WHOLESALE DEMAND RESPONSE GUIDELINES – INITIAL VERSION

FINAL REPORT AND DETERMINATION

Published: **March 2021**

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EXECUTIVE SUMMARY

The publication of this Final Report and Determination (**Final Report**) concludes the Rules consultation process conducted by AEMO to make the Wholesale Demand Response (**WDR**) Guidelines (**Guidelines**) under clause 3.10.1 of the National Electricity Rules (**NER**).

On 11 June 2020, the Australian Energy Market Commission (**AEMC**) made the final rule (*National Electricity Amendment (Wholesale demand response mechanism) Rule 2020 No. 9*) (**Rule**) to facilitate WDR in the National Electricity Market (**NEM**) through implementing the WDR mechanism (**WDRM**).

The WDRM will be implemented on 24 October 2021. The substantive parts of the Rule – in particular, as referenced in this Final Report – will commence on 24 October 2021.

The Guidelines must be made and published by 24 June 2021, being four months before 24 October 2021, as required under NER 11.125.2(a)(1).

On 22 October 2020, AEMO published the Notice of First Stage Consultation and the Issues Paper for the Guidelines, through which AEMO aimed to facilitate informed industry feedback to AEMO on the requirements and processes to be set out in the Guidelines. AEMO received seven submissions in respect of the Issues Paper. Multiple respondents provided feedback on each of 10 of the 11 issues in the Issues Paper. In response to these submissions, AEMO made several changes to the proposals in the Issues Paper.

On 21 January 2021, AEMO published the Notice of Second Stage Consultation, Draft Report and Determination (**Draft Report**) and draft Guidelines. AEMO received seven submissions to the Second Stage Consultation. Respondents provided feedback on nine of the 11 issues in the Draft Report.

Having considered matters raised in submissions and discussions with stakeholders, AEMO has made several changes to its proposals as set out in this Final Report, including:

- applying the regional threshold for non-telemetered WDRUs as a dispatch constraint, instead of as a cap on the classification of such WDRUs;
- where AEMO requires the endorsement of the relevant Distribution Network Service Provider (**DNSP**) in order to approve a proposed aggregation of WDRUs (**DNSP Endorsement**), allowing a Demand Response Service Provider (**DRSP**) to apply to AEMO to aggregate the WDRUs without the DNSP Endorsement if the DRSP provides evidence that it has applied to the relevant DNSP at least 25 business days prior; and
- minor drafting changes and clarifications.

AEMO welcomes feedback from DNSPs and prospective DRSPs that shows a willingness to engage further in the design of the DNSP Endorsement process. AEMO will initiate this engagement following the publication of this Final Report.

Accordingly, AEMO's final determination is to make the Guidelines in the form published with this Final Report, with effect from 24 June 2021.

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1. STAKEHOLDER CONSULTATION PROCESS

As required under NER 3.10.1(e), AEMO has consulted on the development of the Guidelines in accordance with the Rules consultation procedures in NER 8.9. AEMO's timeline for this consultation is outlined in Table 1.

Table 1 Timeline for this consultation

Deliverable	Indicative date
Notice of First Stage Consultation and Issues Paper published	22 October 2020
First stage submissions closed	27 November 2020
Draft Report, Draft Guidelines & Notice of Second Stage Consultation published	21 January 2021
Second stage submissions closed	19 February 2021
Final Report published	25 March 2021

In addition, this consultation has included various discussions at meetings and workshops:

- AEMO established the WDR Guidelines Technical Working Group (**WDRG-TWG**) to enable effective dialogue between AEMO and stakeholders.[1] The topics covered in the Guidelines were discussed at WDRG-TWG meetings on 11 August 2020 and 12 October 2020.
- AEMO hosted a workshop with WDRG-TWG members on 23 November 2020 during the first stage of consultation (**First Stage Consultation**) to provide an opportunity for stakeholders to ask questions about issues in the Issues Paper.
- AEMO presented a summary of stakeholder submissions to the Issues Paper, as well as AEMO's consideration of these submissions, at the WDR Consultative Group (**WDR CG**) meeting on 15 December 2020.[2]
- AEMO hosted a workshop with WDRG-TWG members on 8 February 2021 during the second stage of consultation (**Second Stage Consultation**) to provide an opportunity for stakeholders to ask questions about issues in the Draft Report.

A glossary of terms used in this Final Report is at **Appendix A**.

[1] The WDRG-TWG terms of reference and records of meetings are available at https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/wdr.

[2] The WDR CG terms of reference and records of meetings are available at https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/wdr.

2. BACKGROUND

2.1. NER requirements

NER 3.10.1(a) requires AEMO to develop and publish, and allows it to amend, the Guidelines, which set out:

- requirements determined by AEMO which AEMO reasonably considers necessary for classification of a load as a WDRU in accordance with NER 2.3.6 or for aggregation in accordance with NER 3.8.3;
- information about the requirements for telemetry and communications equipment for WDRUs;
- the methodology for determination of a threshold, determined under NER 3.10.1(c), for the total quantity of WDR in a region above which AEMO will impose additional or alternative telemetry and communications equipment requirements for any load in the region seeking to be classified as a WDRU after the threshold is reached;
- information about the process for development of baseline methodologies (**BMs**), including how proposals for new BMs may be made;
- the process for a DRSP to apply to AEMO for approval to apply a BM and related baseline settings to a WDRU;
- the process for a DRSP to apply to AEMO for approval to change the maximum responsive component (**MRC**) of its WDRU;
- arrangements for the provision of information about the MRC of the WDRU and the BM and baseline settings applicable to the WDRU; and
- other information determined by AEMO relating to the supply of WDR under the NER.

NER 3.10.1(b) requires AEMO, in developing or amending the Guidelines, to have regard to:

- the need not to distort the operation of the market;
- the need to maximise the effectiveness of WDR at the least cost to end use consumers of electricity; and
- any other matter determined by AEMO acting reasonably and which must be specified by AEMO in the Guidelines.

NER 3.10.1(e) requires AEMO to comply with the Rules consultation procedures when making or amending the Guidelines.

2.2. Context for this consultation

On 11 June 2020, the AEMC made the Rule to facilitate WDR in the NEM through implementing the WDRM. Under the WDRM, consumers would be able to sell demand response in the wholesale market either directly or through specialist aggregators, for the first time.

The WDRM will be implemented on 24 October 2021. The substantive parts of the Rule – in particular, as referenced in this Final Report – will commence on 24 October 2021.

The Guidelines must be made and published by 24 June 2021, being four months before 24 October 2021, to allow registration and classification processes to commence transitionally, as required under NER clause 11.125.2(a)(1).

2.2.1. WDRM does not include all forms of demand-side participation

The Rule was designed "to allow meaningful volumes of demand-side participation in dispatch and associated system operation benefits at minimal cost and in the near term".[3]

The AEMC noted that:

- the WDRM will not suit all types of demand-side participation, as it "requires consumer loads to be controllable for the purposes of scheduling and predictable for the purposes of baselines";[4]
- other customers may be able to provide demand response through other mechanisms, such as "retailer-led demand response programs or providing emergency reserves through the reliability and emergency reserve trader";[5] and
- potential future reforms to create a two-sided market, which could supersede the WDRM, "would result in consumers benefiting from increasing opportunities to provide demand response services".[6]

Accordingly, AEMO has had regard to the requirements for loads participating in the WDRM to be controllable and predictable.

2.3. First stage consultation

On 22 October 2020, AEMO issued the Notice of First Stage Consultation and published the Issues Paper, through which AEMO aimed to facilitate informed industry feedback on the requirements and processes to be set out in the Guidelines.

On 23 November 2020, AEMO hosted the workshop with WDRG-TWG members, to provide an opportunity for stakeholders to ask questions about issues in the Issues Paper, prior to the deadline for submissions.

AEMO received seven written submissions in respect of the Issues Paper. Copies of all written submissions, as well as minutes of meetings and issues raised in forums (excluding any confidential information) are available from: https://aemo.com.au/consultations/current-and-closed-consultations/wdr-guidelines.

On 15 December 2020, AEMO presented a summary of these submissions, as well as AEMO's consideration of these submissions, at the WDR CG meeting.

By 31 December 2020, AEMO had also met with several individual stakeholders, including current gentailers, specialist demand response aggregators, large customers and Network Service Providers (**NSPs**).

2.4. Second stage consultation

On 21 January 2021, AEMO issued the Notice of Second Stage Consultation and published the Draft Report and draft Guidelines.

On 8 February 2021, AEMO hosted a workshop with WDRG-TWG members, to provide an opportunity for stakeholders to ask questions about issues in the Issues Paper, prior to the deadline for submissions.

AEMO received seven written submissions to the Second Stage Consultation. Copies of all written submissions (excluding any confidential information) are available from: https://aemo.com.au/consultations/current-and-closed-consultations/wdr-guidelines.

[3] AEMC, 11 June 2020, *Rule Determination, National Electricity Amendment (Wholesale Demand Response Mechanism) Rule 2020 / National Electricity Retail Rule (Wholesale Demand Response Mechanism) Rule 2020*, page iii, https://www.aemc.gov.au/sites/default/files/documents/final_determination_-_for_publication.pdf.

[4] Ibid.

[5] Ibid.

[6] Ibid.

By 5 March 2021, AEMO had met or corresponded with interested stakeholders to discuss aspects of the draft Guidelines. Stakeholders included gentailers, specialist demand response aggregators, NSPs and advocates, many of whom had provided submissions during the Second Stage Consultation.

3. SUMMARY OF MATERIAL ISSUES

Respondents provided feedback on 9 of the 11 issues in the Draft Report.

The key issues in the Draft Report are listed in Table 2 below. AEMO's determination in respect of each issue is detailed in section 4 of this Final Report.

Table 2 Listing of issues arising from the Draft Report

No.	Issue	Raised by
1.	Principles for developing and amending the Guidelines	-
2.	Scope of the Guidelines	-
3.	Conditions for classification of a load as a WDRU	Multiple respondents
4.	Conditions for aggregation of WDRUs	Multiple respondents
5.	Assessment of power system security impacts of WDRU aggregation	Multiple respondents
6.	WDRU telemetry and communications requirements	Multiple respondents
7.	Regional thresholds for increased visibility of WDRUs	Multiple respondents
8.	Baseline methodology development process	Enel X
9.	Applying a baseline methodology and settings to a WDRU	Enel X
10.	Maximum responsive component	Enel X
11.	Access to baseline data	Energy Networks Australia (**ENA**)

A detailed summary of the issues raised by Consulted Persons in submissions, together with AEMO's response, is contained in **Appendix B**.

4. DISCUSSION OF MATERIAL ISSUES

4.1. Principles for developing and amending the Guidelines

4.1.1. Issue summary and submissions

AEMO must have regard to a set of principles when developing or amending the Guidelines (**Guidelines Principles**).

The Guidelines Principles:

- must include the principles in NER 3.10.1(b)(1)-(2) (**Mandatory Principles**), being, respectively:
  - market operation non-distortion (**Mandatory Principle 1**); and
  - WDRM effectiveness maximisation at least cost to consumers (**Mandatory Principle 2**); and
- may include any other principles which AEMO specifies in the Guidelines, as per NER 3.10.1(b)(3) (**Additional Principles**).

Finally, in making and amending the Guidelines, AEMO must have regard to the national electricity objective in NEL section 7 (**NEO**):

> *The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:*
> *(a) price, quality, safety, reliability and security of supply of electricity; and*
> *(b) the reliability, safety and security of the national electricity system.*

AEMO proposed in the Issues Paper that the Guidelines should include two Additional Principles, while stakeholders suggested a further three Additional Principles during First Stage Consultation. In the Draft Report, AEMO assessed the five proposed Additional Principles:

- for consistency with the NEO; and
- to avoid duplication among the Guidelines Principles, in order to avoid duplicative effort when assessing the initial Guidelines and any future amendments.

Accordingly, AEMO determined in the Draft Report to include only one Additional Principle in the draft Guidelines, being "the need to ensure adequate power system operation, and the maintenance of power system security and reliability of supply".

No feedback on this topic was provided in submissions in Second Stage Consultation.

4.1.2. AEMO's conclusion

Accordingly, AEMO has determined to include one Additional Principle in the Guidelines, being "the need to ensure adequate power system operation, and the maintenance of power system security and reliability of supply". This determination is unchanged from the Draft Report, is consistent with the NEO, and avoids duplication among the Guidelines Principles.

4.2. Scope of the Guidelines

4.2.1. Issue summary and submissions

AEMO may include in the Guidelines any other information determined by AEMO related to the supply of WDR under the NER, which is additional to the information in NER 3.10.1(a)(1)-(7) (NER 3.10.1(a)(8)) (**Additional Information**).

In the Draft Report, consistent with the proposal in the Issues Paper, AEMO determined to include the following Additional Information in the draft Guidelines:

- explanation of how AEMO will assess the potential impacts of WDRU aggregation on power system security (section 4.5);
- explanation of how AEMO will assess the MRC proposed by a DRSP (section 4.10) in respect of:
  - a WDRU at a connection point (**NMI-Level MRC**); and
  - a WDR dispatchable unit identifier (**DUID**), which may comprise a single WDRU or an aggregation of WDRUs (**DUID-Level MRC**); and
- description of the arrangements for provision of WDR dispatch data to DRSPs and retailers, in addition to information about WDRU classification (section 4.11).

The majority of First Stage Consultation submissions in respect of the Additional Information generally supported AEMO's proposal. These parties agreed with AEMO that it may be beneficial to include further Additional Information – particularly related to BM metrics, baseline compliance testing and dispatch non-conformance assessments – but recognised that this may extend the timeline for developing the initial Guidelines, and suggested that this content could be added to the Guidelines at a later date.

No feedback on this topic was provided in submissions in Second Stage Consultation.

4.2.2. AEMO's conclusion

AEMO has determined to include the Additional Information described above, consistent with the Draft Report.

AEMO notes that the revised approach to application of regional thresholds for non-telemetered WDR, described in section 4.7, means that the thresholds are no longer determined under NER 3.10.3. Consequently, the methodology described in the Guidelines for determining these regional thresholds is now included as Additional Information under 3.10.1(a)(8).

AEMO considers that the scope of Additional Information balances the inclusion of further information on WDR-related processes in the Guidelines with the benefit of timely development of the initial Guidelines. AEMO will consider consolidation of additional WDR-related process documentation into subsequent updates to the Guidelines.

4.3. Requirements for classification of a load as a WDRU

4.3.1. Issue summary and submissions

AEMO may stipulate additional requirements in the Guidelines for the classification of a load as a WDRU (NER 2.3.6(e)(7)) (**Additional Classification Requirements**).

In the Draft Report, AEMO determined to include the Additional Classification Requirements listed in Table 3 in the draft Guidelines, which add to the requirements in NER 2.3.6(e), as well as clarify and reflect other NER requirements. AEMO only made one amendment to the Additional Classification Requirements that had been proposed in the Issues Paper, related to spot price exposure, to increase flexibility of WDR participation and more closely aligns with the AEMC's policy position in respect of spot price exposure.[7]

[7] AEMC, 11 June 2020, *Rule Determination, National Electricity Amendment (Wholesale Demand Response Mechanism) Rule 2020 / National Electricity Retail Rule (Wholesale Demand Response Mechanism) Rule 2020*, pages 180-182. https://www.aemc.gov.au/sites/default/files/documents/final_determination_-_for_publication.pdf.

