Stakeholder Forum Voluntarily Scheduled Resources Guidelines

Integrating Price Responsive Resources into the NEM reform (IPRR)

28 February 2025

1. Welcome

Ulrika Lindholm (AEMO)

We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country; and hope that our work can benefit both people and Country.

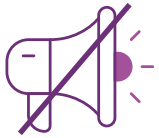
'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have delivered its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation - a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Read our RAP

General Housekeeping

1. Please mute your microphone.



2. We look forward to your feedback and questions. Use the 'Chat' function to ask any questions or comments throughout the session.
   - AEMO SMEs are on the call, who will attempt to respond in the chat.

3. Key questions or comments will be addressed verbally in dedicated Q&A sections.
4. In attending this meeting, you are expected to:
   - Contribute constructively.
   - Be respectful, both on the call and in the chat.

Participants are asked to familiarise themselves with AEMO's Competition Law Meeting Protocol as outlined in Appendix A and at AEMO's website.

IPRR reform to date

2022
AEMO consulted on 'Scheduled Lite' high-level design

10 Jan 2023
AEMO submitted rule change request

03 Aug 2023
AEMC published Consultation Paper

14 Dec 2023
AEMC published Update Paper

15 Feb 2024
AEMC published "Benefits modelling"

25 Jul 2024
AEMC Draft determination & rule

02 Aug 2024
AEMO published draft HLIA v0.1

07 Aug 2024
AEMO public briefing on HLIA

27 Aug 2024
AEMC public forum

12 Sep 2024
AEMC consultation on draft rule concludes
AEMO published draft HLIA v0.2

19 Dec 2024
AEMC Final determination & rule

20 Mar 2025
AEMO Final HLIA

The IPRR high-level implementation assessment (HLIA) provides an indicative and preliminary view to participants on how the IPRR rule may be implemented by AEMO.

For more information visit:

nemreform@aemo.com.au

AEMO | NEM Reform | IPRR

AEMC | IPRR rule development

Agenda

#	Time (AEDT)	Topic	Presenters
1	10:00-10:05 AM	**Welcome**	Ulrika Lindholm **(AEMO)**
2	10:05-10:10 AM	**Objective of this Session**	Ulrika Lindholm **(AEMO)**
3	10:10-10:20 AM	**Purpose & Context of the IPRR Reform**	Emily Brodie **(AEMO)**
4	10:20-10:25 AM	**Approach – Voluntarily Scheduled Resources (VSR) Guidelines**	Oliver Derum **(AEMO)**
5	10:25-11:00 AM	**Matters for VSR Consultation**	Oliver Derum & Louise Bardwell **(AEMO)**
6	11:00-11:05 AM	**Next Steps**	Ulrika Lindholm **(AEMO)**
7	11:05-11:25 AM	**Q&A**	Ulrika Lindholm **(AEMO)**
	11:30 AM	**Close**	

Prereading:

- AEMC Final Rule: Integrating Price Responsive Resources into the NEM (IPRR)
- AEMO's v1.0 IPRR High Level Implementation Assessment
- AEMO's Voluntary Scheduled Resources Guidelines Consultation Paper
- AEMO's IPRR Project Webpage: Integrating Price Responsive Resources into the NEM (IPRR)

Appendix A AEMO Competition Law - meeting protocol

Appendix B Glossary

Appendix C Additional Matters

"Please note that this meeting will be recorded by AEMO and may be accessed and used by AEMO for the purpose of compiling minutes. By attending the meeting, you consent to AEMO recording the meeting and using the record for this purpose. No other recording of the meeting is permitted"

2. Objective of this Session

Ulrika Lindholm (AEMO)

