's Relevant Demand.

- AEMO calculates a DSP's Required Level as the Facility's Relevant Demand minus the Capacity Credits assigned to it. A capacity provider's compliance with the various obligations of the Reserve Capacity Mechanism (**RCM**) is largely tied to its ability to operate at a level equivalent to its Required Level. Thus, a major consequence of the current Relevant Demand calculation is that the DSP must commit to curtailing a significant amount of load, uncredited, before it reaches its Relevant Demand level. Participation in the RCM is therefore uneconomic for many industry sectors, and impossible for others.
- Any concerns about the availability of a DSP are more appropriately addressed through the testing and compliance framework, not by restricting its participation outright through the Relevant Demand calculation.
- Under-calculating a DSP's Relevant Demand level means that a DSP will be certified for a much lower number of Capacity Credits than the capacity it is capable of providing.

The associated outcomes of this under-calculation are inconsistent with the Wholesale Market Objectives.

- The objective of the Relevant Demand calculation should be to determine the “baseline” consumption of a demand side resource with reasonable accuracy when it is dispatched.
- The Market Rules should be amended to:
 - include a clear definition of Relevant Demand, and a clear description of what the calculation is intended to achieve, so that stakeholders are clear on its purpose. Enel X’s proposed definition is:

“An estimate of demand side programme’s counterfactual demand when it is dispatched”,
 - adopt a baseline methodology for DSPs that strikes an appropriate balance between accuracy,¹ simplicity² and integrity.³
 - Enel X advocates implementing a dynamic baseline methodology for DSPs that accounts for a Load’s variability when calculating a DSP’s Relevant Demand. Enel X proposes that an “X of Y” methodology⁴ is best suited for the WEM because:
 - it will provide an accurate measure of a DSP’s expected baseline consumption, thus minimising errors;
 - it can accommodate natural and unexpected fluctuations in demand in any Trading Interval as dynamic baseline methodologies can take into account a Load’s variability over whatever hours the DSP is actually dispatched relative to a static approach;
 - it is reasonably easy to apply and therefore not expected to involve significant costs; and
 - such methodologies are commonly used in other markets, thus making available a large amount of analysis and expertise to draw upon.

Enel X also provided responses to the issues of capacity certification, availability of demand side resources and availability monitoring in the Rule Change Proposal.

Enel X did not propose drafting for the Amending Rules. The Market Rules permit a Rule Change Proposal to be submitted without drafting, but this means that RCP Support will need to develop drafting and additional consultation may be needed on the Rule Change Proposal to allow stakeholders an opportunity to comment accordingly.

Appendix 1 contains the Rule Change Proposal and gives information about:

- relevant references to the Market Rules and the sections of the Market Rules that are likely to be affected; and
- the submitter’s description of how the proposal would allow the Market Rules to better address the Wholesale Market Objectives.

¹ Accuracy – customers receive credit for no more and no less than the curtailment that they provide.

² Simplicity – the methodology makes baseline and curtailment calculations easy to calculate and easy for customers to understand.

³ Integrity – the methodology does not encourage irregular consumption, and irregular consumption does not influence the baseline calculations (i.e. protects against the ability to “game the system”).

⁴ The “Y” is a Load’s expected demand drawn from data from a number of previous days and “X” is a subset of these “Y days” to obtain a representative sample.

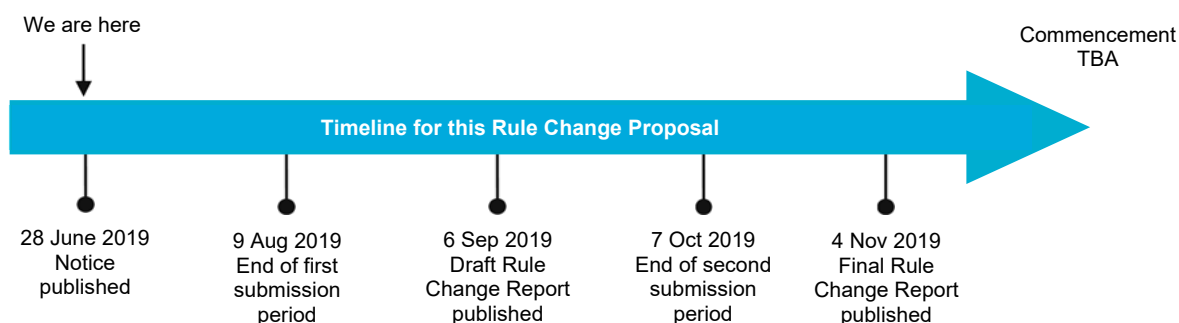
Decision to progress the Rule Change Proposal

The Rule Change Panel has decided to progress this Rule Change Proposal on the basis that stakeholders should be given an opportunity to consider the Rule Change Proposal and provide submissions through the rule change process.

Timeline

This Rule Change Proposal will be progressed using the Standard Rule Change Process, described in section 2.7 of the Market Rules.

The projected timeline for progressing this proposal is:



Call for submissions

The Rule Change Panel invites interested stakeholders to make submissions on this Rule Change Proposal. The submission period is 30 Business Days from the Rule Change Notice publication date. Submissions must be delivered to the RCP Secretariat by **5:00 PM** on **Friday, 9 August 2019**.