Table 3 Additional Classification Requirements in draft Guidelines

Additional Classification Requirement		Rationale
1	5-minute metering must be available at the connection point	To facilitate settlement and dispatch conformance monitoring
2	The connection point must not be classified as an ancillary service load by a different DRSP or Market Customer	NER 2.3.4(d), 2.3.5(e1), 2.3.6(f)
3	The load may not be represented by more than one NMI	NER 2.3.6(m)(1)(i)
4	The load may not be participating in RERT at the time of classification	NER 3.20.3(g)
5	The DRSP has declared to AEMO that it will provide an available capacity of zero for the load in relation to any trading interval in which the load will be, or is likely to be, spot price exposed	NER 2.3.6(e)(2), 3.8.2A(d)

During the First Stage Consultation, two parties expressed support for the Additional Classification Requirements as proposed in the Issues Paper, with clarification sought in respect of small business customer loads and loads with multiple connection points. In addition:

- Enel X proposed that the Guidelines should include a deadline for assessing an application to classify a load as a WDRU. AEMO determined not to include such a deadline until further experience was gained in the operation of the WDRM.
- Enel X sought further information about the application fees that would apply to applications to classify loads as WDRUs, aggregate WDRUs, or to change the BM or MRC in respect of a WDRU. AEMO advised that it would determine the various DRSP application fees by 30 June 2021, and would communicate these through the WDR CG.
- Brickworks suggested that five-minute metering should not be required for WDR participation. In response, AEMO noted that WDR settlement in accordance with the settlement equations in NER 3.15.6B would only be possible with five-minute metering.

The following feedback was provided in the Second Stage Consultation:

- Enel X and PIAC each requested AEMO to consider approaches that would allow sites with multiple connection points to participate.
- Enel X also:
  - sought clarification on the information that would need to be provided with the application for load classification;
  - reiterated its preference for the Guidelines to include a deadline for assessing an application to classify a load as a WDRU; and
  - provided suggestions to improve or clarify the drafting of the Guidelines.

4.3.2. AEMO's assessment

NER 2.3.6(m)(1)(i) stipulates that a load may only be a qualifying load if it "comprises a single *connection point* or a *parent connection point* in respect of all its associated *child connection points* that are not *market connection points*". Consequently, AEMO considers that it has no discretion to allow loads with multiple connection points to participate in the WDRM.

In response to the other aspects of Enel X's submission:

- AEMO will provide information about application requirements through the relevant WDR application forms and guides, and will conduct a WDR registration workshop prior to the commencement of the WDR registration processes.
- AEMO has determined to not include in the Guidelines a deadline for assessing an application to classify a load as a WDRU, due to uncertainty about the volume of applications that will be submitted when the WDRM commences. However, AEMO will consider including such a deadline in a future update to the Guidelines, after having gained experience with the operation of the WDRM.
- AEMO has amended the drafting of the Guidelines in response to Enel X's suggestions, including changes to the wording of Additional Classification Requirements 2 and 5 (see Appendix B for details).

AEMO considers that the:

- Additional Classification Requirement 1 of five-minute metering supports Mandatory Principle 1 of market operation non-distortion; and
- Additional Classification Requirements 2-5, which predominantly clarify and reflect other NER requirements, support Mandatory Principle 2 of WDRM effectiveness maximisation at least consumer cost.

4.3.3. AEMO's conclusion

AEMO has determined to include in the final Guidelines the same:

- Additional Classification Requirements as in the draft Guidelines, with minor drafting amendments as suggested by Enel X; and
- brief explanation regarding loads with multiple connection points as included in the draft Guidelines.

4.4. Requirements for aggregation of WDRUs

4.4.1. Issue summary and submissions

AEMO:

- may stipulate additional requirements in the Guidelines for the aggregation of WDRUs to be approved for the purpose of central dispatch (NER 3.8.3(b2)(4)) (**Additional Aggregation Requirements**); and
- has determined that the Guidelines will explain AEMO's approach to assessing the potential impacts of WDRU aggregation on power system security, as noted in section 4.2.

In the Issues Paper, AEMO indicated that:

- no Additional Aggregation Requirements had yet been identified; and
- the Guidelines would describe circumstances in which AEMO may require aggregated WDRUs to be disaggregated, as standard terms and conditions that AEMO may impose when approving aggregations under NER 3.8.3(b3).

AEMO received no specific submissions on this issue during the First Stage Consultation. However, AEMO determined in the Draft Report to include two Additional Aggregation Requirements in the draft Guidelines, being that:

- all of the WDRUs within the proposed aggregation are contained within a single load forecasting area specified in the Power System Operating Procedure – Load Forecasting (SO_OP_3710); and

- an assessment by the relevant DNSP(s) on whether the aggregation has sufficient granularity to manage potential localised security impacts (**DNSP Endorsement**) should be required where:
  - the application seeks to add one or more WDRUs to an aggregated DUID; and
  - the proposed aggregation includes WDRUs at or behind a single transmission node with an aggregate MRC of 5 MW or greater.

The Draft Report explained that AEMO sought to provide additional clarity in the draft Guidelines regarding its assessment of the power system security impacts of aggregation (discussed in section 4.5 below), in order for the assessment process to be as transparent and predictable as practicable. AEMO considered that the goals of transparency and predictability would be advanced by stipulating relevant power system security criteria as conditions for aggregation where these can be specified precisely.

In their submissions in the Second Stage Consultation:

- AGL supported AEMO's approach that an aggregation must be contained with a single load forecasting area.
- AGL and Enel X also provided suggestions to improve or clarify the drafting of the Guidelines.

4.4.2. AEMO's assessment

AEMO has made minor drafting amendments in the final Guidelines, in response to suggestions from AGL and Enel X (see Appendix B for details).

As explained in section 4.5, AEMO has determined to allow a DRSP to apply to aggregate WDRUs without a DNSP Endorsement (where it would otherwise be required) where it can demonstrate that it has sought DNSP Endorsement at least 25 business days earlier, but has yet to receive a response. Accordingly, AEMO has amended the Additional Aggregation Requirement related to the DNSP Endorsement, to reflect this determination.

AEMO considers that the inclusion of the two Additional Aggregation Requirements and the description of standard terms and conditions to be imposed under NER 3.8.3(b3) are consistent with the Guidelines Principles, by transparently describing the conditions for initial and ongoing aggregation of WDRUs. This proposal is consistent with the need to maximise the effectiveness of the WDRM at least cost for consumers.

4.4.3. AEMO's conclusion

Accordingly, AEMO has determined to:

- include the two Additional Aggregation Requirements, amended from the draft Guidelines as described in section 4.4.2; and
- describe standard terms and conditions to be imposed upon approving an aggregation, which include a description of circumstances in which AEMO will require the aggregation to be disaggregated.

4.5. Assessment of power system security impacts of WDRU aggregation

4.5.1. Issue summary and submissions

AEMO is required under NER 3.8.3(b2)(2) to be satisfied that power system security will not be materially affected by the proposed aggregation, when assessing an aggregation application.

In this regard:

- NER 3.8.1(a) requires AEMO to "operate a *central dispatch* process to *dispatch…wholesale demand response units*…in order to balance *power system supply* and demand, using its reasonable endeavours to maintain *power system security* in accordance with Chapter 4…".
- NER 3.8.1(b)(4) requires AEMO to consider "*power system security* requirements determined as described in Chapter 4 and the *power system security standards*" in the central dispatch process.
- NER 4.3.1(i) requires AEMO to arrange the dispatch of WDRUs "allowing for the dynamic nature of the *technical envelope*".
- NER 4.3.1(j) requires AEMO "to determine any potential *constraint* on the *dispatch*" of WDRUs.
- NER 4.3.2(a) requires AEMO "to use its reasonable endeavours…to achieve the *AEMO power system security responsibilities* in accordance with the *power system security* principles."

These responsibilities apply for the entirety of the national grid, including transmission and distribution networks.

Accordingly, AEMO must consider:

- the potential impact of WDR dispatch on system security; and
- the constraints which may need to be applied to WDRUs, to keep the power system operating within the technical envelope.

The WDRM allows for the aggregation of multiple WDRUs that may be dispersed within a region, unlike a generating system, which is at a specific location in the power system. AEMO may need to dispatch WDRUs on only one side of a network constraint, to manage network congestion within a region. However, the automated nature of the central dispatch process means AEMO cannot do so with certainty if a DUID includes WDRUs on both sides of the network constraint.

AEMO proposed in the Issues Paper to describe its assessment of power system security implications in the Guidelines, including:

- the triggers for assessment;
- the mechanisms to provide information to DRSPs about areas of the power system where WDRU aggregation may affect power system security; and
- the matters that AEMO will consider when assessing the power system security impacts of aggregation, including power quality, voltage stability and the potential need for constraints to manage network congestion.

Stakeholders provided the following feedback during First Stage Consultation:

- Origin supported AEMO's proposal, suggesting further informative content that could be included in the Guidelines.
- Multiple submitters raised concerns about the proposals:
  - cautioning against the imposition of requirements on DRSPs to address broader power system challenges that are not specifically caused by WDR participation;
  - noting that customers can already choose to be spot price exposed through their retail contracts, so could shift load in response to spot prices in the same way as they would under the WDRM, but without obligations to provide AEMO with visibility or controllability;
  - cautioning against the use of subjective, imprecise definitions;
  - suggesting that setting the assessment triggers as low as 5 MW could present a barrier to entry; and

  - recommending that the Guidelines should provide as much information as possible, to make the power system security assessment as transparent and predictable for DRSPs as possible.

- Energy Queensland indicated that DNSPs would require information to assess potential risks to the distribution network and any operating envelopes that may need to apply, including:
  - the NMIs that are proposed to be aggregated;
  - the DUID-Level MRC and potential duration of dispatch; and
  - the ramp rate.

Accordingly, AEMO determined in the Draft Report to provide increased clarity in the draft Guidelines, to allow the process for assessing the power system security impacts of aggregation to be as transparent and predictable as possible. Specifically, AEMO:

- sought to avoid the use of imprecise terminology in the draft Guidelines;
- identified two power system security criteria for aggregation that could be specified precisely (explained in section 4.4.1);
- described in the draft Guidelines the conditions that would require AEMO to assess the power system security impacts of proposed aggregations smaller than 5 MW; and
- explained in the draft Guidelines the basis of AEMO's decision to approve or reject a proposed aggregation.

AEMO also determined in the Draft Report to augment the process for assessing the security impacts of aggregation which was proposed in the Issues Paper with the requirement for the DNSP Endorsement under specified circumstances, subject to further consideration and consultation. AEMO recognised that DNSPs are best placed to assess the local power system security risks that may arise in their distribution networks from aggregation.

The Draft Report indicated that:

- A DNSP's assessment of a proposed aggregation would result in an endorsement or rejection of the proposed aggregation, as well as advice of any restrictions that must be imposed on the aggregation, such as ramp rate limits, to ensure that the dispatch of WDRUs will not infringe the technical envelope.
- A DNSP would only reject a proposed aggregation where it considered that the WDRUs within the proposed aggregation need to be represented as two or more DUIDs in constraints used in central dispatch. If this occurred, AEMO presumes that the DNSP would advise AEMO of any constraints to be applied to the DUIDs in the central dispatch process.

The Draft Report described options to facilitate the DNSP Endorsement process within, or alongside, AEMO's assessment of an application to aggregate WDRUs, noting the advantages and disadvantages of the various options. Stakeholders were asked a series of questions related to the timing, duration, scope, outputs and transparency of the DNSP assessment.

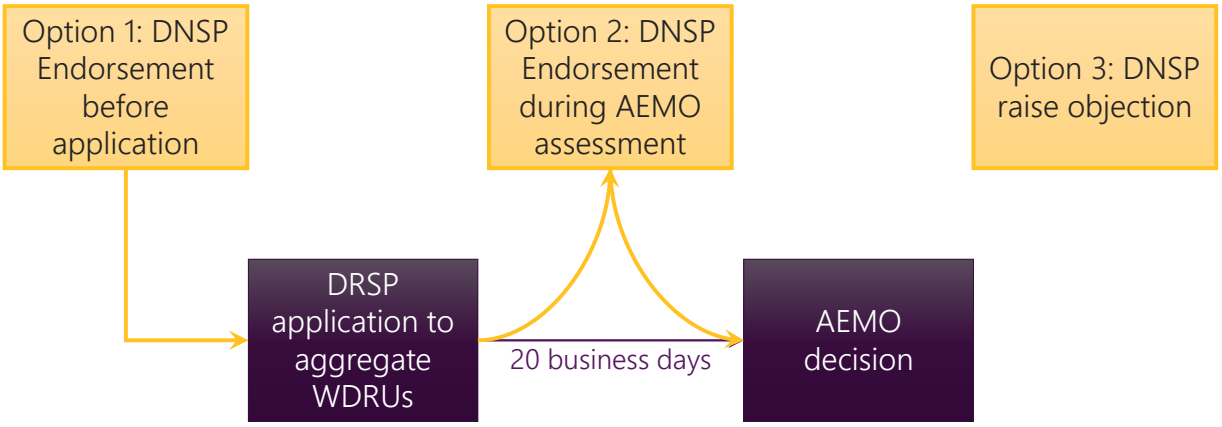
The following feedback was provided in the Second Stage Consultation:

- Enel X opposed the inclusion of a system security assessment for WDRU aggregations, noting that many forms of demand response already occur in the system, without such an assessment.
- Enel X and PIAC:
  - expressed concern that such assessments for small aggregations are likely to deter participation in the WDRM, with Enel X suggesting that it may push customers toward spot price exposure instead, over which AEMO has no visibility or control;

  - suggested that the 5 MW threshold is too low, arbitrarily set and may unnecessarily limit participation; and
  - sought clarity on the boundaries and interaction between assessments of power system security by AEMO and DNSPs, and whether AEMO would be able to reject a DNSP Endorsement.
- AGL expressed support for the 5 MW threshold for the power system security assessment, but expressed concern about the purpose of the DNSP assessment, as well as the role that the DNSP will play. AGL recommended that AEMO should be cognisant of:
  - the potential future DNSP roles of market and system operation to support orchestration of distributed energy resources (**DER**);
  - increasing use of demand response by DNSPs for network support and non-network planning solutions;
  - the need for consistency and transparency of assessment across different DNSPs; and
  - AEMO's exclusive responsibility in the NER to assess material system security impacts, suggesting that DNSPs should only provide information to aid AEMO's assessment, rather than have the ability to accept or reject a proposed aggregation.
- ENA, Energy Queensland and TasNetworks all expressed support for the inclusion of the DNSP Endorsement, while Enel X and PIAC acknowledged that DNSPs are best placed to assess power system security impacts in their distribution networks.
  - Energy Queensland expressed a preference to assess all WDRU aggregations, but accepted that this may present disincentives and noted the 5 MW threshold in the draft Guidelines.
  - TasNetworks expressed support for the 5 MW threshold.
- ENA, Enel X, Energy Queensland and TasNetworks expressed willingness to collaborate for the detailed design of the DNSP Endorsement process, and suggested various guiding principles and elements of that process.
- ENA speculated on the implications for existing DNSP contractual obligations and future DNSP investment to support WDR participation.
- In respect of the timing options set out in the Draft Report, which are shown schematically in Figure 1:
  - ENA, Enel X[8], Energy Queensland, PIAC and TasNetworks supported Option 1, under which the DRSP would provide the DNSP Endorsement as part of its application to aggregate WDRUs.
  - Enel X expressed support for the ability for DRSPs to apply to aggregate without a DNSP Endorsement under Option 1, where the DNSP Endorsement is still being assessed.
  - AGL supported Option 2, under which AEMO would seek the DNSP Endorsement after receiving an application to aggregate WDRUs, on the basis that Option 2 preserves the role of AEMO as the sole decision maker in respect of the appropriate measures to address material risks to system security.
  - ENA considered that Option 3, under which the DNSP would advise of the need to disaggregate an existing aggregation, may warrant further consideration once the WDRM is operational. No other submitters expressed support for Option 3.
  - TasNetworks indicated that it could commit to responding to most applications within 20 business days, but that a DNSP should be able to negotiate longer timeframes for particularly complex proposals.