Objectives of today's session

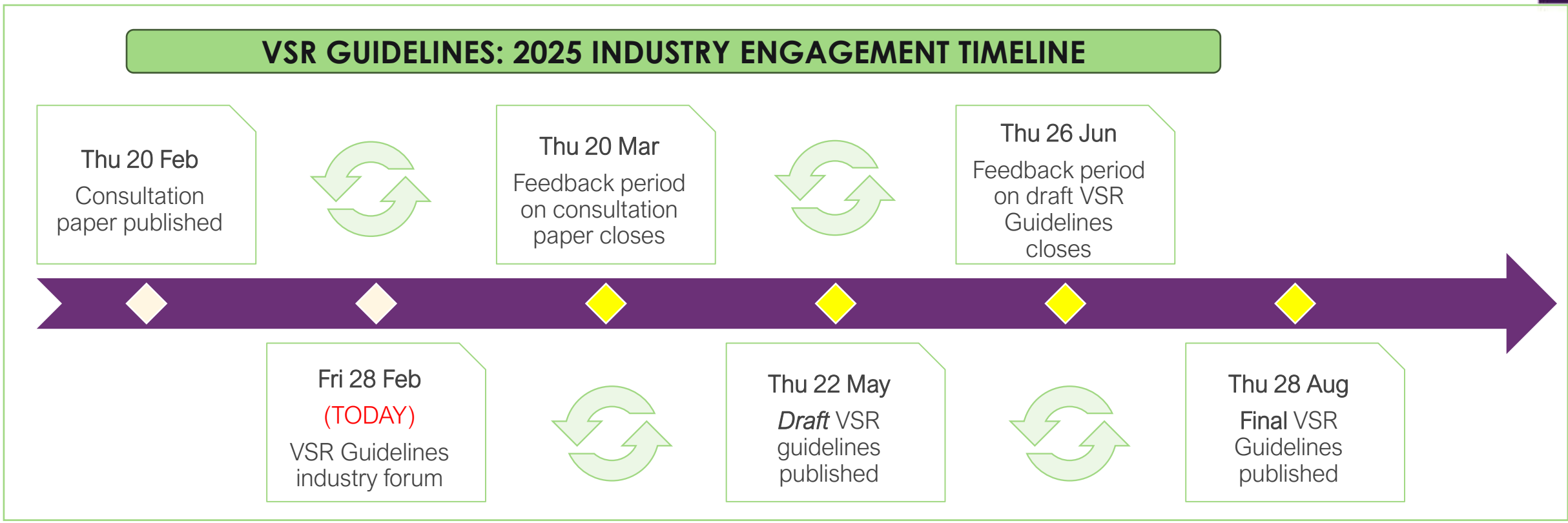
1. Provide an understanding of Voluntarily Scheduled Resources guidelines

2. An opportunity to share insights and seek clarification

3. Invite participation in this VSR Guidelines consultation process

Scene setting: 'Green fields'

- Today is all about the VSR Guidelines Consultation Paper but it's about collaboration too.
- The content we will cover today is not 'set in stone' and we want to hear from our stakeholders over the coming months about what the best solutions could be.
- We intend to have ongoing discussions with all industry stakeholders in formats that suit e.g. 1:1's or potentially working group sessions.



Collaboration approach

To support uptake of IPRR, AEMO seeks to engage industry stakeholders collaboratively in the development of technical and operating parameters for the Integrating Price Responsive Resources reform.

Proposed engagement principles:

- Support broad awareness and understanding of IPRR reform
- Support collaborative problem identification
- Complement statutory consultations on new and existing guidelines and procedures for IPRR (e.g. Voluntarily Scheduled Resources Guidelines consultation)
- Leverage existing programs of work and channels for engagement as relevant to optimise stakeholder touch points with AEMO (e.g. NEM Reform Program forums or existing DNSP working groups)

Indicative approach based on feedback to date:

1:1s		Focus Group(s)
Audience: Prospective Voluntarily Scheduled Resource providers, Industry bodies Topics: Understanding and working through barriers and opportunities Timing: February start	Combined sessions for information sharing on common issues and consolidated positions: NEM Reform Program forums, dedicated stakeholder forums	Audience: Distribution networks Topics: Understanding participant interactions and data sharing Timing: Late March (TBC) start

AEMO is seeking input into this collaboration approach. Have we missed a key stakeholder group? What are your needs? Do you have a view on what is the appropriate approach and timing for engagement?

3. Purpose & Context of the IPRR Reform

Emily Brodie (AEMO)