The Rule Change Panel prefers to receive submissions by email, using the submission form available at: <https://www.erawa.com.au/rule-change-panel/make-a-rule-change-submission> sent to support@rcpwa.com.au.

Submissions may also be sent to the Rule Change Panel by post, addressed to:

Rule Change Panel
Attn: Executive Officer
C/o Economic Regulation Authority
PO Box 8469
PERTH BC WA 6849

Wholesale Electricity Market Rule Change Proposal

Rule Change Proposal ID: RC_2019_01
Date received: 21 June 2019

Change requested by:

Name:	Claire Richards
Phone:	0416 194 215
Email:	claire.richards@enel.com
Organisation:	Enel X
Address:	Level 18, 535 Bourke St, Melbourne, VIC 3000
Date submitted:	21 June 2019
Urgency:	High
Rule Change Proposal title:	The relevant demand calculation
Market Rule(s) affected:	Appendix 10, clause 4.11.1(j), and consequential amendments as required.

Introduction

Clause 2.5.1 of the Wholesale Electricity Market (WEM) Rules (Market Rules) provides that any person may make a Rule Change Proposal by completing a Rule Change Proposal form that must be submitted to the Rule Change Panel.

This Rule Change Proposal can be sent by:

Email to: support@rcpwa.com.au

Post to: Rule Change Panel
 Attn: Executive Officer
 C/o Economic Regulation Authority
 PO Box 8469
 PERTH BC WA 6849

The Rule Change Panel will assess the proposal and, within 5 Business Days of receiving this Rule Change Proposal form, will notify you whether the Rule Change Proposal will be further progressed.

In order for the proposal to be progressed, all fields below must be completed and the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the Wholesale Market Objectives.

The objectives of the market are:

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;

- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;
- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and
- (e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

Details of the Proposed Rule Change

1. Describe the concern with the existing Market Rules that is to be addressed by the proposed rule change:

This rule change request proposes a change to the way in which the relevant demand of a demand side programme is calculated. While not explicitly defined in the WEM rules, the relevant demand level is generally intended to be an estimate of a demand side programme's counterfactual demand when it is dispatched. If a programme is dispatched, it is required to deliver the quantity of capacity it is certified for as a reduction from its relevant demand level.

1.1 Background

In 2014 Minister Nahan initiated a review of the WEM. The objective of the review was to reduce the cost of capacity at a time when the SWIS was experiencing a capacity oversupply. It was identified that the fundamental problem with the reserve capacity mechanism was a lack of price response to capacity – capacity was overvalued when there was an excess and underpriced when there was a shortage. The rules made in 2016 at the conclusion of the review adjusted the capacity price formula to progressively steepen the capacity price curve.

The review also resulted in significant amendments to the way in which the demand side participates in the reserve capacity mechanism, including:

1. **Pricing of demand side capacity.** The new rules introduced pricing arrangements that severely devalued a demand side programme's provision of capacity compared to generation, despite the fact that changes were also made to harmonise the demand side service requirements with those applying to the supply side.
2. **Calculation of a demand side programme's relevant demand.** The new rules changed the relevant demand calculation. Prior to the change, the relevant demand of a demand side programme was the median of the historical consumption quantities of all associated loads in the 32 trading intervals of highest demand during the hot season of the previous capacity year. A demand side programme's relevant demand is now determined based on the lesser of:
 - the fifth percentile of the top 200 system peak hours in the previous capacity year – that is, the tenth lowest of 200 consumption values
 - the sum of all individual reserve capacity requirement (IRCR) contributions of the associated loads of the programme.¹

¹ See clause 4.26.2CA and Appendix 10 of the WEM rules.

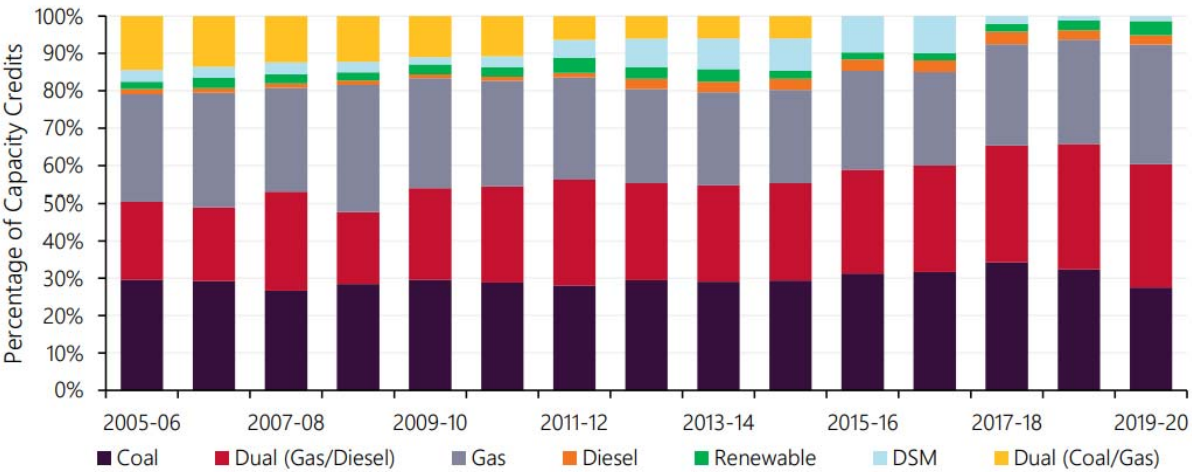
These two changes significantly undervalued and under-calculated the contribution that the demand side can bring to supporting reliability outcomes in the WEM, and resulted in about 500 MW of demand side capacity exiting the market (relative to the 2016/17 capacity year), as shown in the table below.