[8] Enel X indicated that Option 2 may be preferable, if the DNSP required any information from AEMO to conduct the assessment.

Figure 1 Timing options for DNSP Endorsement



4.5.2. AEMO's assessment

In response to Enel X's submission, AEMO has provided further explanation of the purpose of the power system security assessment for WDRU aggregations at the beginning of section 2.2.3 of the Guidelines. As explained in the Draft Report, AEMO is required to assess the system security impacts of proposed aggregations, in the sense that AEMO must:

- be satisfied that power system security will not be materially affected by a proposed aggregation (NER 3.8.3(b2)(2);
- dispatch scheduled facilities within the dynamic nature of the technical envelope (NER 4.3.1(i)); and
- determine any potential constraint on the dispatch of scheduled facilities (NER 4.3.1(j)).

Unlike other forms of demand response, WDRUs are scheduled facilities, which fall under AEMO's obligations in NER 4.3.1.

In respect of AGL's opposition to the DNSP Endorsement process, AEMO:

- Recognises that NER 3.8.3 assigns it the responsibility for assessing the potential power system security impacts of an aggregation of WDRUs, but notes that AEMO does not have sufficient visibility at this time to assess power system security impacts arising from WDRU aggregation in the distribution system.
- Considers that, in the absence of a formal DNSP Endorsement process, the assessment of local power system security impacts in the distribution system would still occur, but would default to Option 3 in the Issues Paper (occurring post-aggregation and potentially leading to disaggregation).
- Considers that this would be more disruptive to DRSPs, DNSPs and AEMO, leading to AEMO's preference that the DNSP Endorsement occurs at an early stage in the aggregation process.

The use of 5 MW thresholds for AEMO's and DNSPs' assessments was accepted in some submissions. However, Enel X and PIAC expressed concern that this threshold is too low and could deter WDR participation. AEMO acknowledges that 5 MW is a 'rule of thumb' threshold that triggers various assessments and obligations, not limited to the WDRM, due to the potential for adverse system security outcomes. AEMO sees no justification to apply a different threshold in respect of WDR than other processes. However, AEMO also notes that an adverse assessment of a proposed aggregation will not prevent participation in the WDRM; it will merely require the same loads to participate as two or more DUIDs.

The majority of submitters expressed a preference for Option 1 for the timing of the DNSP Endorsement. Under Option 1, the applicant would be required to submit the DNSP Endorsement as part of its application to aggregate WDRUs. AEMO agrees with these submitters that Option 1 is preferable because:

- AEMO considers that Option 2 is infeasible due to the likely inability to accommodate the DNSP assessment within AEMO's obligation in NER 3.8.3(e) to evaluate applications within 20 business days. AEMO formed this view having regard to TasNetworks' submission that it could commit to responding to most applications within 20 business days, but may require longer in some circumstances, as well as discussions with NSP stakeholders.
- As noted above, AEMO considers that Option 3 would be more disruptive to all stakeholders, as compared with Option 1.

However, as foreshadowed in the Draft Report and supported by Enel X, AEMO has determined to allow a DRSP to apply to aggregate WDRUs without a DNSP Endorsement (where it would otherwise be required), where the DRSP can demonstrate that it has sought the DNSP Endorsement at least 25 business days earlier but the DNSP has yet to complete the assessment. AEMO considers that this allowance will mitigate the possibility of long process delays in the DNSP Endorsement.

Under Option 1, the DNSP Endorsement occurs before the DRSP applies to AEMO to aggregate WDRUs. Consequently, AEMO considers that it does not have the power to specify details of the DNSP Endorsement process in the Guidelines.

However, AEMO welcomes the willingness expressed by multiple submitters to support the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs, with the aim of documenting a consistent and transparent process. AEMO will assist the facilitation of this work after publication of this Final Report. AEMO suggests that the process documentation could take the form of a guide or other information published on the ENA website. The exact form of the process documentation would need to be decided as part of the detailed design of the DNSP Endorsement process.

AEMO does not share ENA's view that the DNSP Endorsement process may have implications for existing DNSP contractual obligations and future DNSP investment to support WDR participation. AEMO considers that:

- The customer and the DRSP are responsible to ensure that the participation of that customer in the WDRM is consistent with the terms of its connection agreement.
- The assessment that forms the DNSP Endorsement should not be contingent on future network investment, as this could introduce delays and uncertainty to the process. If, in future, network investment enabled aggregation that was previously rejected, the DRSP could then apply to aggregate, once the investment had occurred.

AEMO has also made amendments in the final Guidelines in response to submissions by Enel X and AGL, to:

- provide explanatory text at the beginning of section 2.2.3, to clarify that the power system security impacts of a proposed aggregation may need to be assessed by both AEMO and DNSPs (in respect of impacts in their distribution networks);
- require in paragraph 2.2.3(c) that, where AEMO does not approve a proposed aggregation, it will provide information on dispatch constraints that would need to be applied to the WDRUs in the proposed aggregation; and
- refer to the specific location in the Power System Operating Procedure – Load Forecasting (SO_OP_3710) that describes the load forecasting area boundaries.

AEMO considers that the process for assessing the power system security impacts of aggregation satisfies the Guidelines Principles by appropriately balancing Mandatory Principle 1 of market operation non-distortion and Mandatory Principle 2 of WDRM effectiveness maximisation at least consumer cost.

4.5.3. AEMO's conclusion

AEMO has determined that the process for assessing the power system security impacts of aggregation will be as set out in the draft Guidelines, with the addition of an ability for an applicant to submit its application to AEMO without a DNSP Endorsement (where it would otherwise be required), where the DRSP can demonstrate that it has sought DNSP Endorsement at least 25 business days earlier but the assessment has yet to be completed.

AEMO has also provided further clarifications and explanations in the Guidelines, in response to matters raised in submissions.

4.6. WDRU telemetry and communications requirements

4.6.1. Issue summary and submissions

AEMO must be reasonably satisfied that a DRSP has adequate communications and/or telemetry in place to support the issuing of dispatch instructions, for AEMO to approve the classification of a load as a WDRU (NER 2.3.6(e)(4)).

In the Issues Paper, AEMO proposed that these requirements would be consistent with those that apply for generating units to the extent practicable, with the Guidelines to describe:

- that telemetry would be required for:
  - an individual WDRU where the NMI-Level MRC is 5 MW or greater;
  - an aggregation of WDRUs where the DUID-Level MRC is 5 MW or greater, with data to be provided at the aggregated level (not for the individual WDRUs);
  - WDRUs that a DRSP has classified within multiple DUIDs at or behind a single transmission node (or a group of neighbouring transmission nodes if deemed necessary due to power system conditions), where the aggregate MRC is 5 MW or greater; and
  - individual or aggregated WDRUs where the NMI-Level MRC or DUID-Level MRC, as applicable, is below the 5 MW threshold, in weaker areas of the power system where AEMO considers that telemetry is necessary to support the maintenance of power system security;
- the mechanisms through which information is provided to DRSPs about weaker areas of the power system that may affect WDRU aggregation, which may include the Integrated System Plan, Transmission Annual Planning Reports, Distribution Annual Planning Reports and the Congestion Information Resource;
- the processes for DRSPs to request exemption from the requirement to provide telemetry data and for AEMO to assess such requests; and
- that telemetry data would represent real-time estimates of the quantity of WDR that is being provided by the WDRU (individual or aggregated, as applicable).

Further, AEMO proposed that the Guidelines would refer to the Power System Data Communications Standard (**Standard**).[9] The Standard sets out technical requirements related to technology interfaces, data quality, reliability and redundancy of data supply, as well as security measures.

[9] Available at https://aemo.com.au/en/energy-systems/market-it-systems/nem-guides/power-systems.

The majority of submissions in the First Stage Consultation that addressed telemetry and communications requirements expressed opposition to the proposed requirements. These submissions:

- observed that WDR participation is different from generation, cautioning against applying the same telemetry requirements;
- suggested that the case for requiring telemetry from DRSPs had not been made, noting that customers can currently vary their consumption without notifying AEMO;
- suggested that the traditional SCADA connection for real-time telemetry was costly and likely to be a barrier to entry, and that alternative, lower-cost interfaces may be better suited for WDR;
- indicated that some overseas markets have opted to not require telemetry from demand response providers;
- indicated that, until AEMO completed its review of the Standard, it was difficult for DRSPs to assess the costs of participation in the WDRM, and this uncertainty was likely to delay the entry of DRSPs; and
- suggested that the issue of real-time telemetry would need to be addressed more fully, were the WDRM to be extended to small customers in future, including as part of the long-term transition to a two-sided market.

In the Draft Report, AEMO took a 'first principles' approach to reassess its proposal for telemetry requirements in the Issues Paper, in light of the opposing submissions. Through this approach, AEMO reconfirmed the suitability of the 5 MW threshold. AEMO also examined the value of real-time telemetry for power system operation, considering that there are two conditions in which real-time telemetry data from DRSPs would improve upon the assumption of perfect adherence to a dispatch instruction, and that this improvement is important for power system operation, in terms of:

- Operational forecasting at regional level – AEMO considers that the application of regional thresholds for non-telemetered WDR is important to limit the risk of demand forecast errors resulting from erroneous real-time estimates of delivered WDR (as explained in section 4.7).
- Management of localised congestion – Even though a regional threshold for non-telemetered WDR may not have been reached, more accurate real-time observations of WDR dispatch performance may be critical where WDRUs or aggregations of WDRUs need to be represented in constraints in the central dispatch process. In these circumstances, undetected WDR dispatch error may result in a constraint being inadvertently breached, or may require more conservative limits to be set in the constraint to avoid breaches.

AEMO determined in the Draft Report that, where a regional threshold for non-telemetered WDR has not been reached, telemetry will be required in the following situations:

- an individual WDRU, where the NMI-Level MRC is 5 MW or greater;
- WDRUs that a DRSP has classified at or behind a single transmission node (or a group of neighbouring transmission nodes, if deemed necessary due to power system conditions), where the aggregate MRC is 5 MW or greater;[10] or
- individual or aggregated WDRUs, where the NMI-Level MRC or DUID-Level MRC, as applicable, is below the 5 MW threshold, in a congested area of the power system where:
  - existing scheduled plant needs to be curtailed to manage power system conditions (such as voltage, transient or thermal limits); and

[10] This applies irrespective of the aggregation status of the WDRUs.

– AEMO considers that telemetry is necessary to support the maintenance of power system security.[11]

However, AEMO determined that telemetry would not need to be provided for aggregations of WDRUs with a DUID-Level MRC of 5 MW or greater that do not meet the criteria above, because:

- AEMO and the relevant DNSP(s) (in specific circumstances) will have assessed the aggregation, being satisfied that it will not materially impact power system security; and
- the aggregation is unlikely to be represented in constraints in central dispatch.

The following feedback was provided in the Second Stage Consultation:

- AGL supported the relaxation of telemetry requirements for geographically dispersed aggregations of WDRUs, but suggested that AEMO should consider circumstances where telemetry may be necessary in order to monitor the performance of one or more loads within an aggregation.
- Enel X indicated that it was difficult to comment on whether the proposed framework strikes the right balance between costs and benefits until the exact telemetry requirements are known, noting that these requirements would be unclear until the review of the Standard had been completed. Enel X suggested that it may be appropriate to revisit the telemetry and communications requirements in the Guidelines following the review of the Standard.
- Enel X also noted that it had separately sent questions to AEMO about the telemetry and communications requirements in Appendix A of the draft Guidelines.
- From the perspective of assessing telemetry requirements, Energy Queensland enquired as to how AEMO intended to manage loads that can be switched between feeders and TNIs.

4.6.2. AEMO's assessment

No material changes to the telemetry and communications requirements were suggested in the Second Stage Consultation.

- In response to AGL's suggestion that telemetry requirements may need to apply to a subset of WDRUs in an aggregation, AEMO considers that it could exercise its power to require an existing aggregation to be disaggregated if it considered that system security risks may arise due to the actions of a those WDRUs. Accordingly, AEMO considers that it will not require telemetry for a subset of the WDRUs in an aggregation.
- In response to Enel X's submission, AEMO acknowledges that the cost to meet telemetry and communication requirements will be less certain until the upcoming review of the Standard has been completed. However, AEMO notes that this may be partly alleviated by the changed approach to applying the regional thresholds for non-telemetered WDR that is outlined in section 4.7.
- In response to Energy Queensland's question, AEMO notes that meter standing data is the only mechanism through which AEMO receives information about the location of a load within the distribution network. Feeder data is not included, and AEMO will only become aware that a load has switched between TNIs where this is advised by the DNSP.

AEMO has also made minor amendments to Appendix A of the Guidelines, increasing the minimum update frequency from 30 seconds to 60 seconds and clarifying requirements.

Accordingly, AEMO has determined that the telemetry and communications requirements in the final Guidelines are the same as proposed in the draft Guidelines. AEMO considers that these requirements satisfy the Guidelines Principles by supporting:

[11] The draft Guidelines describe the mechanisms through which DRSPs are provided with information about congested areas of the power system, as noted in section 4.5.2.

- the use of telemetry data in circumstances where it will provide a material benefit to maintaining adequate power system operation (Additional Principle 1) and avoiding distortions in the market (Mandatory Principle 1); and
- WDRM effectiveness maximisation at least consumer cost (Mandatory Principle 2), by limiting the need for telemetry data to those circumstances where it will provide a material benefit.

4.6.3. AEMO's conclusion

AEMO has determined that the WDR telemetry and communications requirements in the final Guidelines are to be consistent with the draft Guidelines, with only minor updates to Appendix A of the Guidelines as described in section 4.6.2.

4.7. Regional thresholds for increased visibility of WDRUs

4.7.1. Issue summary and submissions

AEMO may determine regional thresholds for the total quantity of WDR in each region above which AEMO will impose additional or alternative telemetry and communications equipment requirements for any load in the region seeking to be classified as a WDRU after the threshold is reached (NER 3.10.1(c)).