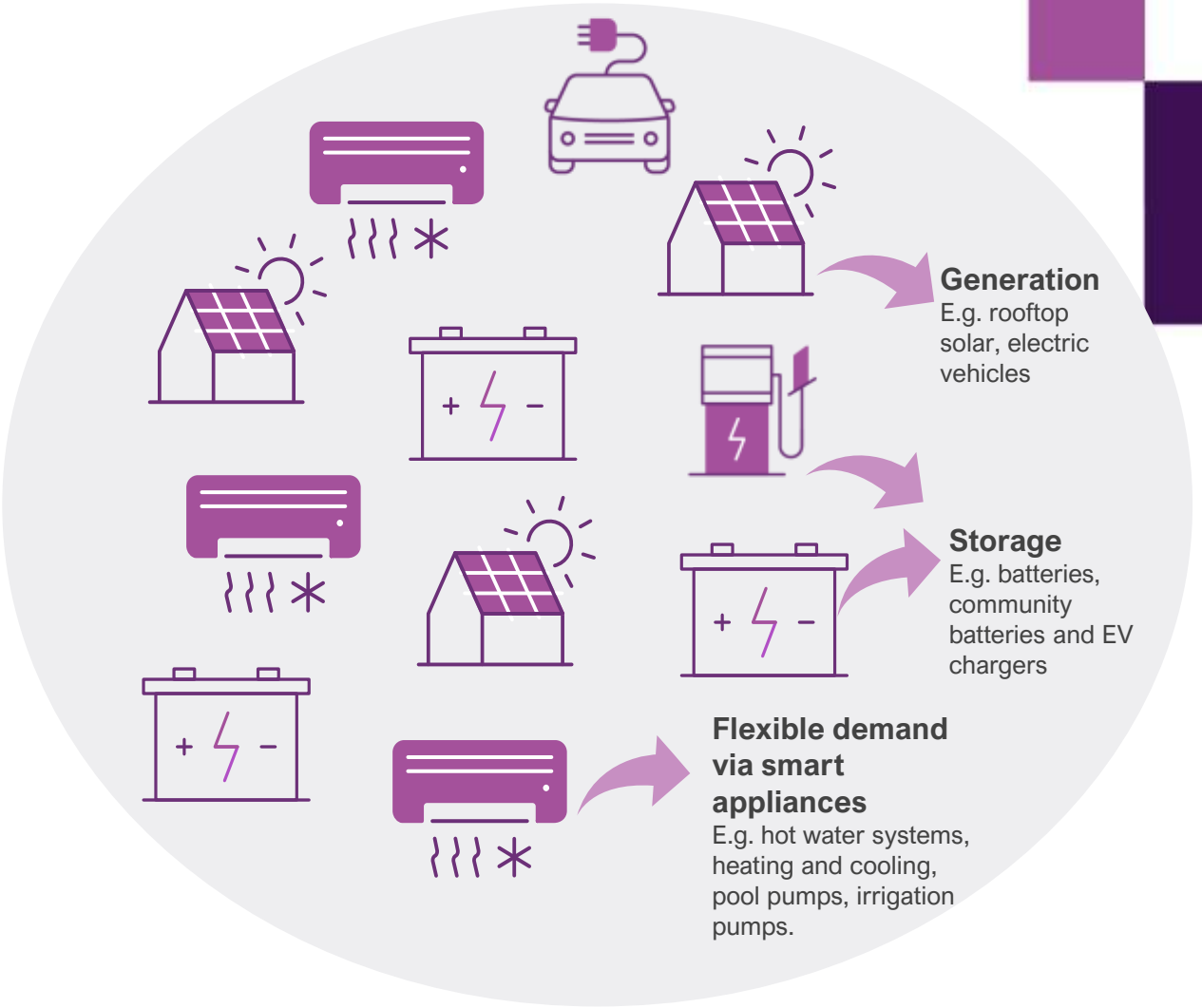
What is a ‘price responsive’ resource?

For IPRR, the term *unscheduled price-responsive resource* refers to a resource which meets the following criteria:

- ✓ It is currently not scheduled through the NEM dispatch process, and
- ✓ It does or could respond (individually or as part of an aggregation) to market price signals.

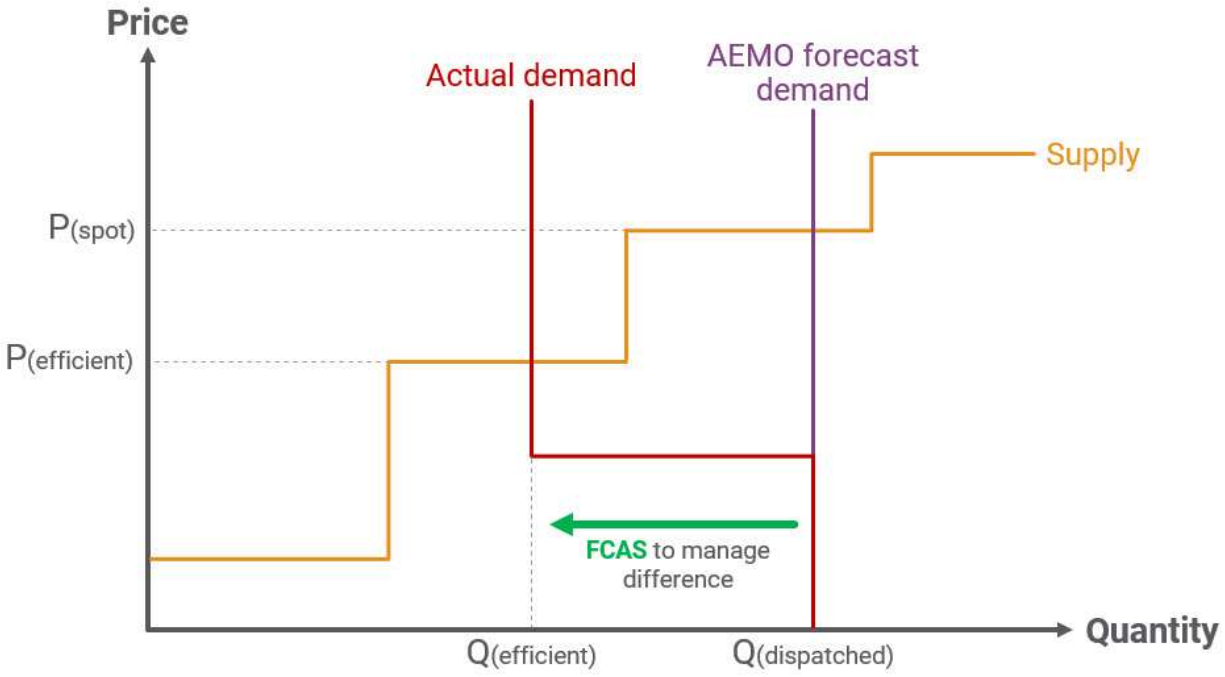
Includes a wide range of resources:

- Small-medium sized assets across renewable generation, storage and flexible demand
- Owned by residential, commercial and industrial consumers, therefore including both Consumer Energy Resources (CER) *and* Distributed Energy Resources (DER).
- Often coordinated by an aggregator, such as a VPP or retailer, on behalf of the consumer.
- Unable to participate in some services that are available to scheduled resources (e.g. regulation FCAS), which limits the value that customers can receive for their CER.



Problem: Existing arrangements don't integrate these resources in the NEM

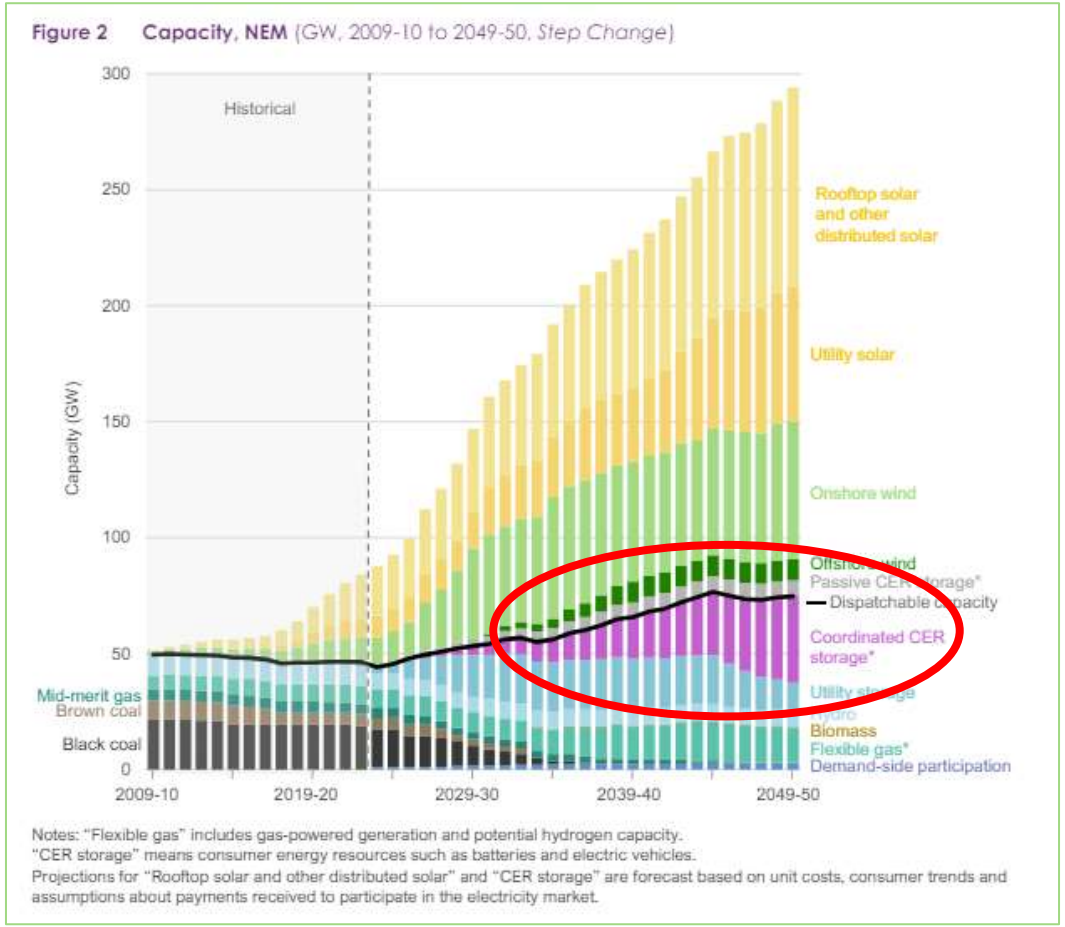
INACCURATE DEMAND FORECASTS => INEFFICIENCIES & COSTS



REFERENCE: AEMC, IPRR final determination p.12.