Table A: Reduction in demand side participation since 2016 rule changes

	2016-17	2017-18	2018-19	2019-20
Capacity credits assigned to demand side programmes (MW) ²	560	106	57	66
Reduction from 2016/17 levels (MW)	-	-454	-503	-494

The graph below shows this reduction. It also shows that there is even less demand side capacity now than when the WEM started in 2006.

Figure A: Capacity credits by fuel type³



While it could be argued that the exit quickly assuaged over-capacity concerns, the changes:

- ensured that there is no meaningful level of demand side participation in the reserve capacity mechanism
- rendered the WEM an outlier amongst global capacity markets.

This first outcome is inconsistent with the WEM objectives, for the reasons set out in section 1.3 below.

The changes to the capacity price formula were intended to be transitional until a longer-term solution was put in place. This longer-term solution has now been developed and consulted on by the PUO through its work on *Improving reserve capacity pricing signals*.⁴ Enel X supports the implementation of a capacity pricing formula that incentivises an efficient level of capacity to meet the reliability needs of electricity consumers in the SWIS. With such a formula in place, Enel X sees no reason why the regulatory framework should not be technology neutral, consistent with the WEM objectives.

Enel X therefore strongly supports the PUO’s conclusion in its final report that equal

² Data from AEMO. See: <https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Assignment-of-capacity-credits>

³ AEMO, Quarterly energy dynamics, Q4 2018, p. 32.

⁴ See: <https://www.treasury.wa.gov.au/Public-Utilities-Office/Industry-reform/Improving-Reserve-Capacity-pricing-signals/>

remuneration of demand and supply side capacity be restored. This change will go some way toward bringing demand side resources back into the reserve capacity mechanism where there are efficient signals to do so, to the benefit of WA electricity consumers. However, the calculation of relevant demand for a demand side programme was not considered in the PUO’s review. Without change, this calculation will continue to present an unjustifiable and inefficient barrier to the entry of demand side resources.

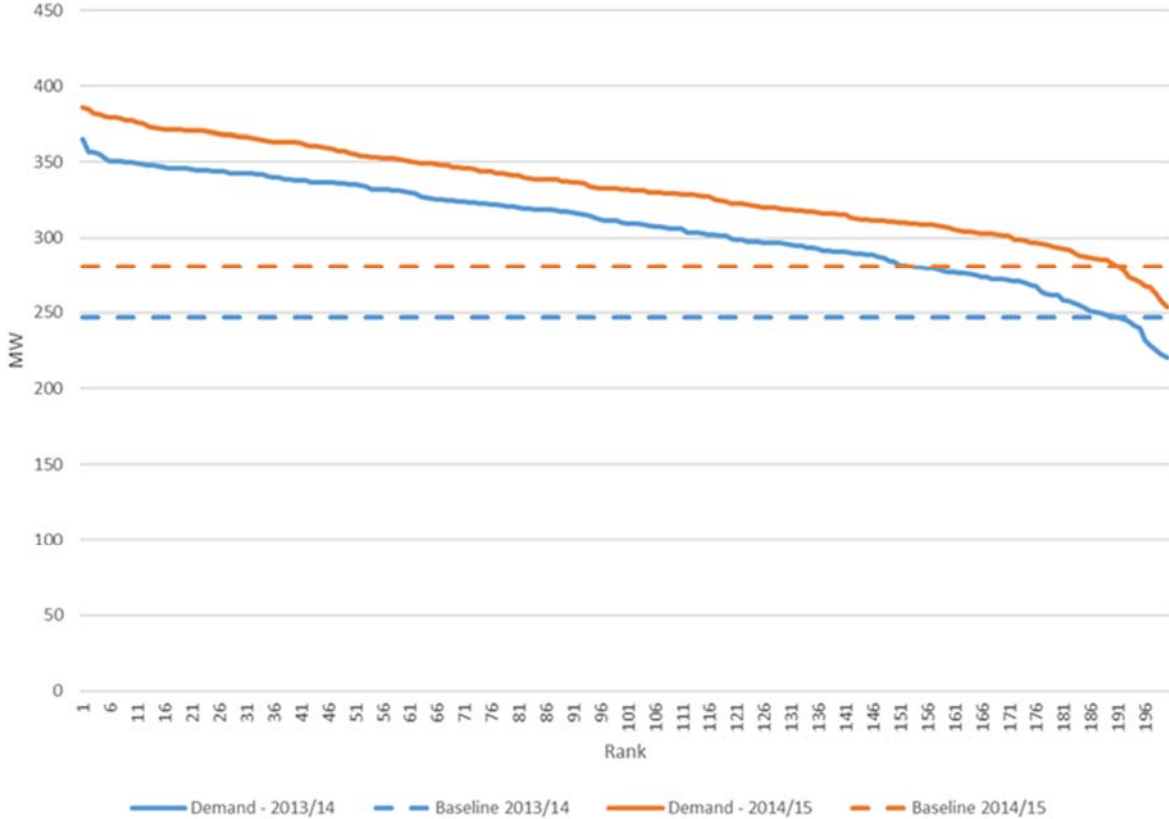
1.2 The issue

The issue with the current relevant demand calculation is that it significantly under-calculates the “curtailability” of loads.