In the Issues Paper, AEMO proposed that it would initially set conservative values for the regional thresholds for non-telemetered WDR, but would allow these to be revised over time, based on observations of WDR dispatch performance and assessments of the impact on forecasting risk and uncertainty. The Draft Report:

- articulated the reason for setting regional thresholds to support operational forecasting accuracy, in response to submissions from Enel X and PIAC, who considered that the case had not been adequately made in the Issues Paper;
- expanded on the proposal in the Issues Paper, including specifying the triggers and methodology for revisions to the regional thresholds, as well as the mechanism through which the thresholds would be applied; and
- acknowledged that the specification of regional thresholds could create a first-mover advantage situation, as indicated by Enel X and PIAC, as an unavoidable consequence.

The following feedback was provided in the Second Stage Consultation:

- Enel X and PIAC did not support the imposition of thresholds based on the assumption of poor WDR dispatch performance. While Enel X supported the ability for the thresholds to be adjusted over time, it considered that the proposed approach would create uncertainty for DRSPs about the telemetry and communications requirements that would apply to them. PIAC expressed concern that the imposition of regional thresholds would create first-mover advantages and may discourage the development of WDR, therefore suggesting that AEMO explore alternative mechanisms.
- AGL and World Kinect Energy Services (**Kinect**) each proposed that the regional thresholds could be applied in a more dynamic way. Rather than applying the thresholds to cap the amount of non-telemetered WDR that was classified in a region, they could be applied as constraints in NEMDE. They suggested that this would alleviate the first-mover advantage problem and would improve the achievement of least-cost dispatch outcomes.

4.7.2. AEMO's assessment

AEMO explained its reasons for determining regional thresholds, and for the conservative initial threshold values, in section 4.7.2 of the Draft Report. AEMO acknowledges that the conservatism of the initial thresholds may create some uncertainty for DRSPs. However, AEMO considers that this conservatism is

warranted, given variable observations from RERT dispatch of demand response, while noting the significant differences between the RERT and WDR mechanisms. Accordingly, AEMO has determined that the thresholds will be determined and updated as described in the Draft Report and draft Guidelines.

However, AEMO agrees with the suggestion of AGL and Kinect that the regional threshold could be applied as a dispatch constraint in NEMDE. AEMO agrees that this alternative approach to applying the regional thresholds will:

- maintain the benefits of stipulating regional thresholds for non-telemetered WDR as detailed in the Draft Report, specifically:
  - limiting the potential for market distortion resulting from demand forecast errors, which may arise due to undetected WDR dispatch error;
  - reducing the risk of additional costs for consumers that may arise from increased frequency control ancillary service (**FCAS**) requirements, increased conservatism in constraints and reduced market efficiency; and
  - supporting power system operation;
- alleviate the first-mover advantage problem that is inherent when regional thresholds are applied as a cap on the amount of non-telemetered WDR that can be classified in a region; and
- promote market efficiency, by increasing price-based competition between WDRUs.

In practice, for example, AEMO may:

- determine a regional threshold of 100 MW;
- approve the classification of non-telemetered WDRUs in that region with an aggregate NMI-Level MRC of 120 MW; and
- apply a constraint in central dispatch, so that only 100 MW of non-telemetered WDR is dispatched in the region.

Accordingly, AEMO will not determine the thresholds under NER 3.10.1(c), which would lead to the imposition of "additional or alternative telemetry and communications equipment requirements for any *load* in the *region* seeking to be classified as a *wholesale demand response unit* after the threshold is reached".

Instead, AEMO will determine a threshold for each region – being the maximum total quantity of WDR, in MW, that may be dispatched at one time, for which no telemetry data is provided – which will be applied as a dispatch constraint (**Regional Threshold**).

In this regard:

- NER 3.8.1(a) requires AEMO to "operate a *central dispatch* process to *dispatch*…*wholesale demand response units*…in order to balance *power system supply* and demand, using its reasonable endeavours to maintain *power system security* in accordance with Chapter 4…".
- NER 3.8.1(b)(4) requires AEMO to consider "*power system security* requirements determined as described in Chapter 4 and the *power system security standards*" in the central dispatch process.
- NER 4.3.1(i) requires AEMO to arrange the dispatch of WDRUs "allowing for the dynamic nature of the *technical envelope*".
- NER 4.3.1(j) requires AEMO "to determine any potential *constraint* on the *dispatch*" of WDRUs.
- NER 4.3.2(a) requires AEMO "to use its reasonable endeavours…to achieve the *AEMO power system security responsibilities* in accordance with the *power system security* principles."

If AEMO elects to determine regional thresholds under NER 3.10.1(c), AEMO is obliged under NER 3.10.1(d) to publish monthly updates of progress towards meeting the regional thresholds. AEMO has included an obligation in the final Guidelines for it to publish monthly updates that compare the quantity of non-telemetered WDR classified in each region with the regional thresholds, despite the thresholds not being determined under NER 3.10.1(c).

Since the publication of the draft Guidelines, AEMO identified two errors in the definition of the term SE_t (the scaled regional dispatch error) in the formula for revising a Regional Threshold:

- The formula in the draft Guidelines did not use the absolute value of the observed dispatch error. This has been corrected in the final Guidelines.
- In the draft Guidelines, the observed dispatch error was to be scaled by multiplying by the ratio between the current Regional Threshold and the aggregate NMI-Level MRC for non-telemetered WDRUs classified in the region. The corrected drafting in the final Guidelines ensures that the scaling is performed by multiplying the observed dispatch error by the ratio between the current Regional Threshold and the aggregate NMI-Level MRC for non-telemetered WDRUs dispatched in the region.

AEMO considers that its methodology for the determination and application of the Regional Thresholds for non-telemetered WDR is consistent with:

- Mandatory Principle 1, by limiting the potential for market distortion resulting from demand forecast errors;
- Mandatory Principle 2, by:
  - enabling entry of WDR into the market without telemetry and promoting price competition between WDRUs;
  - reducing the risk of additional costs for consumers that may arise from increased FCAS requirements, increased conservatism in constraints and reduced market efficiency; and
  - ensuring costs are commensurate to the resulting risks and benefits, by scaling the need for telemetry according to the magnitude of the observed dispatch error; and
- Additional Principle 1, by ensuring that telemetry data is available where necessary to support power system operation.

4.7.3. AEMO's conclusion

AEMO has determined to set and update the Regional Thresholds for non-telemetered WDR as proposed in the Draft Report, but to apply the thresholds as dispatch constraints in NEMDE.

4.8. Baseline methodology development process

4.8.1. Issue summary and submissions

NER 3.10.3 allows AEMO to develop additional BMs, which must be published in a register of BMs and baseline settings. The development of a new BM may be triggered by a proposal from a Registered Participant, or may be initiated by AEMO. The development of any additional BM will involve the implementation of IT system changes, with time and cost considerations.

As proposed in the Issues Paper, AEMO determined in the Draft Report that its decision to implement a new BM would consider:

- the need for consistent results to be achievable when different parties calculate a baseline for a WDRU using the approved BM, baseline settings and the same set of metering data (consistent with NER 3.10.3(c)); and

- AEMO's assessment of the relative costs and benefits of developing the new BM, recognising that any new BM will need to be implemented in AEMO's systems.

Further, the Draft Report described AEMO's proposed process for development of new BMs, which included:

- an application process through which a proponent would provide AEMO with a detailed outline of the proposed BM calculation and any related baseline settings, and evidence of benefits that may be realised through the introduction of the BM;
- estimation of implementation time and cost, in recognition that these may vary depending on the complexity of a proposed BM and its similarity to any existing BMs;
- a requirement for AEMO to publish a market notice advising that a new BM has been proposed, AEMO's draft position and estimated implementation cost/schedule, followed by a consultation period of 20 business days for stakeholders to provide feedback; and
- a requirement for AEMO to publish its final decision within 20 business days of submissions closing.

In response to submissions during the First Stage Consultation, AEMO amended the process from that proposed in the Issues Paper to set a 110 business day cap on the total time from the receipt of a complete application for a new BM to AEMO's final decision on whether to implement the BM. However, AEMO considered that uncertainty about system implementation timeframes prevented it from also capping the implementation time for a new BM.

Enel X commented on the BM development process in its submission in Second Stage Consultation. Enel X supported the inclusion of a deadline for the assessment of a proposed BM, though considered that 110 business days is a long time. Enel X also restated views raised in the First Stage Consultation, that AEMO should:

- include a maximum timeframe for implementing a BM after approval; and
- allow for the development of new BMs to commence as early as possible.

4.8.2. AEMO's assessment

No new recommendations for changes to the BM development process were raised in the Second Stage Consultation.

In response to matters raised by Enel X:

- AEMO considers that uncertainty about implementation timeframes makes it challenging to specify a maximum timeframe for implementing a BM after approval. This uncertainty arises largely due to the potential for coincidence with high priority, resource-intensive projects, such as the implementation of major rule changes.
- AEMO anticipates that its assessment of the incremental benefits of a new BM will require experience with the operation of the WDRM and the performance of existing BMs. Accordingly, AEMO expects that assessments of new BMs will benefit from lessons learned from the first summer of operation of the WDRM (2021-22), potentially resulting in improved efficiency in the establishment of additional BMs. Consequently, AEMO has stipulated in the Guidelines that applications may be submitted on or after 1 April 2022.

Accordingly, AEMO has determined that the BM development process in the final Guidelines will be the consistent with the process proposed in the draft Guidelines. AEMO has made one further amendment, replacing a specific application form with an obligation for AEMO to publish on its website the list of information that must be provided in an application.

AEMO considers that this BM development process balances flexibility and prudent management of implementation cost and time, and includes measures to provide transparency to the applicant and the broader market. Accordingly, AEMO considers that the proposed process is consistent with the Guidelines Principles, particularly Mandatory Principle 2 of WDRM effectiveness maximisation at least consumer cost.

4.8.3. AEMO's conclusion

AEMO has determined that the BM development process is to be consistent with the Draft Report, with only minor changes as described in section 4.8.2.

4.9. Applying a baseline methodology and settings to a WDRU

4.9.1. Issue summary and submissions

AEMO determined in the Draft Report that the process for a DRSP to apply to AEMO for approval to apply a BM and baseline settings to its WDRU would be as proposed in the Issues Paper. This process includes:

- nomination of a BM and baseline settings through either an application form (if concurrent with an application to register as a DRSP) or through the Portfolio Manager system, requiring selection from the register of BMs and baseline settings published by AEMO under NER 3.10.3(d); and
- assessment by AEMO of whether the proposed BM and baseline settings enable the WDRU to satisfy the BM metrics.

The majority of First Stage Consultation submissions on the application of a BM to a WDRU were generally supportive of AEMO's proposed process. AEMO agreed with Brickworks' suggestion that an application to change the BM that applies to a WDRU should not result in an existing WDRU being ineligible for participation in the WDRM while AEMO is assessing the application. AEMO noted in the Draft Report that:

- all WDRUs could continue participating in the WDRM where they are baseline compliant; and
- AEMO is developing a process whereby a DRSP will be able to suspend a baseline non-compliant WDRU within an aggregation that will allow the remainder of the aggregation to continue participating in the WDRM.

Only Enel X commented on this topic in the Second Stage Consultation, suggesting that the proposed approach appeared sensible and supporting the ability for DRSPs to initiate this process via the Portfolio Management system.

4.9.2. AEMO's conclusion

AEMO has determined that the process for applying a BM and baseline settings to a WDRU is to be unchanged from the Draft Report.

AEMO considers that this process is transparent and administratively simple, as well as being consistent with the Guidelines Principles, particularly Mandatory Principle 2 of WDRM effectiveness maximisation at least consumer cost.

4.10. Maximum Responsive Component

4.10.1. Issue summary and submissions

The MRC has two main purposes under the NER:

- The NMI-Level MRC caps the WDR settlement quantity at that NMI. This may be a decimal value.
- The DUID-Level MRC caps the amount of WDR capacity that may be offered in central dispatch for that DUID. Where the WDR DUID is an aggregation of WDRUs, the DUID-Level MRC will equal the

aggregate of the NMI-Level MRCs or a lower value specified by AEMO as a condition of aggregation.[12] The DUID-Level MRC, which must be an integer value of at least 1 MW, is an item of bid and offer validation data for the DUID.

AEMO determined in the Draft Report that the Guidelines would set out the following process for a DRSP to apply to AEMO for approval to set or change a NMI-Level MRC or DUID-Level MRC, which was predominantly as proposed in the Issues Paper:

- nomination of the NMI-Level MRC to be made for each relevant load through either an application form (if concurrent with an application to register as a DRSP) or through the Portfolio Manager system;
- nomination of the DUID-Level MRC to be made through either an application form (if concurrent with an application to register as a DRSP) or through the Portfolio Manager system, noting that this nomination may occur as part of an application to aggregate WDRUs or an application to change the NMI-Level MRC for a WDRU that is within an existing aggregation;
- where the nomination is made as part of an application for classification or aggregation, AEMO's assessment of MRC nominations to occur within the existing assessment timeframes for classification and aggregation applications[13];
- for nominations that are not concurrent with applications for classification and aggregation, AEMO to determine whether further information is required within 5 business days, and approve or reject the application as soon as reasonably practicable, but no later than 15 business days from the latter of the initial application or the receipt of any further information that was requested;
- nominations of the NMI-Level MRC to include the identity of the DRSP, details of the load (NMI, address, identity of the end customer (subject to privacy requirements)), the proposed NMI-Level MRC for the WDRU and an explanation of how the WDR will be provided from the load;
- nominations of the DUID-Level MRC to include an explanation for the nomination;
- AEMO's assessment of the MRC nomination to consider the information submitted with the application, metering data from the WDRU and previous dispatch performance (if applicable); and
- where the WDRU will be aggregated with other WDRUs, AEMO to specify that the DUID-Level MRC equals:
  - the value nominated by the DRSP, where a nomination has been made; or
  - the aggregate of the NMI-Level MRCs for the constituent WDRUs, where the DRSP has not nominated a value for the DUID-Level MRC, rounded down to the nearest integer,

  unless AEMO considers that a lower DUID-Level MRC is appropriate, having regard to the matters in the previous paragraph.

The draft Guidelines required a DRSP to resubmit any existing dispatch bids following a change in a DUID-Level MRC, so that these bids may be revalidated against the updated bid and offer validation data. A DRSP is also expected to update its Demand Side Participation Information (**DSPI**) in accordance with the DSPI Guidelines following a change in the NMI-Level MRC of one or more of its WDRUs. These updates are provided to AEMO using the DSPI Portal, which is opened on 31 March each year, with Registered Participants required to provide data that was current as at 31 March of that year, by 5.00pm on 30 April.

[12] NER Chapter 10, glossary definition of "maximum responsive component".

[13] For an application to:
- Classify a load as a WDRU, AEMO must advise the applicant within 5 business days of any further information or clarification required in support of the application (NER 2.3.6(c)). However, a specific deadline is not stipulated for AEMO to approve or reject the application.
- Aggregate WDRUs, AEMO must assess the application and advise the applicant within 20 business days (NER 3.8.3(e)).