- Small distributed resources cannot participate in central dispatch easily i.e. can't access the full market (energy and FCAS)
- Price is not an input into demand forecasting
- This results in:
  - → Higher spot prices (P(s))
  - → Higher generation costs
  - → Potentially use of higher emitting generation
  - → To balance the system, increased use of FCAS and potentially emergency reliability measures
- Over time these inefficiencies may lead to additional market entry, at a material cost.

Why is the IPRR initiative important?



- Forecast rapid growth in unscheduled price responsive resources is expected.
- These resources are already being aggregated and operated dynamically to respond to NEM price signals.
- Without effective coordination of consumer batteries, around $4.1 billion of additional grid-scale investment would be needed, increasing the costs that are reflected in consumer bills.

REFERENCE: AEMO, 2024 Integrated System Plan p.11.

AEMC made IPRR rule on 19 Dec 2024

Three components, each with new supporting document

1. Dispatch mode

- **Problem**: Small distributed resources cannot participate in central dispatch easily.
- **Solution**: New *VOLUNTARY* "Dispatch mode" to integrate presently unscheduled price-responsive energy resources into NEM scheduling processes.

TODAY'S FOCUS

→ VSR GUIDELINES
Establishes the technical and operational characteristics of VSRs.

2. Incentive framework

- **Problem:** Being scheduled does not always provide the scheduled participant with benefits.
- **Solution**: New time-limited incentive mechanism (tenders) to encourage participation in dispatch mode. Up to $50m, with potential top ups from external bodies.

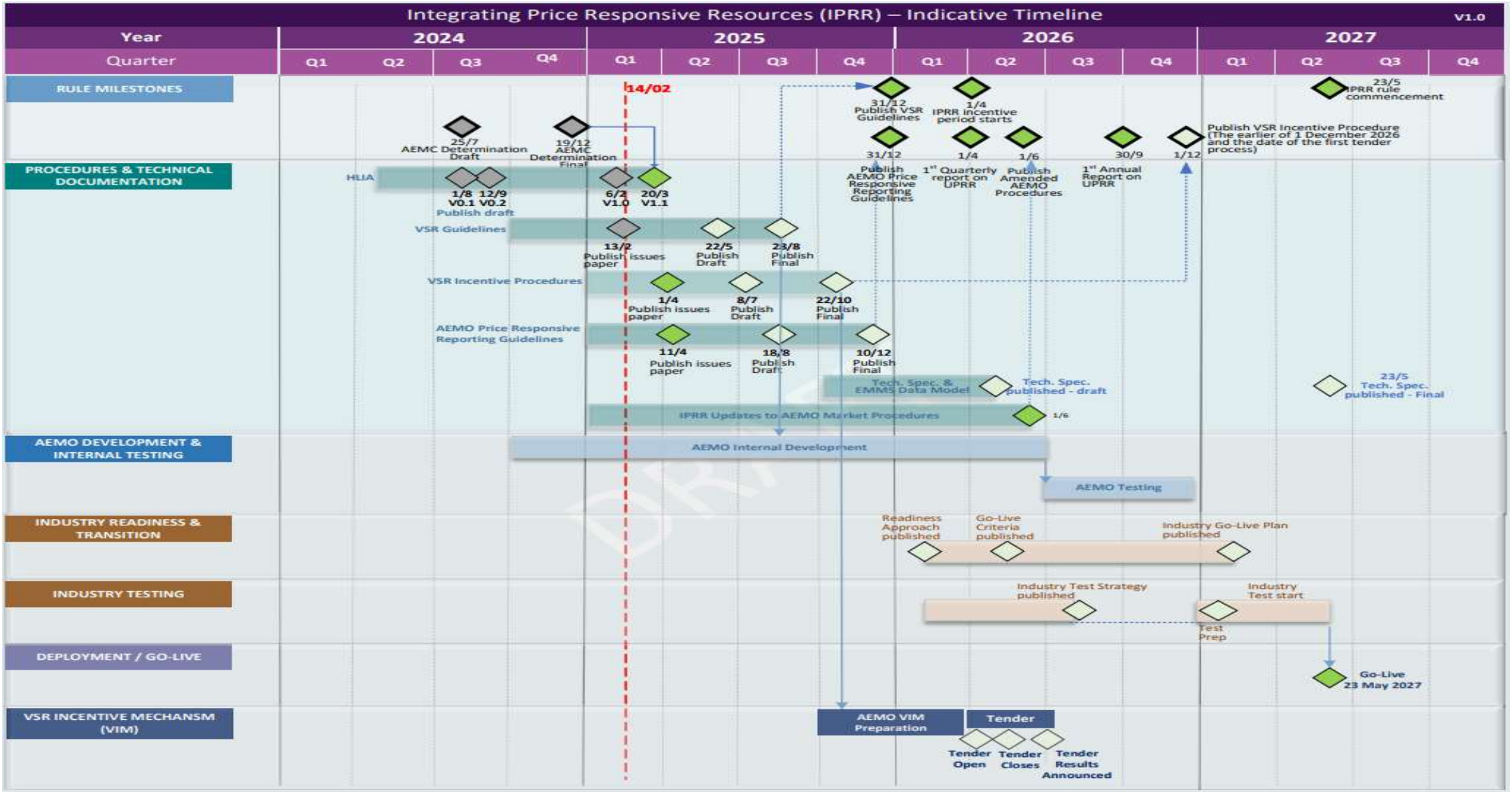
→ VSR INCENTIVE PROCEDURE
Specifies a range of matters to support operation of the VSR incentive mechanism including "participation payments".