As above, a demand side programme’s relevant demand is currently set at the lesser of the fifth percentile of the top 200 system peak hours in the previous capacity year, and the sum of all IRCR contributions of the programme’s associated loads. As you would expect, in most cases the fifth percentile calculation results in a lower value than the IRCR calculation, and hence sets the programme’s relevant demand.

This is shown in Figure B below, which uses data from a 200 MW sample of Enel X’s portfolio in the 2013/14 and 2014/15 capacity years. The solid lines show the portfolio’s total demand, ranked from the highest demand (rank 1) to the lowest demand (rank 200) in the 200 system peak hours. The dotted lines show what the portfolio’s relevant demand would be under the current fifth percentile calculation.

Figure B: Portfolio demand and relevant demand



The graph shows that the portfolio’s demand was much higher than its relevant demand in the majority of the 200 highest system peak hours.

The “required level” of a demand side programme is calculated by AEMO using the facility’s

relevant demand minus the capacity credits assigned to it.⁵ A capacity provider’s compliance with the various obligations of the reserve capacity mechanism is largely tied to its ability to operate at a level equivalent to its required level. Thus a major consequence of the current relevant demand calculation is that the programme must commit to curtailing a significant amount of load, uncredited, before it reaches its relevant demand level. Participation in the reserve capacity mechanism is therefore uneconomic for many industry sectors, and impossible for others.

This is demonstrated in Table A below, which has been compiled using interval data from the industry sectors that made up the majority of Enel X’s portfolio in the 2014/15 capacity year. It sets out the effective compensation rate for certain industry sectors under the current relevant demand calculation. By “effective compensation rate”, we mean the percentage of the sector’s curtailment that can actually be certified and rewarded through the reserve capacity mechanism. This is a factor of how much the sector is technically able to curtail (“average maximum curtailment”) and the magnitude of the reduction below the relevant demand level (“credited MW”).

The table shows this for the 25, 50 and 100 highest demand hours of the 200 system peak hours.

Table A: Effective compensation rate under the current relevant demand calculation

	Average max. curtailment (MW) ⁶	Credited MW	Effective compensation rate
Agricultural sector (average demand 11.5 MW)			
Top 25 hrs	9.2	4.9	53%
Top 50 hrs	9.0	5.0	56%
Top 100 hrs	8.7	5.1	59%
Commercial property sector (average demand 29.5 MW)			
Top 25 hrs	10.7	-7.9	-
Top 50 hrs	10.5	-7.5	-
Top 100 hrs	10.2	-6.7	-
Manufacturing (average demand 68.1 MW)			
Top 25 hrs	64.6	31.4	49%
Top 50 hrs	63.6	31.6	50%
Top 100 hrs	61.0	32.3	53%
Mining (average demand 153.2 MW)			
Top 25 hrs	141.4	68.3	48%
Top 50 hrs	139.3	68.8	49%
Top 100 hrs	135.5	69.8	51%

⁵ See clause 4.11.3B(c) of the WEM rules. *Required level* is defined as the level of output, in MW, required to be met by a facility as determined in clause 4.11.3B.

⁶ This is based on a curtailment potential of: 70 per cent for agriculture, 30 per cent for commercial property, 80 per cent for manufacturing, 80 per cent for mining and 65 per cent for refrigerated storage.

Refrigerated storage (average demand 8.1 MW)			
Top 25 hrs	7.0	4.3	61%
Top 50 hrs	6.9	4.4	63%
Top 100 hrs	6.7	4.4	67%

The table shows that, under the current rules, most industry sectors can only get credit for about half of the load curtailment they can provide.

The table also shows that the sample loads in the commercial property sector were not able to reduce their aggregate demand enough to reach their relevant demand level at all, even though they were capable of curtailing around 10 MW. As a result, it is likely to be impossible for this sector to offer capacity in the reserve capacity mechanism under the current rules.

Interaction with the 200 hour availability requirement

The rules made in 2016 increased the yearly availability requirement for a programme from 24 hours to 200 hours, and increased the number of values in the relevant demand calculation from 32 intervals to 200 hours. Enel X understands that these changes were made to address a concern that demand side resources would not be able to deliver the capacity they are credited for when called upon. Using a high number of hours increases the range of consumption values in the relevant demand calculation, and thus delivers a low relevant demand level. This presumably gives AEMO a high degree of confidence that the small quantity of certified capacity can be delivered if and when it is called upon.