One party expressed broad support for AEMO's proposed process during the First Stage Consultation, while other submissions focused on specific aspects of the MRC process:

- In response to the submission from VIOTAS, AEMO noted that the time to assess a proposed MRC change was dependent on circumstances. AEMO considered that the Guidelines should require AEMO to assess applications as soon as reasonably practicable, but no later than 15 business days after the latter of the initial application or the receipt of any further information that was requested, rather than detailing different deadlines for different circumstances.
- AEMO agreed with VIOTAS that a DRSP will be able to apply to change the DUID-Level MRC without making a change to the NMI-Level MRCs of the constituent WDRUs.
- AEMO noted, in response to a suggestion from Brickworks, that the NER Chapter 10 definition of 'maximum responsive component' stipulates that the MRC for an aggregation of WDRUs is as specified by AEMO as a condition of aggregation, or otherwise defaults to the aggregate of the NMI-Level MRCs.

Enel X commented on the MRC change process in its submission in the Second Stage Consultation. Enel X considered that the process for setting and amending the NMI-Level MRC appeared sensible, but questioned the length of the process for setting the DUID-Level MRC, noting that the development of a vibrant and competitive WDR market relies on quick and cost-effective processes.

4.10.2. AEMO's assessment

The only recommendation to vary the MRC change process raised in the Second Stage Consultation was Enel X's suggestion to shorten the process for setting or amending the DUID-Level MRC.

AEMO shares Enel X's aspiration for a vibrant and competitive WDRM and recognises the importance of ensuring that registration processes are as quick and cost-effective as feasible. However, a change to the DUID-Level MRC, which is an item of bid and offer validation data under NER Schedule 3.1, requires manual updates to be made in AEMO's systems. The stipulation in paragraph 5.2(o) of the Guidelines – that the DUID-Level MRC will take effect at least six weeks after the receipt of the application – mirrors the NER requirement at Schedule 3.1(d) that requires updates to bid and offer validation data to be submitted to AEMO at least six weeks prior to the date of the proposed change. However, paragraph 5.2(o) of the Guidelines allows for this to be faster where AEMO agrees for the DUID-Level MRC to apply from an earlier trading day.

Accordingly, AEMO has determined that the MRC change process in the Guidelines will be the same as proposed in the draft Guidelines.

AEMO considers that the process in the Guidelines is transparent and administratively simple, while allowing for the necessary scrutiny of MRC values given their use in AEMO's reliability assessments. AEMO considers that the proposed process is consistent with the Guidelines Principles, particularly:

- Mandatory Principle 2 of WDRM effectiveness maximisation at least consumer cost; and
- Additional Principle 1 of ensuring adequate power system operation, and the maintenance of power system security and reliability of supply.

4.10.3. AEMO's conclusion

AEMO has determined that the process for applying to change the MRC for a WDRU is to be unchanged from the Draft Report.

4.11. Access to baseline data

4.11.1. Issue summary and submissions

AEMO must provide baseline data to DRSPs and retailers which are financially responsible market participants (**FRMPs**). Baseline data encompasses the MRC, BM and baseline settings, and information about dispatch periods and quantities (NER 7.15.6).

The Issues Paper proposed arrangements for the provision of baseline data to DRSPs and FRMPs. It also explained the limitations in the provision of dispatch data to FRMPs, specifically that it would occur on day D+1 and would indicate the dispatch quantity in each trading interval for the DUID (but not individual NMIs).

During the First Stage Consultation, Energy Queensland advised in its submission that DNSPs would require access to some WDR data to allow them to assess risks to the security of the distribution networks, such as the effect of rapid load ramping on voltage levels. AEMO also consulted with DNSPs at a WDR DNSP Workshop held on 11 December 2020, and separately met with Energy Queensland, to better understand DNSPs' concerns regarding the potential impacts of WDR activities on the security of the distribution system.

AEMO determined in the Draft Report that the provision to DNSPs of specific WDRU data, which is designated as confidential information in NER 7.15.6, was necessary to maintain the security of supply of electricity and the national electricity system. AEMO is authorised in section 54G(1) of the NEL to disclose protected information (which includes information classified as confidential information under the NER) under these circumstances.

ENA alone commented on this topic in the Second Stage Consultation, thanking AEMO for recognising the role that DNSPs play in maintaining and supporting the power system, as well as the information they need in order to do so.

4.11.2. AEMO's conclusion

AEMO has determined that the arrangements for the provision of baseline data are to be consistent with the Draft Report, with the only changes being the removal of some prescription of the mechanisms for delivery of data to FRMPs and DNSPs, to preserve flexibility as AEMO makes technology decisions on implementation of the WDRM, in consultation with stakeholders.

AEMO considers that these arrangements provide timely information to Market Participants to inform their decisions and maximises the use of existing systems and processes.

AEMO also considers that the proposed arrangements are consistent with the Guidelines Principles, particularly:

- Mandatory Principle 1 of market operation non-distortion;
- Mandatory Principle 2 of WDRM effectiveness maximisation at least consumer cost; and
- Additional Principle 1 to ensure adequate power system operation, and the maintenance of power system security and reliability of supply, through the provision of relevant information to DNSPs.

5. FINAL DETERMINATION

AEMO's final determination is to make the Guidelines in the form published with this Final Report, in accordance with NER 3.10.1, with effect from 24 June 2021.

APPENDIX A. GLOSSARY

Term or acronym	Meaning
Additional Aggregation Requirement	A requirement that must be satisfied for the aggregation of WDRUs to be approved for the purpose of central dispatch that is specified in the Guidelines, in accordance with 3.8.3(b2)(4)
Additional Classification Requirement	A requirement that must be satisfied for a load to be classified as a WDRU that is specified in the Guidelines, in accordance with 2.3.6(e)(7)
Additional Information	Any information related to the supply of WDR under the NER that is determined by AEMO and included in the Guidelines, in accordance with NER 3.10.1(a)(8), which is additional to the information in NER 3.10.1(a)(1)-(7)
Additional Principle	A principle to which AEMO must have regard when developing or amending the Guidelines that is specified in the Guidelines and is additional to the Mandatory Principles in NER 3.10.1(b)(1)-(2)
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
BM	Baseline methodology
DNSP	Distribution Network Service Provider
DNSP Endorsement	The endorsement by a DNSP of an aggregation of WDRUs for the purpose of central dispatch
DRSP	Demand Response Service Provider
DSPI	Demand Side Participation Information
DUID	Dispatchable Unit Identifier
DUID-Level MRC	The MRC in respect of an aggregation of WDRUs
ENA	Energy Networks Australia
ESB	Energy Security Board
FCAS	Frequency control ancillary service
FRMP	Financially Responsible Market Participant
FSIP	Fast Start Inflexibility Profile
Guidelines	The wholesale demand response guidelines being developed by AEMO, through this consultation, in accordance with NER 3.10.1
Guidelines Principles	The set of principles to which AEMO must have regard when developing or amending the Guidelines, which include the Mandatory Principles in NER 3.10.1(b)(1)-(2) and any Additional Principles specified in the Guidelines
Kinect	World Kinect Energy Services
Mandatory Principles	The principles to which AEMO must have regard when developing or amending the Guidelines that are specified in NER 3.10.1(b)(1)-(2)
MRC	Maximum Responsive Component, being the maximum quantity (in MW) of WDR that a WDRU is able to provide under the NER
MW	Megawatt
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine
NEO	National electricity objective

Term or acronym	Meaning
NER	National Electricity Rules
NMI	National Metering Identifier
NMI-Level MRC	The MRC of a single load that has been classified as a WDRU
NSP	Network Service Provider
PIAC	Public Interest Advocacy Centre
Regional Threshold	The maximum total quantity of WDR, in MW, that may be dispatched at one time for which no telemetry data is provided, determined by AEMO under section 3.2 of the Guidelines
RERT	Reliability and Emergency Reserve Trader
Rule	*National Electricity Amendment (Wholesale demand response mechanism) Rule 2020 No. 9*
SCADA	Supervisory Control and Data Acquisition
Standard	Power System Data Communications Standard
WDR	Wholesale Demand Response
WDR CG	WDR Consultative Group
WDRM	Wholesale Demand Response Mechanism
WDRG-TWG	WDR Guidelines Technical Working Group
WDRU	Wholesale Demand Response Unit

APPENDIX B. SUMMARY OF SUBMISSIONS AND AEMO RESPONSES

No.	Consulted person	Issue	AEMO response
General comments			
1.	Energy Queensland	The Australian Energy Regulator is yet to commence consultation on its Wholesale Demand Response Participation Guidelines, and further consideration of this Participation Guideline may be beneficial	AEMO considers that the scope of the AER's WDR Participation Guidelines, which is to include guidance on record-keeping by DRSPs for compliance purposes and may include guidance related to specific bidding obligations, is distinct from the scope of the WDR Guidelines.
2.	PIAC	We are concerned with views expressed by AEMO that the WDR mechanism is a transitional scheme that will be replaced by the two-sided market and that important aspects of WDR should be dealt with by the ESB in its Post-2025 Market Design process, in particular the Two-Sided Market workstream. PIAC has been participating in the Post-2025 consultation process for more than a year and notes it has changed significantly over that time. Initially the Two-Sided Market was a dedicated workstream, however, it has now been incorporated, along with Distributed Energy Resource integration into a Demand Side Participation workstream. As well as reducing specific focus on a 'two-sided market', the ESB has not made any specific policy recommendations on a two-sided market or demand response in its most recent paper. It has also signalled it will not be resolving issues around a two-sided market by putting forward the idea of a 'maturity plan' to guide ongoing work on Demand Side Participation. While we appreciate AEMO must implement a mechanism in line with the AEMC's final rule, we caution against deferring important decisions regarding WDR on the basis they will be addressed in future processes. History shows the pace of change in energy policy reform is often slow and uncertain. There is no guarantee the Post-2025 process, which ends with the ESB in the second half of 2021, will deliver a solution to replace the WDR mechanism. Given this uncertainty, getting things right from the outset and addressing issues as they emerge should be prioritised where possible.	AEMO agrees with PIAC's view, and considers that it is good practice to avoid assumptions about potential future regulatory changes when designing processes and requirements such as those in the Guidelines. Some aspects of AEMO's WDRM implementation (such as the number of BMs) will be limited at the time of WDRM commencement. AEMO notes that these decisions are driven by the implementation timeframe, rather than any assumption about future market reforms. AEMO will further develop the WDRM implementation over time (including the addition of new BMs). In its submission to the Issues Paper, Enel X suggested that telemetry requirements would need to be reviewed to ensure they are fit-for-purpose for small customer participation and a future move to a two-sided market. AEMO took a 'first principles' approach to determining the WDR telemetry requirements in the draft Guidelines, without consideration for potential future regulatory changes. AEMO also notes that it intends to review and consult on the Power System Data Communications Standard in 2021 to allow for additional, lower cost interfaces and to update existing requirements.
Requirements for classification of a load as a WDRU			
3.	Enel X	We appreciate the clarification provided regarding loads with multiple connection points. However, many C&I sites are served by multiple connection points to enhance site reliability in the event of a grid outage or provide	AEMO considers that it has no discretion on this matter, as WDR participation of loads with multiple connection points is prevented by the requirement in NER 2.3.6(m)(1)(i) that "the *load* comprises a

No.	Consulted person	Issue	AEMO response
		flexibility when testing or maintenance is conducted at the site or in the network. In our experience, such sites tend to be good sources of flexibility. It may be worth considering the concept of "common connection point" to reflect the aggregate response of the site across the connection points. This approach would allow participation by C&I loads with multiple connection points and would remove the potential for gaming that this policy is intended to target.	single *connection point* or a *parent connection point* in respect of all its associated *child connection points* that are not *market connection points*".
4.	Enel X	We seek clarification on what information the DRSP would need to provide to AEMO to satisfy each of the load classification requirements. It would be helpful to workshop this with AEMO.	AEMO will be providing this information through the relevant application forms and guides, and will conduct a WDR registration workshop prior to the commencement of the WDR registration processes.
5.	Enel X	While noting that AEMO has chosen not to include a deadline for assessing an application to classify a load, we still believe that one should be included to provide greater certainty to DRSPs and their customers about the process and the timing of an outcome.	AEMO has determined to not include a deadline for assessing an application to classify a load in the Guidelines, due to uncertainty about the potential for receipt of large volumes of concurrent applications. AEMO will consider including such a deadline in a future update to the Guidelines after having gained experience with the operation of the WDRM.
6.	Enel X	It would be helpful if Guidelines section 2.1 listed the requirements in NER 2.3.6(e) to provide readers with the full set of requirements in one place. Doing so would also help make it clearer which parts of the guideline add detail to the NER clause and which are separate obligations. It would also be helpful if the Guidelines set out the NER requirements in relation to the timing of the load classification application process, i.e. NER 2.3.6(c) and (d).	AEMO notes that the full list of requirements for classification of a load as a WDRU will be provided in the relevant application forms and guides. Accordingly, AEMO has decided against duplicating the requirements in NER 2.3.6(e) in the Guidelines.
7.	Enel X	Suggestion that Guidelines paragraph 2.1(b) should also include "or WDRU".	AEMO has amended paragraph 2.1(b) to read as follows: "the *load* has not been classified as a WDRU or an *ancillary service load* by a different person;"
8.	Enel X	In relation to Guidelines paragraph 2.1(e), we seek AEMO's clarification on how the DRSP will provide an available capacity of zero for a single WDRU in an aggregated portfolio – through the suspension process or some other means?	AEMO has amended paragraph 2.1(e) to read as follows: "the DRSP has declared to AEMO that it will provide an *available capacity* of zero for the *load* or, where the *load* is aggregated with other *loads*, the aggregated *loads*, in relation to any *trading interval* in which the *load* will be, or is likely to be, *spot price exposed*."