3. AEMO monitoring & reporting framework

- **Problem:** Price sensitivity is not currently used by AEMO as an input for demand forecasting.
- **Solution**: New framework to understand and manage the impact of unscheduled price-responsive energy resources on operational demand forecasting processes and market outcomes.

→ AEMO PRICE RESPONSIVE REPORTING GUIDELINES
How AEMO will meet its annual and quarterly reporting obligations.

IPRR indicative timeline

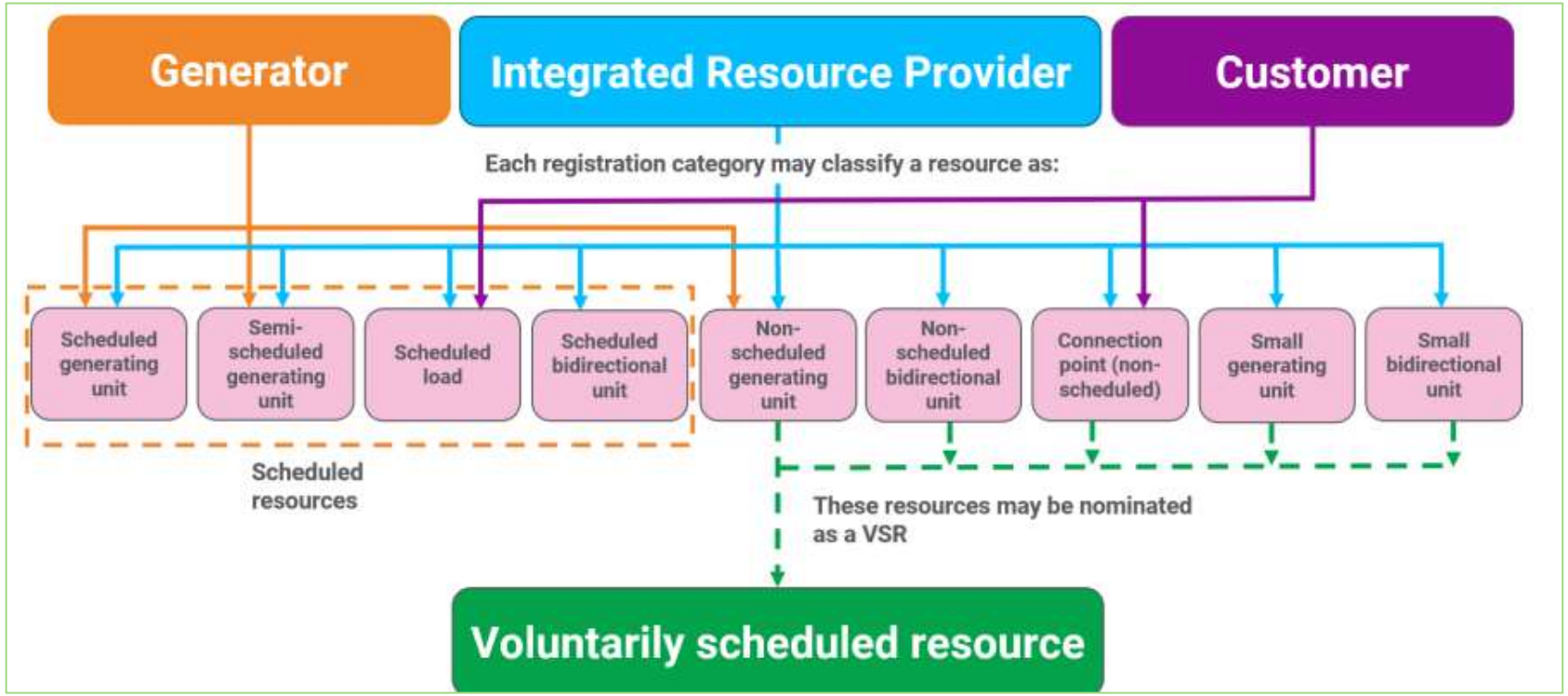


Dispatch mode high-level design: Qualifying resources

→ VSRs can comprise small to medium sized assets across renewable generation, storage and flexible demand that cannot presently be scheduled.