While not explicitly defined, the relevant demand level is generally intended to be an estimate of a demand side programme's counterfactual demand when it is dispatched. The current relevant demand calculation gives a reasonably accurate estimate of this in the 190th system peak hour, but not during the intervals when a demand side programme is most likely to be dispatched – i.e. during extreme system events.⁷

If the objective is to determine an accurate measure of a programme's demand in the 200 hours AEMO expects it might be dispatched, then a static relevant demand calculation is not the way to achieve this. Using a low, static calculation not only under-calculates and undervalues the potential of the demand side, but results in a very inaccurate picture of the programme's expected consumption in the majority of the 200 hours. The more biased a baseline methodology is (in either direction), the less accurate settlement will be. Reducing bias is an absolute good.

Section 1.4 sets out an alternative relevant demand methodology that can reduce errors and more accurately measure the expected consumption of a demand side programme.

In Enel X's view, any concerns about the availability of a demand side programme are more appropriately addressed through the testing and compliance framework (discussed further in section 1.4.2), not by restricting its participation outright through the relevant demand calculation.

1.3 Implications of the current rules

Under-calculating a programme's relevant demand level means that the number of capacity credits it can be certified for is much less than the capacity it is capable of providing. This has

⁷ The rules prioritise the dispatch of the Synergy portfolio; AEMO will only dispatch a demand side programme if there is a system reliability or security concern. See rule 6.12 and clauses 7.6.1C-D of the WEM rules.

the following outcomes:

- Fewer resources offering capacity, resulting in higher market-wide capacity costs, which are borne by WEM consumers.
- Significant under-utilisation of demand side capacity resources that:
 - provide valuable CO₂ emission reductions
 - relieve network congestion,
again to the detriment of WEM consumers.
- Limited participation by many demand side resources, and no participation by others (e.g. businesses in the commercial property sector). Opening up energy frameworks to demand side resources not only supports competition and cost reductions in those frameworks, but brings benefits to the providers themselves, including improved business competitiveness, which has economy-wide benefits.

These outcomes are inconsistent with the WEM objectives to:

- promote the economically efficient, safe and reliable production and supply of electricity
- encourage competition ... including by facilitating efficient entry of new competitors
- avoid discrimination ... against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions
- minimise the long-term cost of electricity
- encourage the taking of measures to manage the amount of electricity used and when it is used.

The benefits of enabling demand side participation in electricity markets are well recognised. In its consultation paper on *Improving reserve capacity pricing signals*, the PUO noted that:

“Demand side capacity providers must continue to be able to participate in the Reserve Capacity Mechanism arrangements. Demand side capacity is a valuable participant in most capacity markets worldwide. It has many unique characteristics that generation capacity cannot easily or cheaply replicate; being scalable, with short lead times to develop and be readily able to enter and exit the capacity market.”

Capacity markets around the world have arrived at this same conclusion. However, for the reasons set out above, demand side capacity providers will not be able to participate in the reserve capacity mechanism at any meaningful level unless the relevant demand calculation is amended.

1.4 Proposed changes to address the identified issues

In Enel X's view, the objective of the relevant demand calculation should be to determine the “baseline” consumption of a demand side resource with reasonable accuracy when it is dispatched. For the reasons explained above, the current relevant demand calculation does not achieve this. This section sets out Enel X's proposed amendments to the WEM rules so that this objective can be achieved.

1.4.1 Define relevant demand

‘Relevant demand’ is not currently a defined term. Enel X proposes that the WEM rules be amended to include a clear definition of relevant demand, and a clear description of what the calculation is intended to achieve, in order to provide clarity to all stakeholders on its underlying

purpose.

Enel X's proposed definition of relevant demand is:

An estimate of a demand side programme's counterfactual demand when it is dispatched.

1.4.2 Implement a dynamic baseline methodology

In Enel X's view, any baseline methodology for a demand side programme should strike an appropriate balance between accuracy, simplicity and integrity.⁸

- **Accuracy** means that customers receive credit for no more and no less than the curtailment they actually provide.
- **Simplicity** means that the methodology makes baseline and curtailment calculations easy to calculate and easy for customers to understand.
- **Integrity** means that the methodology does not encourage irregular consumption, and irregular consumption does not influence baseline calculations. In other words, a methodology with a high level of integrity will protect against attempts to "game the system".

Enel X has always advocated for baselines that are determined on a dynamic basis – that is, in a way that takes into account a load's variability – and we will continue to do so. Enel X operates over 50 demand response programs in 12 countries, and our experience in those markets confirms that dynamic baseline calculations strike a much better balance between accuracy, simplicity and integrity than static baseline methodologies do. Almost all electricity markets around the world with any meaningful level of demand side participation have moved or are moving to the application of dynamic baseline methodologies, including:

- Asia: Japan, South Korea.
- Europe: France, Great Britain, Greece, Ireland, Poland.
- USA: California (CAISO), Mid-Atlantic (PJM), Midwest (MISO), New England (ISO-NE) New York (NYISO), Texas (ERCOT).