No.	Consulted person	Issue	AEMO response
9.	PIAC	PIAC is concerned the restriction on sites with multiple connection points may exclude valuable loads from participating. PIAC recommends AEMO consider further how it can mitigate the risks associated with sites with multiple connection points – switching rather than reducing load – while not unnecessarily missing out on potentially valuable WDRUs.	See AEMO's response at item 3.
Requirements for aggregation of WDRUs			
10.	AGL	The draft guideline proposes aggregation of DR units may only include DR units within a single load forecasting area as set out in the Power System Operating Procedure – Load Forecasting (SO_OP_3710). We support this approach and consider this will provide certainty as to how DRSPs may aggregate potential WDR units.	AEMO notes AGL's support.
11.	AGL	We note the above mentioned procedure has been recently updated to clarify the meaning of 'load forecasting area', however for the purposes of clarity in the WDR guideline, the guideline should provide a an exact reference within the document given this is not a defined term in the procedure.	AEMO agrees with AGL's suggestion and has updated the drafting of the Guidelines to refer to Appendix D of the Power System Operating Procedure – Load Forecasting (SO_OP_3710).
12.	Enel X	It would be helpful if Guidelines section 2.2 listed the requirements in NER 3.8.3(b2) to provide readers with the full set of requirements in one place.	AEMO notes that the full list of requirements for aggregation of WDRUs will be provided in the relevant application forms and guides. Accordingly, AEMO has decided against duplicating the requirements in NER 3.8.3(b2) in the Guidelines.
13.	Enel X	It would be helpful if Guidelines section 2.2 included the NER requirements in relation to the timing of the aggregation approval processes, i.e. NER 3.8.3(e).	AEMO notes that the full list of requirements for classification of a load as a WDRU will be provided in the relevant application forms and guides. Accordingly, AEMO has decided against duplicating the requirements in NER 2.3.6(e) in the Guidelines.
14.	Enel X	We seek AEMO's clarification on the drafting in paragraph 2.2.1(b)(i). Does this mean that DNSP endorsement is only required for existing aggregations (i.e. those already approved and established under a DUID), where (ii) is also met?	Yes, the DNSP Endorsement is only required where both conditions in paragraph 2.2.1(b) (both (i) and (ii)) are met.
15.	Enel X	Paragraph 2.2.2(a) seems more like an outcome of the aggregation application process than a term/condition.	AEMO's drafting at paragraph 2.2.2(a) reflects the NER glossary definition of MRC for an aggregation of WDRUs: "For *wholesale demand response units* aggregated in accordance with clause 3.8.3, the *maximum responsive component* specified by *AEMO* as a condition of aggregation under clause 3.8.3(b3) (if any)

No.	Consulted person	Issue	AEMO response
			or otherwise, the aggregate *maximum responsive component* of the aggregated *wholesale demand response units.*".
16.	Enel X	The condition at paragraph 2.2.2(b)(i) also appears to be a prerequisite for aggregation. That is, why/how would AEMO require disaggregation of loads on either side of a load forecasting area when section 2.2.1(a) only permits the aggregation of loads within a single forecasting area?	The inclusion of the condition at paragraph 2.2.2(b)(i), that an aggregation would need to be disaggregated if it spanned multiple load forecasting areas, is intended to allow for changes to the load forecasting areas, as published in the Power System Operating Procedure – Load Forecasting (SO_OP_3710). AEMO has amended the drafting of this paragraph to clarify that disaggregation may be required "following an update to the load forecasting area boundaries".
Assessment of power system security impacts of WDRU aggregation			
17.	AGL	We agree with AEMO's assessment that below 5 MW an aggregated DUID is unlikely to raise system security concerns at the time of classification and should therefore not be subject to the DNSP assessment. The 5 MW threshold provides sufficient certainty for DRSPs to build a portfolio without risk of delay or uncertainty of classification.	AEMO notes AGL's support.
18.	AGL	We are concerned by both the role the DNSP will play in carrying out AEMO's system security responsibilities under the WDR framework, and the ultimate purpose of the DNSP assessment. In considering the proposed DNSP assessment role, we consider AEMO should be cognisant of the following factors: • The broader policy context regarding the role of the DNSP as potential Market Operator and System Operator as distributed energy resources become more prevalent and controllable. • This would be a new role for a DNSP which would need to be clearly defined to ensure consistency and transparency of assessment across the 10 Distribution zones, achieve timeliness and certainty, and would need to align with broader regulatory arrangements for DNSPs. This is particularly important where a DRSP will need to engage with multiple DNSPs within a load forecasting area. • The DNSP is increasingly using Demand Response for network support and non-network planning solutions. These assets may also be co-optimised for market dispatch through third party access arrangements.	AEMO recognises that NER 3.8.3 assigns it the responsibility for assessing the potential power system security impacts of an aggregation of WDRUs. AEMO will perform the assessment of impacts in the transmission system, over which it has visibility. However, AEMO notes that such impacts may arise in the distribution system, over which AEMO does not have sufficient visibility at this time to assess power system security impacts arising from WDRU aggregation. AEMO considers that, in the absence of a formal DNSP Endorsement process, the consideration of power system security impacts in the distribution system would still occur, but would default to Option 3 in the Issues Paper (occurring post-aggregation and potentially leading to disaggregation). AEMO considers that this would be more disruptive to DRSPs, DNSPs and AEMO.

No.	Consulted person	Issue	AEMO response
		• AEMO has an express role within the WDR framework, under the NER, with the exclusive responsibility to assess material system security impacts and undertake any necessary measures to mitigate these risks.	AEMO considers that it is unable to design the DNSP Endorsement process to reflect future potential DNSP functions to support DER orchestration. See also AEMO's response at item 2. AEMO supports the ability for customers to offer multiple services, such as the provision of network support to a DNSP and WDR through a DRSP. AEMO considers that it is the role of the DRSP to ensure that its WDR bids reflect the availability to provide WDR. AEMO welcomes the willingness of DNSPs and prospective DRSPs, expressed through submissions, to work together to set out the detailed design of the DNSP Endorsement process, with the aim of documenting a consistent and transparent process. AEMO will assist the facilitation of this work after publication of this Final Report.
19.	AGL	As set out in the draft guideline consultation paper, the DNSP may provide input with regard to three critical components: 1. assessment of a proposed aggregation would result in an endorsement or rejection of the proposed aggregation. 2. advice of any restrictions that must be imposed on the aggregation, such as ramp rate limits, to ensure that the dispatch of WDRUs will not infringe the technical envelope. 3. advise AEMO of any constraints to be applied to the DUIDs in the central dispatch process. With regard to the first component, we do not consider it is necessary, or appropriate (given the factors outlined above) for the DNSP to make the aggregation classification decision. Rather the DNSP should be required to provide information to AEMO regarding the latter two components, i.e. DR unit performance and dispatch constraints. Whilst we agree with AEMO that the DNSP is best placed to assess risks to the network, we consider it should ultimately fall to AEMO as to how these risks may be managed either through the classification process or through central dispatch. The DNSP's role in the WDRM should therefore be as a critical participant in providing information rather than a decision maker for DUID aggregations.	As explained in the response to item 18, AEMO considers that the assessment of power system security impacts in the distribution system will occur regardless of the existence of a formal DNSP Endorsement process, and may result in the DNSP identifying the need for an aggregation (proposed or existing) to be split in order to manage those impacts. AEMO considers it is preferable that this assessment occurs at an early stage in the aggregation process to minimise the disruption to all affected parties. In this way, AEMO considers that the DNSP Endorsement involves the provision of information to AEMO to aid its assessment of a proposed aggregation. AEMO considered Option 2, whereby it would seek DNSP input after receipt of an application to aggregate WDRUs. However, having considered TasNetworks' submission (see item 47) and following discussions with NSP stakeholders, AEMO considers that it is infeasible to accommodate the DNSP assessment within AEMO's obligation in NER 3.8.3(e) to evaluate applications to aggregate within 20 business days.
20.	AGL	Ultimately AEMO's aggregation assessment centres on the performance of potential WDR unit(s) that constitute the aggregated DUID rather than the	AEMO agrees with AGL's comments.

No.	Consulted person	Issue	AEMO response
		aggregation as a whole. In carrying out AEMO's system security obligations the key issue is not whether the aggregated DUID can be classified, but rather when and how the aggregated DUID can be dispatched given the concerns identified with one or more of the DR units. This assessment of DR units is consistent with the broader approach AEMO will undertake with multiple DR units within a distribution network whether they are aggregated or individual DR unit DUIDs. As already noted, AEMO can also apply ramp rate limitations and constraints on DUIDs regardless as to whether the unit is aggregated. With this in mind, we consider the primary issue is not whether a greater than 5 MW aggregated DUID can be classified, but how this aggregated unit will be impacted if one of the DR units give rise to system security concerns, such as a dispatch constraint in certain circumstances and telemetry requirements. Given this impact, it would then be open to the DRSP to consider whether this initial aggregation still remains appropriate or whether there is an alternative classification of the DR units that optimises potential dispatch (such as two or more DUIDs). This approach also acknowledges that an aggregated DUID material risk to system security is dynamic and may change over time from the time of classification as the circumstances change in how the network is used. We propose that rather than an 'accept or reject' aggregation approach, the WDR guidelines should set out the process in which the above mentioned assessment will occur during the registration and classification process. In turn the guideline should clearly set out how an aggregation will be impacted should one or more DR units require ramp rate or dispatch constraints.	An adverse assessment of power system security impacts of aggregation should result in the WDRUs within the proposed aggregation being represented as two or more DUIDs in central dispatch, rather than a single DUID. An adverse assessment would not prevent the classification of any load as a WDRU. Where AEMO does not approve an application to aggregate WDRUs, AEMO will advise the applicant of one or more alternative aggregations that may be suitable and the constraints that would apply, consistent with paragraph 2.2.3(c) of the Guidelines.
21.	AGL	In the draft guideline consultation paper, AEMO has outlined three potential options in how the DNSP could interact with AEMO's process to accept or reject an application to aggregate DR Units. Noting our discussion above regarding whether the issue is classification or the ultimate impact of a DR unit on the aggregate DUID, should AEMO consider the proposed 'accept or reject' framework is still necessary we consider option 2 is preferable. This option would require AEMO to liaise with the relevant DNSP to attain all relevant information and advice to then undertake the system security assessment. In contrast to option 1, this option preserves the role of AEMO as the sole decision	See AEMO's response at item 19.

No.	Consulted person	Issue	AEMO response
		maker as to the appropriate measures necessary to address material risks to system security. We note AEMO's concern that this option may be costly due to the need to develop a robust DNSP framework. However, we expect the even greater collective costs for DNSPs would also apply to option 1. Regardless as to whether it is AEMO or the DRSP engaging with the DNSP, there would still need to be a clear and transparent framework that ensures a consistent approach across all distribution zones. This is particularly important in circumstances where a DRSP is dealing with multiple DNSPs within a load forecasting area for potential aggregation.	
22.	ENA	Energy Networks Australia members, specifically DNSPs are supportive of collaborative efforts to provide guidance to existing and prospective DRSPs as the electricity network evolves to accommodate new forms of participation. DNSPs support the connection of new customers to their networks, including those that wish to participate in WDR, subject to the ability of the network to support them. DNSPs commit to producing a set of high-level principles agreed with DRSPs on how WDRs will be assessed, but note that more detailed discussions may need to account for local jurisdictional regulations and the state of the network.	AEMO welcomes ENA's and DNSPs' willingness to support the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs.
23.	ENA	In the context of WDR, we would consider endorsement of an application in the same spirit as a connection agreement between the DNSP and a customer. This potentially leads to issues of ongoing responsibility to maintain that connection.	AEMO notes that a load cannot be classified as a WDRU until it has been operating for a period of time, due to the requirement to determine baseline compliance. Accordingly, the WDRM involves participation of existing connected customers. AEMO also notes that the DNSP Endorsement will only assess aggregation of WDRUs, not classification. An adverse DNSP Endorsement will mean that a set of loads cannot be aggregated into a single DUID, but will not prevent participation of those same loads individually or in smaller, acceptable aggregations.
24.	ENA	ENA were pleased to see consideration of different options to incorporate DNSP endorsement. While the various options each have their own advantages and disadvantages, feedback from our members indicates strong support for Option 1: DNSP endorsement before application, at least in the initial implementation stages of WDR. Further consideration of Option 3: DNSPs raise	AEMO notes ENA's views. As noted in section 4.5.2, AEMO has determined that the timing of the DNSP Endorsement should align with Option 1. However, to avoid long process delays, AEMO has determined that where the DNSP Endorsement is required, the DRSP may include in its application aggregate WDRUs either: • The DNSP Endorsement; or

No.	Consulted person	Issue	AEMO response
		exception may be warranted once we reach an operational 'steady state' and we gain greater confidence in the process.	• evidence that it sought the DNSP Endorsement at least 25 business days before submitting the aggregation application. AEMO considers that Option 3 will remain available even if not specified in the WDR Guidelines. If a DNSP alerts AEMO to system security risks associated with an existing WDRU aggregation, AEMO can exercise its power under NER 3.8.3(b3) to require the aggregation to be disaggregated.
25.	ENA	To support an accurate assessment of proposed WDR applications, basic information including the size, ramp-rate and participating NMIs of the application should be provided to the local DNSP for consideration. This will provide DNSPs with the information they need to assess and mitigate against potential impacts that WDR could have on other customers.	AEMO notes that it will share this data on existing WDRUs with DNSPs under section 6 of the Guidelines. However, AEMO recognises that a DRSP is likely to submit applications to classify and aggregate WDRUs concurrently, so this information may not yet be available to the DNSP under section 6 of the Guidelines. Under Option 1, the DNSP Endorsement occurs before the DRSP applies to AEMO to aggregate WDRUs. Consequently, AEMO considers that it does not have the power to specify such details in the Guidelines. AEMO advises that these information requirements should be considered during the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs.
26.	ENA	ENA and our members also recognise the sensitive commercial aspects of these types of applications and propose to treat them in a similar manner to large generation proponents where there are often competing commercial interests which the DNSP must manage fairly, confidentially and on a first come, first served basis. While this can be a difficult and resource-intensive task, it has proven to be an effective mechanism to generator proponents that DNSPs can adapt into a simpler form for DRSPs. DNSPs seek to mitigate poor customer outcomes by offering to engage with DRSPs to provide a level of transparency and evidence of the assessment that is practical and agreeable to both parties.	AEMO welcomes ENA's views on this matter, and suggests that the balance between confidentiality and transparency should be considered during the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs.
27.	ENA	DNSPs consider endorsement of a WDR application as part of the evolving nature of how our networks are used and an important step towards increasing flexibility. In practice, this means there might be ongoing	AEMO considers that it is the responsibility of a customer and the DRSP to ensure that the participation of that customer in the WDRM is consistent with the terms of its connection agreement.