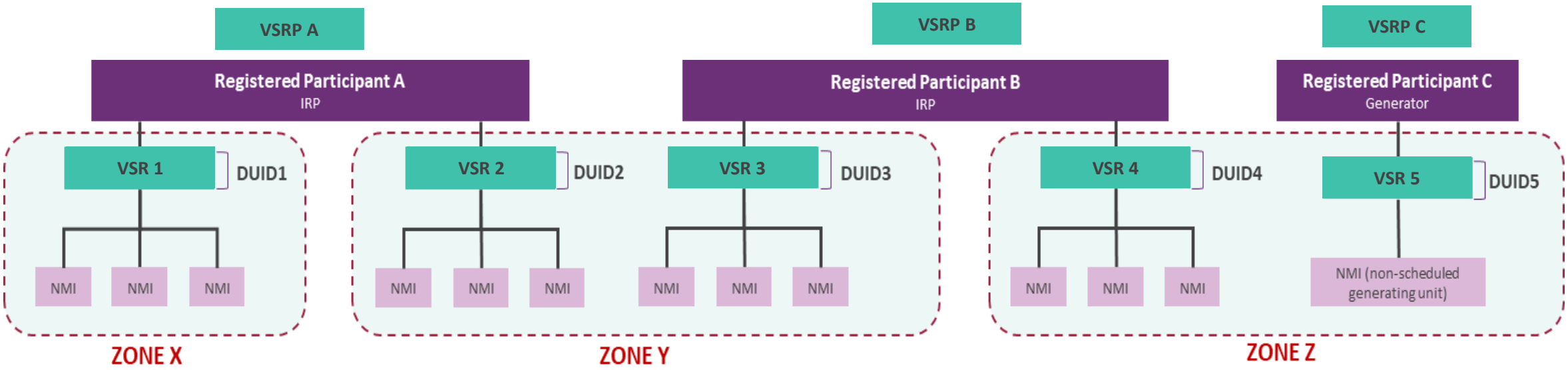
→ VSRs are coordinated by aggregators known as a voluntarily scheduled resource providers (VSRP), such as a VPP or retailer, on behalf of the consumer

→ VSRP must be the financially responsible market participant (FRMP) for the connection point/s nominated as a VSR.



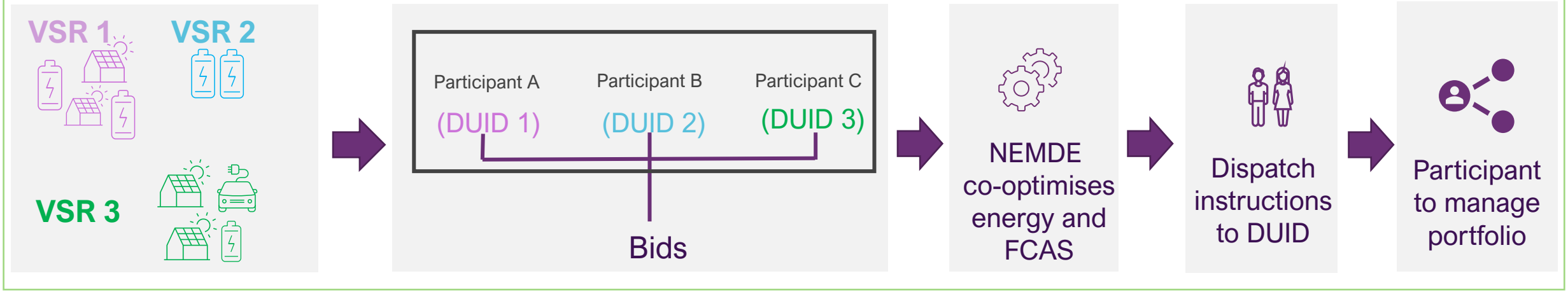
Dispatch mode high level design: VSR Zones

Qualifying resources for an aggregated VSR must be contained within a VSR Zone.



Dispatch mode high level design: VSR dispatch

VSRs can be scheduled & dispatched, consistent with existing framework for scheduled resources.



Dispatch mode high level design: VSR participation modes

Participation modes recognise that some VSRs can only participate in dispatch for specific periods e.g. where a VSR:

- May not have continuous operational capabilities
- May operate seasonally.

DEACTIVATED VSR…

… during which time the VSR only partially participates in central dispatch

- Partial opt-out of dispatch mode
- Participants submit bids but do not need to conform to dispatch instructions
- Applies to every qualifying resource in the VSR
- Criteria and process for to be set in the VSR guidelines.