The most commonly used dynamic baseline methodology is an "X of Y" methodology. This approach determines a load's expected demand drawing on data from a number of previous days (the "Y"), which typically excludes holidays, previous event days, and weekends. Once a group of prior days is identified as the Y days, that group is narrowed down to a subset of days (the "X") in order to obtain a more representative sample. For example, a demand response event within a summer emergency demand response program will usually be called on a day when demand is expected to be high, driven by extreme weather conditions. Not all of the eligible Y days, however, will have been days with high demand, so a better match could be achieved by choosing the X number of days within Y with the highest load levels. Best practice when "X of Y" baseline methodologies are used is to apply day-of adjustments to more accurately reflect load conditions on the event day.

Enel X is of the view that an "X of Y" methodology is best suited for the WEM for the following reasons.

- It will provide an accurate measure of the expected baseline consumption of a demand

⁸ See: EnerNOC, *The demand response baseline*, 2011, available [here](#); and Florence School of Regulation, *Measuring the intangible: An overview of the methodologies for calculating customer baseline load in PJM*, May 2018, available [here](#).

side programme, thus minimising errors. Dynamic approaches minimise the total error across however many hours of dispatch there turn out to be.

- It will be able to accommodate natural and unexpected fluctuations in demand in *any* interval. Dynamic baseline methodologies measure baseline consumption much more accurately than static approaches because they are capable of taking into account a load's variability over whatever hours the programme is actually dispatched. As a result, dynamic baselines do not require you to estimate the number of hours of dispatch and the extent to which they will coincide with system demand peaks.
- It is reasonably easy to apply, and is therefore not expected to involve significant costs. Dynamic methodologies do not require the market operator to conduct ongoing calculations. Calculations are only needed to estimate the programme's counterfactual demand during dispatches and tests.
- Such methodologies are commonly used in other markets, and thus there is a large amount of analysis and expertise available to draw upon.

It may not be necessary to settle on one specific approach. Many international markets offer a range of baseline methodologies so that the most accurate one can be chosen for each site.

Dynamic baselines and capacity certification

One question that has been raised about the applicability of a dynamic baseline methodology in the WEM is how a demand side programme's capacity can be certified two years ahead of the relevant capacity year. Enel X's response to this is: the same way that all capacity is certified now. That is:

- AEMO determines the quantity of capacity credits that a facility is eligible for, based on its expectation of how much generation or load reduction the facility will be able to provide. If the facility does not yet exist (e.g. the generator has not yet been built or specific loads have not been identified), AEMO has the ability to check whether the provider's intentions are credible in determining the quantity of capacity credits it is eligible for. The rules give AEMO the ability to request regular updates on the progress of new facilities.
- The participant commits to make that quantity of capacity available in the relevant capacity year. A prudent demand side programme provider will contract with more load than is required to meet its capacity obligations. It will do this so it can be certain of delivering the full quantity of certified capacity in light of natural or unexpected variations in the availability of the individual loads in the programme.

This is the approach to capacity certification taken in other capacity markets, regardless of what baseline methodology they use.

Baseline methodologies are purely about *measurement*. They provide an objective means to calculate how much load is curtailed when a demand side programme is dispatched in real or test events. This calculation can then be used to determine whether the programme was compliant with its capacity delivery obligations.

While this information is likely to be helpful in the ongoing capacity certification process for existing programmes, it is not necessary (or even possible) to use a relevant demand calculation to determine how much capacity a new demand side programme could be certified for. As above, there is an existing framework by which AEMO certifies capacity for new facilities. This framework is somewhat confused by the second limb of clause 4.11.1(j) of the WEM rules, which refers to relevant demand in the context of capacity certification. Enel X

recommends that this clause be clarified through this rule change process to remove any confusing link between capacity certification and the relevant demand calculation.

Ensuring the availability of demand side resources

Enel X is also aware of a concern that the amount of capacity a demand side programme has been credited for will not actually be available. Again, a framework exists and applies to all capacity providers to mitigate this risk. Specifically:

- The participant puts up a security deposit that AEMO can draw down on if the participant fails to meet certain obligations. The PUO's final report on *Improving reserve capacity pricing signals* recommended that demand side programmes be required to provide a security deposit each year of capacity certification.⁹
- AEMO conducts testing to ensure that each facility is capable of meeting its reserve capacity obligations. The PUO's final report on *Improving reserve capacity pricing signals* recommended more stringent testing of demand side programmes, including by conducting random tests.

Demand side programme providers have an incentive and a regulatory obligation to make sure that the amount of capacity they committed to provide is there in the relevant capacity year, as do generators. The security, testing and penalty regimes described above are robust enough to deter any participant from taking on a capacity obligation speculatively or failing to deliver contracted capacity. When implemented, the PUO's final recommendations with respect to security deposits and testing for demand side programmes will make this framework even more robust.

Availability monitoring

The WEM rules currently require a demand side programme to pay a refund to AEMO if it fails to comply with its reserve capacity obligations in any given trading interval. AEMO determines whether a refund is payable by calculating the difference between the programme's relevant demand and its minimum load. If this calculation results in a quantity that is less than the programme provider's reserve capacity obligation, a refund is payable in proportion to the deficit.¹⁰

Enel X notes that most capacity markets worldwide do not impose any obligation on the system operator to monitor availability to gain assurance that capacity providers will be able to deliver the capacity they have been credited for. The risk of using an ongoing availability monitoring approach is that it may create a false sense of security. That is, availability monitoring tells a system operator that a programme's baseline is high enough that it's theoretically possible for the programme to reduce its demand by enough to meet its capacity obligations. But it doesn't actually give the system operator any real assurance that the programme will be able to reduce demand by that amount.