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		obligations/expectations that the DNSP must continue to provide capacity until the agreement expires or is changed by the customer. Hypothetically, if the endorsement of a WDR application required further DNSP investment above existing plans, this would affect the way DNSP investment is allocated as a whole. This is a challenge we would like to discuss further with all relevant stakeholders.	AEMO also considers that the assessment that forms the DNSP Endorsement should not be contingent on future network investment, as this could introduce delays and uncertainty to the process. If, in future, network investment enabled aggregation that was previously rejected, the DRSP could then apply to aggregate once the investment had occurred.
28.	Enel X	We do not support the rationale for requiring a system security assessment for demand response, given many forms of demand response already occur in the system without such an assessment. Guidelines paragraph 2.2.3(a) does not make it clear what this assessment is intended to achieve or involve.	AEMO acknowledges that other forms of demand response currently occur in the system without a specific power system security assessment. However, AEMO notes that its obligations to: • be satisfied that power system security will not be materially affected by a proposed aggregation (NER 3.8.3(b2)(2); • dispatch scheduled facilities within the dynamic nature of the technical envelope (NER 4.3.1(i)); and • determine any potential constraint on the dispatch of scheduled facilities (NER 4.3.1(j)), require it to assess the system security impacts of proposed aggregations. AEMO has provided further explanation of the purpose of the assessment at the beginning of section 2.2.3 of the Guidelines.
29.	Enel X	If an assessment is to be included, 5 MW is a very low threshold. We imagine most DRSPs would seek to build a portfolio in excess of this to justify the costs of participating in the mechanism. While 5 MW aligns with the threshold for standing generator exemptions, AEMO has acknowledged in the past that this threshold has "no technical or economic basis." We encourage AEMO to work with DNSPs and other stakeholders to determine whether 5 MW is an efficient threshold, weighing up the actual expected power system security impacts of aggregated WDR, and the cost/time involved for all parties.	AEMO acknowledges that 5 MW is a 'rule of thumb' threshold that triggers various assessments/obligations due to the potential for adverse system security outcomes. AEMO sees no justification to apply a different threshold for WDR than for other processes.
30.	Enel X	As noted in our submission to the Issues Paper, power system security assessments for small aggregations of WDR are likely to deter participation as a scheduled demand response resource and push customers toward spot exposure instead, over which AEMO has no visibility or control. Any limitations on potential aggregations should be proportionate to the portfolio's actual potential to materially affect power system security when the demand response	AEMO agrees that any limitations on potential WDRU aggregations should be proportionate to the system security impact. The assessment of power system security seeks to impose only those requirements necessary to ensure that the dispatch of WDR is consistent with the management of power system security,

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		is likely to be provided. Limitations that are disproportionate to the risk will only introduce market distortions and create barriers to entry.	particularly the application of constraints in the central dispatch process. AEMO also notes that an adverse assessment of a proposed aggregation will not prevent participation in the WDRM; it will merely require the same loads to participate as two or more DUIDs.
31.	Enel X	In the WDR Q&A session on 8 February 2021, AEMO noted that while its power system responsibilities cover transmission and distribution systems, DNSPs are better able to assess power system security impacts in distribution systems. The DNSP endorsement appears to have been proposed to allow DNSPs to assess the power system security impact of the proposed aggregation. However, this is not clear. Section 2.2.3 of the draft Guidelines does not make it clear whether: • the DNSP endorsement is the power system security assessment, and AEMO's role is to confirm it from a process perspective (regarding consistency with the aggregation application and validity of the endorsement, as suggested by paragraph 2.2.3(b)(ii)), or • AEMO will conduct an assessment in addition to the DNSP endorsement, as suggested by 2.2.3(a), (b)(iii) and (d). Given DNSPs are better placed to assess power system security impacts in distribution systems, it would make sense for the endorsement to be the assessment, and for AEMO to confirm that endorsement from a process perspective as part of the aggregation application. It would be confusing and inefficient for both AEMO and DNSPs to conduct an assessment. If there are matters that AEMO will need to consider in addition to the endorsement, it would be helpful if the guideline set these out, as well as the process.	Both AEMO & DNSP assessments may be necessary for a proposed aggregation, subject to the network locations of the loads within the proposed aggregation. For example, an application to aggregate 10 MW of WDRUs at one TNI with 10 MW at another TNI will require DNSP assessment of constraints behind the respective TNIs, and AEMO's assessment of any constraints between the two TNIs. AEMO has provided further explanatory text at the beginning of section 2.2.3 of the Guidelines to clarify that both AEMO and DNSPs may need to assess the power system security impacts of a proposed aggregation.
32.	Enel X	The DNSP endorsement needs further specification. We are keen to help develop a robust and nationally consistent framework with DNSPs, the ENA, AEMO and other industry participants. There is not much guidance on what the endorsement is meant to involve, in what timeframe, and at what cost. We note that the questions in the draft determination are intended to draw some of this out, which we support. If the DNSP endorsement framework is not further specified, there is a risk that: • DNSPs will be unclear on what they are meant to be assessing and for what purpose	AEMO welcomes Enel X's willingness to support the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs. AEMO also welcomes the detailed list of matters that Enel X has provided for consideration in the detailed design. Under Option 1, the DNSP Endorsement occurs before the DRSP applies to AEMO to aggregate WDRUs. Consequently, AEMO considers that it does not have the power to specify details of the DNSP Endorsement process in the Guidelines. AEMO suggests that

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		• DRSPs will have no transparency of the timing or cost of such assessments • The process will vary between DNSPs, resulting in inefficiency and inconsistency of approach. If there is to be a DNSP endorsement, we support the development of a nationally consistent framework that: • articulates the split of responsibilities between AEMO and DNSPs in relation to the network and system impacts of WDR, so it is clear what "authority" the endorsement has • provides upfront transparency about the process for DRSPs, in terms of who to talk to, how to submit an endorsement application, what information will need to be provided, how long the process is expected to take, and what costs are involved • gives DNSPs the right tools and data to make the assessment and provide clear advice to AEMO • avoids making withholding endorsement the easy option, by providing a clear framework based on the actual likelihood of a material system security impact (for example a problem that would arise if the aggregation was dispatched at a time of minimum demand and high wind/solar output), not just a theoretical possibility • doesn't discriminate against first mover DRSPs and their customers, for example by imposing stricter requirements on first movers on the expectation that others will follow • recognises that WDR assets will almost universally be switched loads, so it is difficult to impose technical restrictions like ramp rates. Other matters to consider: • Would there be a time period within which an aggregation needs to be in the market after the endorsement is received? • Would the endorsement expire after a period of time? Or would there be other triggers to require a re-endorsement? • What happens if a DRSP wants to add a NMI/NMIs to an aggregation that already has DNSP endorsement, or if the capability of a load in the aggregation changes? Must the aggregation be re-endorsed, or could the endorsement specify an upper limit of additions to the aggregation before a new endorsement is required? Aggregations of WDRUs are likely to be quite dynamic. If the objective is to support a vibrant market of competing DRSPs,	the process documentation could take the form of a guide or other information published on the ENA website. The exact form of the process documentation would need to be decided as part of the detailed design of the DNSP Endorsement process.

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		the friction involved in moving customers between portfolios should be minimised. • How should we approach the endorsement of aggregations involving more than one DNSP? Will each DNSP conduct an endorsement, or coordinate the endorsement?	
33.	Enel X	We are supportive of DNSPs conducting the assessment and providing their decision to AEMO. However, in our experience carrying out similar processes for our other demand response programs, the split of responsibility between DNSPs and AEMO is not clear. This has created confusion for all parties and significant delays. If DNSPs are to conduct the assessment, they should have clear autonomy to do so and AEMO should not have the right to reject their endorsement, given that DNSPs are best placed to assess the power system security risks of WDR in distribution systems.	AEMO agrees that DNSPs are best placed to assess the power system security risks of WDR in distribution systems. AEMO will not reject a DNSP Endorsement as it does not have visibility of the distribution systems. See also AEMO's response at item 31.
34.	Enel X	Regarding the process for DNSP endorsement, we do not support option 3 on the basis that this presents a significant risk for DRSPs and their customers. Option 1 is likely to provide greater flexibility to DRSPs in how they recruit customers for participation, allowing them to proceed to an aggregation application and finalise arrangements with customers only when they have certainty that the proposed aggregation has the DNSP's endorsement. We support the ability for DRSPs to apply to aggregate without a DNSP endorsement under option 1 where that endorsement is still being assessed. However, there are risks with option 1 that will need to be worked through: • Will DNSPs need any information from AEMO to conduct the assessment? If so, option 2 may make more sense. • As above, will AEMO be able to reject a DNSP's endorsement? If, as AEMO has stated, DNSPs are better able to assess the power system security impacts of WDR in distribution systems, then AEMO should not be able to reject a DNSP's endorsement. However, we are concerned that this may not play out in practice, in which case option 2 would be the better approach.	AEMO notes Enel X's preference for Option 1, with the ability for the DRSP to submit its application to AEMO where the DNSP Endorsement is still being assessed. AEMO expects that a request for a DNSP Endorsement will include all of the information required for the DNSP's assessment, without the need for additional information from AEMO. See also AEMO's response at items 24 and 33.
35.	Enel X	In respect of Guidelines paragraph 2.2.3(a)(ii): • Is there any way for proponents to determine this before they submit the application and pay the fee?	AEMO has listed various information sources in paragraph 2.2.3(d) of the Guidelines. In addition, AEMO publishes a Forecasting and planning interactive map on its website[14] where stakeholders can

[14] The Forecasting and planning interactive map is available at https://www.aemo.com.au/aemo/apps/visualisations/map.html.

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		• Does "per year" mean calendar year? Or the 12 months preceding the application? • How is "area" defined?	view corridors of system normal congestion and ISP projects at the different stages of development that may help to alleviate congestion. AEMO will assess both historical congestion, which is reported in calendar years through the Annual NEM Constraint Report[15], and forecasts of future congestion, which are reported in financial years through the Integrated System Plan.[16] AEMO considers that it is challenging to provide a specific definition of area for the purposes of the assessment of power system security assessment of aggregation. The nature of network congestion is such that the relevant area will be dependent upon the network configuration and ratings, and the proximity of generation.
36.	Enel X	In respect of Guidelines paragraph 2.2.3(b): • Paragraph (b)(i) is already specified in section 2.2.1(a) as a requirement of aggregation, and does not seem to relate to the power system security assessment as the heading of 2.2.3 suggests. • (b)(ii)(B) needs further specification. What does "current" mean?	AEMO notes the duplication between paragraphs 2.2.3(b)(i) and 2.2.1(a). AEMO considers this is appropriate in case of any changes to the load forecasting area boundaries during the period between the lodgement of the aggregation application and AEMO's final decision. AEMO considers that the currency of a DNSP Endorsement should be considered during the detailed design of the DNSP Endorsement process. For example, it may be feasible for a DNSP to endorse an aggregation and, in doing so, to also endorse some amount of additional WDR before requiring the DRSP to seek an additional DNSP Endorsement.
37.	Energy Queensland	Energy Queensland notes that 5 MW has been nominated as the limit for requiring DNSP endorsement in order to assess power system security with regard to wholesale demand response. We thank AEMO for the inclusion of a DNSP Endorsement and seek the development of a cost-effective and timely methodology for conducting assessments. We also note the reference made to the standing exemption which applies to generators under 5 MW and take the opportunity to highlight that for these generators, even though AEMO is not	AEMO notes Energy Queensland's comments. AEMO also notes that each DNSP will be provided with information on classified WDRUs that are relevant to its distribution network under section 6 of the Guidelines.

[15] The Annual NEM Constraint Report is available at https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/congestion-information-resource/statistical-reporting-streams.

[16] The Integrated System Plan is available at https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp.

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		involved, system studies and appropriate performance standards are applied by the relevant network service provider. Additionally, we recognise that 5 MW is unlikely to cause any issues at a broader system level (transmission level) and note that this underpins the need for the DNSP to conduct studies on the local area with the national meter identifiers provided by AEMO. [*Response to Question 4.5*] It is Energy Queensland's preference to assess all aggregations. However, we accept consumer concerns that this may present disincentives. As such, DNSPs need to ensure they receive notification of all NMIs participating in WDR in order to assess risk as part of normal planning procedures, and to provide operating information to the Control Room so they can appropriately take action if required.	
38.	Energy Queensland	Energy Queensland prefers Option 1 as outlined in the Consultation.	AEMO notes Energy Queensland's preference.
39.	Energy Queensland	We support a Guideline that enables customers to participate in the wholesale market, while maintaining safety and network security for all customers. In our view, a direct relationship between the DNSP and DRSPs would be the most effective pathway for registering of WDRUs and the technical performance parameters, including local network operation and performance. This is because issues are anticipated to be exceptions rather than common place and early identification of these exceptions would be in the interests of customers and DRSPs to assess the costs versus benefits of proceeding. We suggest that DNSPs, in conjunction with ENA, should establish processes to ensure efficient and effective assessments and give certainty to DRSP participants and their customers. Such assessments will quickly identify areas where power quality risks may arise from DRSP's operations and allow expedient development of efficient solutions appropriate to the local network operational risks. *[Response to Question 4.3]* Energy Queensland is also supportive of developing a standardised approach with other DNSPs and ENA to minimise cost and time for DRSPs. *[Response to Question 4.4]* Energy Queensland is supportive of a standardised approach between DNSPs for consistency and transparency purposes. DNSPs could provide, as part of the response, the methodology to be applied.	AEMO welcomes Energy Queensland's willingness to support the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs. AEMO also notes that the DNSP Endorsement will only assess aggregation of WDRUs, not classification. An adverse DNSP Endorsement will mean that a set of loads cannot be aggregated into a single DUID, but will not prevent participation of those same loads individually or in smaller, acceptable aggregations.

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40.	Energy Queensland	*[Response to Question 4.1]* Energy Queensland suggests where the DNSP has identified adverse power quality or other technical constraints, an aggregation of WDRUs should be rejected. Additionally, when the DNSP has knowledge of multiple WDR DUIDs, these can be assessed together as per normal planning procedures, which may result in the development of constraint requirements or similar which would then be fed back to AEMO, if required.	From discussion with Energy Queensland, AEMO understands that "adverse power quality or other technical constraints" relate primarily to the potential need to limit ramp rates on individual feeders in order to maintain voltages within limits. For an aggregation of switched loads, this may be achieved by staggering the switching of the different loads. See also AEMO's response at item 39.
41.	Energy Queensland	(Response to Question 4.2) Energy Queensland envisages that ramp rate information (for both taking load off and bringing load back on after an event) will be provided.	AEMO notes Energy Queensland's advice.
42.	PIAC	PIAC welcomes the increased detail around how power system security impacts will be measured and assessed in the WDRU approval process. However, PIAC remains concerned the 5 MW threshold for assessment of power system impacts is arbitrarily set and may unnecessarily limit participation. We welcome further consideration of whether the 5 MW threshold is appropriate and encourages efficient levels of WDR.	See AEMO's response at item 29.
43.	PIAC	PIAC appreciates DNSPs are well-placed to assess power system security impacts of potential WDR aggregations in their network, and understands AEMO's decision to include them in the aggregation approval process. However, PIAC is concerned AEMO's proposal has the potential to add complexity and uncertainty to the approval process, adding costs and discouraging participation. The Guidelines do not prescribe to DNSPs how they should assess an aggregation's impact, leaving them a high degree of discretion in their decisions to approve or not. Further, there is no requirement for consistency across DNSPs so aggregations in different areas could be subject to different assessments. PIAC considers more prescription is needed either by AEMO or agreed between DNSPs to support consistency and predictability for DRSPs in the approvals process. There is a lack of clarity around the division of responsibility between AEMO and DNSPs concerning approvals. It is not clear whether AEMO may override or dispute a DNSP's decision, and to whom a DRSP should dispute a decision. AEMO should address this in consultation with DNSPs and DRSPs to reduce confusion and limit duplication.	AEMO notes PIAC's preference for Option 1. See also AEMO's responses at items 31, 32 and 33.

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		PIAC prefers Option 1 of the proposed approval processes as it seems most likely to minimise uncertainty and limit unnecessary costs.	
44.	TasNetworks	TasNetworks supports the involvement of DNSPs in the endorsement process for aggregation of Wholesale Demand Response Units (WDRU). The obligation to ensure network security and reliability sits with the DNSP as thus the ability to understand any potential demand response and its potentially synchronised restoration is critical.	AEMO notes TasNetworks' support.
45.	TasNetworks	TasNetworks supports Option 1 as the preferred mode for the assessment of a proposed WDRU aggregation by a DNSP.	AEMO notes TasNetworks' preference. See also AEMO's response at item 24.
46.	TasNetworks	*[Response to Question 4.1]* While not all risks can be removed if there is a way to mitigate known risks they should be done. Being able to manage the amount of WDR on a specific feeder and tailor it for the typical operational behaviour of that feeder is critical. This includes the ability to understand the cold-load pickup characteristics of any WDR not just the coordinated reduction in demand on a feeder. *[Response to Question 4.2]* The DNSP should be able to provide operational caveats. This could be limits on the size of the load dispatched when flows are above certain limits. There needs to be room available for cold load pickup. While the synchronised reduction in load can have voltage and security impacts on a network so does the synchronised reconnection of load; and in some circumstances, this cold load pickup, can have more significant impacts than the initial load reduction.	From discussion with TasNetworks, AEMO understands that the capability to "manage the amount of WDR on a specific feeder and tailor it for the typical operational behaviour of that feeder" relates primarily to the potential need to limit ramp rates on individual feeders in order to maintain voltages within limits. For an aggregation of switched loads, this may be achieved by staggering the switching or movement of the different loads. See also AEMO's response at item 39.
47.	TasNetworks	*[Response to Question 4.3]* TasNetworks submits it could commit to responding to most applications within 20 business days, noting that a DNSP should be able to negotiate longer timeframes should a particularly complex proposal be provided.	AEMO notes TasNetworks' advice, which provides a useful reference point for the detailed design of the DNSP Endorsement process, to be developed through engagement between DNSPs and prospective DRSPs.
48.	TasNetworks	*[Response to Question 4.4]* TasNetworks is comfortable that the details of its assessment are made available to legitimate industry participants; like the specific DRSP, AEMO and AER. There are security concerns about publishing our assessment more broadly due to the potential it may indicate areas of weakness in our network.	AEMO advises that the information publication and disclosure requirements should be considered during the detailed design of the DNSP Endorsement process, through engagement between DNSPs and prospective DRSPs.
49.	TasNetworks	*[Response to Question 4.5]* TasNetworks is supportive of the 5 MW threshold.	AEMO notes TasNetworks' support.

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WDRU telemetry and communications requirements			
50.	AGL	The draft guideline proposes to relax the telemetry requirements for aggregated DUIDs above 5 MW when the aggregate DUID does not materially impact power system security and therefore is not represented in constraints in central dispatch. We support this approach and consider this appropriately treats aggregated DUIDs with the same logic as a collection of DR units with individual DUIDs within a load forecasting area that do not materially impact system security.	AEMO notes AGL's support.
51.	AGL	We note there are still telemetry requirements for individual or aggregated DUIDs where existing scheduled plant needs to be curtailed to manage power system conditions or AEMO considers telemetry is necessary to support power system security. As AEMO notes in the consultation paper, more accurate real-time observations of WDR dispatch performance may be critical where WDRUs or aggregations of WDRUs need to be represented in constraints in the central dispatch process. Whilst we agree with this concept, as noted earlier in our submission, in the case of aggregated DUIDs a risk to system security may stem from only one WDRU, or a selection of the WDRUs, that constitute the DUID. In this case AEMO should consider if the telemetry requirements could only apply to the relevant WDRUs rather than the entire portfolio of WDRUs that constitute the DUID, given the ultimate purpose of this requirement is to monitor performance of these particular WDRUs in real-time when constraints are binding. We acknowledge this is not how current aggregated DUIDs are monitored, however given the unique challenges of the WDR, AEMO should explore if this different approach is possible in these unique circumstances.	In circumstances where AEMO considers that system security risks may arise due to the actions of a subset of an aggregation of WDRUs, AEMO will exercise its power to require the aggregation to be disaggregated under paragraph 2.2.2(b) of the Guidelines. Given this, AEMO considers that it will not require telemetry for a subset of the WDRUs in an aggregation.
52.	AGL	We request AEMO provide guidance on how AEMO will validate SCADA feeds given the requested feed appears to relate to the DUID available capacity which is a theoretical value based on baselining NMI meter data, and therefore how AEMO will infer the impact of the DR relative to actual real-time metered data.	The validations for the telemetry data are described in Appendix A of the Guidelines.
53.	Enel X	We appreciate the additional information that AEMO has provided to explain its rationale for real-time telemetry data, and the circumstances in which this will be required. However, without knowing what the exact telemetry requirements are, it is difficult to comment on whether this framework strikes the right balance between cost / barriers to entry and AEMO's needs. We note that the	AEMO acknowledges that the cost to meet telemetry and communication requirements will be less certain until the upcoming review of the Power System Data Communications Standard has been completed.

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		communications standard is due to be reviewed shortly. It may be appropriate to revisit this part of the WDR guideline once the communications standard review is finalised, or at least its direction better understood.	AEMO notes that this may be partly alleviated by the changed approach to applying the regional thresholds for non-telemetered WDR that is outlined in section 4.7.
54.	Enel X	Enel X has asked AEMO some specific questions on the draft telemetry data channels in Appendix A, so we will continue to engage separately on that. More generally, we seek clarification on when this data will need to be provided to AEMO. At all times, or just when the DUID is dispatched? As noted in our submission to the Issues Paper, the telemetry requirements should, to the extent possible, reflect that DRSPs will not seek to be dispatched anywhere near as often as scheduled generators are.	AEMO welcomes Enel X's engagement and has responded to the questions via email. In response to this correspondence, AEMO has changed the minimum update frequency from 30 seconds to 60 seconds and clarified some requirements. While AEMO expects that telemetry data will be provided at all times, the DRSP will only need to provide data updates to AEMO upon change. For example, once a DRSP provides a zero MW value after the end of a WDR dispatch event, this value will stand until a non-zero value is provided during the next dispatch event.
55.	Energy Queensland	Energy Queensland seeks to understand how AEMO intends to manage loads that can be switched between feeders and Transmission Node Identifiers, and the application of regional telemetry thresholds to these loads.	Meter standing data is the only mechanism through which AEMO receives information about the location of a load within the distribution network. Feeder data is not included, and AEMO will only become aware that a load has switched between TNIs where this is advised by the DNSP.
Regional thresholds for increased visibility of WDRUs			
56.	AGL	Whilst we consider these regional thresholds for non-telemetered DR units are appropriate at the initial stage of the commencement of the WDR mechanism, AEMO should consider if this threshold can be managed through the dispatch process rather than the initial registration and classification of non-telemetered WDR units. We consider AEMO's concern is not how much non-telemetered capacity is registered but rather the potential capacity that may be dispatched at any given time in a region. Consequently, AEMO could place a limit on the amount of non-visible WDR NEMDE can dispatch. This would ensure that when the threshold is met, the DR units dispatched would be based on least cost bids to the market rather than when the unit was registered.	AEMO welcomes, and agrees with, AGL's suggestion. AEMO has amended its approach to applying the regional thresholds in line with AGL's suggestion, as explained in section 4.7.
57.	Enel X	As set out in our submission to the Issues Paper, we do not support the imposition of thresholds on the assumption that DRSPs will be poor dispatch performers. While we support the ability for these thresholds to be adjusted over time to reflect observed dispatch performance, this does not provide	AEMO acknowledges that the proposed initial thresholds are conservative. However, AEMO considers this is appropriate in the absence of representative dispatch performance data, and has designed a threshold revision approach that can allow the

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		prospective DRSPs with much certainty about what requirements will apply to them when they choose to enter. The more equitable and efficient approach would be to determine appropriate telemetry requirements for DRSPs in line with how they are expected to participate in the market, and then apply these across the board. This approach will also enable a smoother transition to the inclusion of small customers in the mechanism, and the longer-term move to a two-sided market.	thresholds to adjust over time without requiring amendment of the Guidelines. AEMO provided dispatch performance results from the RERT activations in the 2019/20 summer in section 4.7.2 of the Draft Report. AEMO acknowledges that there are substantial differences between the RERT and WDR mechanisms, such as customer type, incentives and dispatch notice, but considers this performance data to be a useful reference point for the setting of initial regional thresholds.
58.	Kinect	We understand that the Guidelines propose regional thresholds to be imposed on the amount of aggregated non-telemetered MRC. The approach proposed in the current Guidelines would, in effect, apply this regional threshold at the time of registration, creating an advantage for first movers. This advantage would have significant financial consequences for any participant registering after the threshold has been reached because of the costs associated with installing equipment capable of meeting AEMO's telemetry requirements. Kinect is of the view that having a certain amount of non-telemetered load being bid into the market should be assessed in a more dynamic manner, not only upon registration or classifying a load. The portfolio of non-telemetered load of already registered DRSPs may change over time and so would the pricing of their bids. It is conceivable that an early mover would not bid all its allocated non-telemetered load into the spot market, in which case the regional threshold would be underutilised. If more DRSPs could bid non-telemetered load it would increase competition (also noting that non-telemetered load may be bidding at lower prices due to lower costs of operation for the DRSP) and in turn, result in better price outcomes for the consumers of electricity. Kinect would, therefore, like to propose a dynamic allocation of non-telemetered load (while still meeting the regional threshold), rather than the current, static one. There are several ways this could be achieved, including, but not limited to introducing: a) the "use it or lose it" principle into the bidding process with regards to non-telemetered load b) network constraints that would limit the amount of non-telemetered load that can be dispatched in any 5-minute interval.	AEMO welcomes, and agrees with, Kinect's suggestion. AEMO has amended its approach to applying the regional thresholds so as to use dispatch constraints, as explained in section 4.7.

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59.	PIAC	As noted in our submission to the Issues Paper, PIAC considers the use of regional thresholds above which additional or alternative telemetry and communications equipment is required creates first-mover advantages and may discourage the development of WDR. PIAC recommends AEMO look for alternatives to regional thresholds that encourage the efficient provision of WDR in a region and the development of the market. We reiterate our concerns raised in our earlier submission that AEMO's proposal to take a conservative approach to setting regional thresholds will likely place unnecessary costs on participation, especially on smaller loads, and restrict the development of the WDR market, placing it at odds with the requirement to 'maximise the effectiveness of WDR at the least cost to end use consumers of electricity'.	AEMO considers that the application of regional thresholds as dispatch constraints in NEMDE should alleviate the first-mover advantage problem that is inherent if AEMO was to cap the amount of non-telemetered WDR that can be classified in a region. See also AEMO's response at item 57.
Baseline methodology development process			
60.	Enel X	The proposed process for assessing new baseline methodologies appears sensible. While 110 business days is a long time for AEMO to provide a final decision on the inclusion of a baseline methodology, we are supportive of the guideline including a deadline.	AEMO notes Enel X's support.
61.	Enel X	Noting that AEMO's draft decision is to not include a maximum timeframe for implementing a baseline methodology after approval, we still believe there is value in one being specified, otherwise there is nothing holding AEMO to that methodology's implementation.	As explained in the Draft Report, AEMO considers that uncertainty about implementation timeframes makes it challenging to specify a maximum timeframe for implementing a BM after approval. This uncertainty arises largely due to the potential for coincidence with high priority, resource-intensive projects, such as the implementation of major rule changes.
62.	Enel X	We agree with VIOTAS's comment that AEMO should allow for the development of new baseline methodologies to commence as early as possible. While the baseline methodology to apply at the commencement of the WDRM is still unknown, we are concerned that what is being proposed (in combination with the proposed eligibility metrics) will rule out a significant number of loads.	As explained in the Draft Report, AEMO anticipates that its assessment of the incremental benefits of a new BM will require experience with the operation of the WDRM and the performance of existing BMs. For this reason, AEMO expects that assessments of new BMs will benefit from lessons learned from the first summer of operation of the WDRM (2021-22), potentially resulting in improved efficiency in the establishment of additional BMs. Consequently, AEMO has stipulated in the Guidelines that applications may be submitted on or after 1 April 2022.

No.	Consulted person	Issue	AEMO response
Applying a baseline methodology and settings to a WDRU			
63.	Enel X	The proposed approach to applying a baseline methodology and settings to a WDRU appears sensible. We support the ability for DRSPs to do this via the Portfolio Manager system.	AEMO notes Enel X's support.
Maximum responsive component			
64.	Enel X	The proposed approach to setting and amending the NMI-Level MRC appears sensible. However, the proposed process for amending a DUID-Level MRC is lengthy. As noted above, the development of a vibrant and competitive WDR market relies on DRSPs being able to add new loads to their DUIDs, and WDRUs being able to switch between DRSPs, quickly and cost-effectively.	AEMO shares Enel X's aspiration for a vibrant and competitive WDRM and recognises the importance of ensuring that registration processes are as quick and cost-effective as feasible. However, a change to the DUID-Level MRC, which is an item of bid and offer validation data under NER Schedule 3.1, requires manual updates to be made in AEMO's systems. The stipulation in paragraph 5.2(o) of the Guidelines, that the DUID-Level MRC will take effect at least six weeks after the receipt of the application, mirrors the NER requirement at Schedule 3.1(d) that requires updates to bid and offer validation data to be submitted to AEMO at least six weeks prior to the date of the proposed change. However, paragraph 5.2(o) of the Guidelines allows for this to be faster where AEMO agrees for the DUID-Level MRC to apply from an earlier trading day.
Access to baseline data			
65.	ENA	We thank AEMO for recognising the role that DNSPs play in maintaining their local distribution networks as well as the larger electricity system and the information they need in order to do so.	AEMO notes ENA's support.
Other matters out of scope of Guidelines			
66.	Kinect	There are a lot of customers with on-site generators which can be used to meet load requirements locally, reducing the amount of electricity being imported/consumed via the grid. They would constitute a significant portion of the total capacity that may be utilised for demand response in the NEM. There would also be several customers with on-site generation who would be affected	AEMO notes that it is implementing FSIPs in the WDRM, which will be an important mechanism to allow DRSPs to reflect their response capabilities through dispatch bids. Details on the FSIP implementation for the WDRM were shared with stakeholders at meeting 4 of the WDR CG.[17]

[17] See slides 32-34 of the meeting pack for WDR CG meeting 4, available at https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/wholesale/wdr/wdr-cg-04-meeting-pack-22-sep-20.pdf?la=en.

No.	Consulted person	Issue	AEMO response
		by the lack of fast start inflexibility profiles (FSIP) that are currently available for registered generators. In the Guideline's current approach, throughout a 30-minute interval, and depending on the spot price outcomes, customers might be required to provide demand response in one or more nonconcurrent 5-minute trading intervals. We believe this requirement would not be technically feasible for a number of potential participating loads, effectively creating a barrier to entry to the WDRM. We understand that creating a minimum activation time, similar to existing FSIP may potentially be out of scope for the Guidelines consultation, however, we'd strongly support AEMO examining the possibility of finding a solution to this issue within the Guidelines.	

APPENDIX C. ATTACHMENT 1 – FINAL WHOLESALE DEMAND RESPONSE GUIDELINES

Attachment 1 is available at: https://aemo.com.au/consultations/current-and-closed-consultations/wdr-guidelines. This attachment provides the final Guidelines, in effect from 24 June 2021.

AEMO has also published a marked-up version of the final Guidelines against the draft Guidelines, to help stakeholders identify the changes made as a result of this final determination.