Therefore, in line with the approach taken in other capacity markets, Enel X is of the view that continuous availability monitoring of demand side programmes is not required. Rather, any concerns about a demand side programme's inability to meet its reserve capacity obligations are better addressed through the security, testing and penalty frameworks described above.

⁹ Demand side resources are currently only required to provide a security deposit until they pass their first capacity test, just like any other capacity.

¹⁰ See clause 4.26.1A(a)(ii)(6)) of the WEM rules.

1.5 Consultation

Enel X discussed an earlier version of this proposal with AEMO, the PUO and members of the MAC.¹¹ The feedback received from those parties is summarised below.

- The PUO suggested that Enel X:
 - consider whether the rule change would address the concern that demand side resources might not be available when called upon
 - provide some analysis showing the potential impact of implementing the proposed approach on a programme's relevant demand level.
- AEMO suggested that Enel X:
 - clearly articulate how the proposal would better meet the WEM objectives than the current arrangements
 - provide evidence of whether and how this approach has worked in other markets.
- The MAC suggested that Enel X:
 - provide further information on how international capacity markets that use dynamic baselines certify capacity ahead of time
 - make a clear argument as to why the Rule Change Panel and other relevant bodies should consider this rule change as a priority.

We have sought to address these comments in this rule change proposal.

Some members of the MAC had more fundamental questions about the role of the demand side in the reserve capacity mechanism. Specifically, they raised questions about whether demand side resources should be remunerated in the same form and at the same price as other forms of capacity, and concerns that demand side resources will “flood the market” under equal pricing and make it difficult for generators to recover costs. Enel X has not sought to address these comments in this rule change proposal because the PUO made a clear statement in its final report on *Improving reserve capacity pricing signals* that demand and supply side capacity should be remunerated equivalently. Given this, Enel X does not consider it appropriate or necessary to address the aforementioned concerns in this rule change request.

2. Explain the reason for the degree of urgency

Enel X proposes that this rule change request be considered with high urgency. As noted above, the PUO concluded that demand and supply-side capacity should be remunerated equivalently. However, reinstating equal remuneration without a consequential change to the relevant demand methodology would result in serious perverse outcomes, as explained in section 1. Without such a change, Enel X expects that the reserve capacity mechanism will continue to see inefficiently low levels of demand side capacity, to the detriment of electricity consumers in the SWIS.

Enel X recommends that this rule change request commence consideration as soon as the

¹¹ Enel X presented a pre-rule change proposal to the MAC on 5 February 2019.

rules to implement the recommendations in the PUO's final report are finalised.¹² Doing so would mean that the rule could come into effect in the same capacity year as the other changes to the reserve capacity mechanism. It is likely to be more efficient for AEMO to implement, and for industry to comply with, rules that relate to similar issues which come into effect all at once (as opposed to operating under one regime for a period and then another sometime after). Making a rule that addresses the issues identified above will also ensure that the benefits of broader participation by the demand side in the reserve capacity mechanism can be realised in the 2021/22 capacity year.

3. Provide any proposed specific changes to particular Market Rules

Enel X has not provided specific rule drafting for this rule change proposal.

4. Describe how the proposed rule change would allow the Market Rules to better address the Wholesale Market Objectives

Enel X expects that the changes proposed in section 1.4 would allow the Market Rules to address all of the Wholesale Market Objectives better than the status quo, for the reasons set out under each objective below.

- (a) *to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;*

It is well recognised that the demand side must play an increasing role in meeting the future reliability and security needs of electricity systems around the world. WA is no exception. AEMO noted the following recently:¹³

“Historically, the predominant method to avoid involuntary load reductions during peak periods or to address unplanned generation or system outages would be to construct new peaking generation, along with the transmission and distribution necessary to accommodate peak conditions.

Now, with the increase in [distributed energy resources] and the growing capability for voluntary price-responsive demand to contribute to the reliability and security of the power system, properly designed wholesale markets can increase competition and support more economically efficient system-wide asset utilisation. The net outcome of a well-designed two-way market can create significant consumer benefits – a more efficient, reliable and secure system at a lower total cost at the meter.”

By accurately measuring the curtailment of a demand side programme during dispatches, the proposed rule will help to ensure that any existing or future demand side participation in the reserve capacity mechanism can contribute effectively to reliability outcomes in the WEM. It may be the case that the capacity price signals that there is no need for new capacity, or it may signal a need for new capacity. Whichever it is, Enel X's proposed rule will be robust to the changing capacity needs of the system,

¹² Enel X understands that these rules were due to be finalised by the end of April 2019 so that they are in place for the 2019 reserve capacity cycle. At the time of writing, the rules were not yet finalised.

¹³ AEMO, Wholesale demand response mechanisms: Submission to AEMC consultation paper, December 2018, p. 3.

and will ensure that there are incentives for the demand side to offer capacity when it is economically efficient to do so.

The change will also give AEMO a much more accurate picture of the ability of the demand side to help meet peak demand, and thus will support the achievement of a reliable system at efficient cost. Where dynamic baselines are used, the market/system operator has a much clearer picture of how many MW will be curtailed in the event a demand side programme is dispatched. AEMO does not have this visibility under the current relevant demand calculation.

- (b) *to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;*

The proposed rule will remove barriers to the efficient entry and participation of the demand side in the reserve capacity mechanism. Enabling the demand side to offer capacity alongside generation is likely to drive capacity price reductions, and thereby reduce the total cost of all capacity credits that is borne by consumers.

- (c) *to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;*

Efficient markets consider all resources, regardless of technology, to achieve cost-effective supply-demand balance and reliability outcomes. In effect, the objective of markets is to minimise the cost (and maximise the surplus) of serving load and maintaining reliability. Resources in wholesale markets should therefore have comparable requirements. This will help foster competition, leading to better service and lower costs. Comparable does not necessarily mean identical, since different resources have different characteristics.¹⁴

As noted above, the rule changes implemented in 2016 had the effect of discriminating against the use of curtailable loads in the reserve capacity mechanism. Enel X's proposed rule, along with the restoration of equal pricing between the supply and demand sides, will ensure that demand side capacity is valued correctly and can contribute to efficient reliability outcomes in the WEM. This will remove the discrimination against the demand side that currently exists.

- (d) *to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and*

As noted above, the demand side will play an increasing role in meeting the needs of the electricity systems of the future. There is significant latent demand response capability in the WEM that can be accessed at relatively low cost to help meet the reserve capacity requirement. Accessing the full potential of this capability is likely to be much more efficient than building new generation.

Greater participation by the demand side can also result in more efficient use of the grid. Flexible load curtailment during high demand periods makes capacity available when and where it is needed and reduces the need to invest in new generation or network capacity. The flow on impact of this is a minimisation of the long-term costs consumers pay for the electricity system.

¹⁴ PJM, Demand response strategy, 28 June 2017, p. 10.

- (e) *to encourage the taking of measures to manage the amount of electricity used and when it is used.*

Technological advancements and rising electricity costs have prompted many electricity users to explore ways to manage their electricity use. Exposing the demand side to prices that signal the cost of electricity consumption at different times is an effective means to incentivise more efficient electricity consumption behaviours.

However, a framework that continues to underestimate curtailment by a demand side programme goes against objective of enabling participation by technologies that are capable of doing this. Properly measuring the performance of the demand side will encourage more loads to participate in the reserve capacity mechanism, and will more explicitly expose them to price signals to reduce or shift demand to help support system reliability.

5. Provide any identifiable costs and benefits of the change

Enel X's views on the costs and benefits of the proposed rule are set out below, as well as in the description of the proposal in section 1.4.

- Dynamic baseline methodologies more accurately calculate and value the curtailment of loads in a demand side programme. If adopted, this will incentivise greater participation by the demand side in the reserve capacity mechanism when there are efficient price signals to do so.
- Enabling the demand side to participate in the reserve capacity mechanism will give AEMO a much more accurate picture of how much demand response capability there is in the WEM, which can help with their system planning. In the delivery year, certified demand side programmes are available as a dispatchable resource, not only to deal with periods of extremely high demand, but other problems as well, such as gas supply interruptions.

This is in contrast to customers who manage their consumption to avoid IRCR charges. Such actions tend to reduce peak demand, but AEMO cannot rely on this for planning purposes because it is unknown whether a customer will reduce its consumption during IRCR intervals just because it did so last year. Further, customers' actions to reduce IRCR charges cannot address supply or network problems unless those problems happen to coincide with likely peak demand intervals.

Active participation by the demand side in the reserve capacity mechanism gives AEMO a predictable, dispatchable resource. However, IRCR avoidance actions will continue to be preferable for customers if the relevant demand calculation continues to value only a fraction of the curtailment they are capable of.

- Dynamic baseline methodologies strike a balance between the diverse incentives that relevant stakeholders have regarding the participation of the demand side in the WEM, which are:
 - Market Customers want the highest possible relevant demand so they can be certified for, and sell, capacity credits in relation to the flexible capacity under their control.
 - Individual curtailable loads want revenue for selling capacity credits, but also want to reduce their IRCR.
 - AEMO wants accurate, realistic relevant demand levels so it knows how much

capacity is available.

- Consumers want the most accurate, realistic relevant demand levels so that they aren't paying for capacity that isn't there.
 - A dynamic baseline methodology will deliver a reliable relevant demand calculation. That is, it will more accurately represent the demand of a demand side programme during intervals in which it is dispatched.
 - If the PUO's recommendation to restore equal pricing between the demand and supply sides is taken up, this rule change will bring the reserve capacity mechanism even closer to truly equal treatment and valuation of all capacity providers.
 - Dynamic methodologies are not costly or complex to design or administer. There is plenty of knowledge and analysis from other markets that can be drawn upon to help make sure this is the case.
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