HIBERNATED VSR

For at least 30 days and no more than 18 months during which the VSR will not participate in central dispatch

- Full opt-out of dispatch mode without deregistration
- Applies to every qualifying resource in the VSR
- The previous classification for that qualifying resource applies e.g. non-scheduled generating unit, non-scheduled bidirectional unit, non-scheduled load.
- Criteria and process to be set in the VSR guidelines.

4. Approach – Voluntarily Scheduled Resources (VSR) Guidelines

Oliver Derum (AEMO)

Purpose of the VSR Guidelines

- IPRR rule provides the framework for dispatch mode.
- VSR Guidelines operationalise dispatch mode by establishing:
  - → Detailed technical and operating parameters for VSRs
  - → Other requirements for VSRPs, DNSPs, metering service providers, AEMO. NER 3.10A.3 specifies a number of elements the Guidelines must contain, including:

• Requirements for nominating qualifying resources into VSRs	• Requirements and process for aggregation of VSRs	• Framework for testing the capabilities of qualifying resources
• Types of data to be submitted	• Dispatch conformance criteria	• Zonal aggregation requirements
• Telemetry & communications requirements	• Acceptable types of metering installations	• Deactivation and temporary hibernation requirements
• Thresholds for participation	• DNSP and (where relevant) TNSP data sharing requirements	• Any other information AEMO considers reasonably necessary.

Maximising participation while preserving system security

The NER places obligations on AEMO to:

- "facilitate ease of participation in central dispatch for VSR" (3.10A.3(d)(2))
- apply restrictions on VSRs in central dispatch "only to the extent reasonably necessary for AEMO to manage power system security and reliability" (3.10A.3(d)(3))

As stated in the consultation paper, AEMO agrees with the intent of these provisions. In developing the VSR Guidelines, AEMO intends to pursue an approach that seeks to maximise VSR growth and participation, within the bounds necessary to allow the secure and reliable operation of the power system.

Managing system security risks as VSRs grow

At the commencement of the IPRR reform, the small number/capacity of VSRs will mean the risks to system security are relatively low. However, the risks will increase as the number and capacity of VSRs grows.

In recognition of this, the framework includes a review of the Guidelines after three years to ensure settings remain appropriate as the market develops.

5. Matters for VSR Consultation

Oliver Derum & Louise Bardwell (AEMO)

VSR Guidelines consultation: Elements for discussion

- Consultation paper considers 13 proposed sections for the VSR Guidelines
- AEMO will focus on **seven of these sections today**
- We have structured today's discussion around matters that:
  1. May relate to a range of stakeholders*
  2. Will relate mostly to VSRPs.

Proposed sections of the VSR Guidelines

1. *Determining zones and loss factors**
2. *Nomination**
3. *Portfolio management*
4. *Capability assessment*
5. *Deactivation and temporary hibernation*
6. *Bidding*
7. *NEMDE processes*
8. *Dispatch*
9. *Conformance*
10. *Metering*
11. *Settlement*
12. *Prudential management*
13. *Data and information sharing**

Matters that may relate to a range of stakeholders (including DNSPs and VSRPs)

What is a VSR zone?

- Refers to the network boundaries, on the network, within which the connection points of the qualifying resources for an aggregated VSR must be contained.
- A key factor for enabling participation in, implementing, and operating dispatch mode.
- Larger zones are more likely to support the development and growth of VSRs.
- Could be based on existing NEM zonal classifications or a new approach.

Could these be appropriate for VSR zones?

NEM ZONE TYPE	#	FEATURES
NEM regions*	5	• Used in NEM Dispatch Engine (NEMDE) for central dispatch
Load Forecasting Areas	8	• Used in the development of pre-dispatch and short term load forecasts • Used in the implementation of the Wholesale Demand Response (WDR) mechanism
ISP sub-regions	12	• Used to improve the granularity of optimisations previously assessed across the five NEM regions
Distribution network areas	13	• Areas serviced by Distribution Network Service Providers (DNSPs) to supply electricity to end-users
Congestion modelling zones	17	• Used to perform congestion modelling and analysis
Renewable Energy Zones (REZs)	43	• Used to cluster large-scale renewable energy projects and supporting network infrastructure

*VSR will be settled at the spot price determined for each NEM region, so NEM regions are the largest zone that could be considered

The current term used is 'VSR zone'. We welcome stakeholder feedback on this term and suggestions for other names.

What other zonal classifications could be appropriate to use as the basis of VSR zones?

Determining VSR zones: Factors to consider

Stakeholder input is needed on the key factors for setting VSR zones. These could include:

Size and ease of participation	• The larger the zones are, generally the more NMIs it will contain. • Larger zones are therefore more likely to support the development and growth of VSRs.
System security	• VSR zones must be set in a way that supports effective management of the power system
Load forecasting	• VSR zones must be set in a way that allows VSRs to be effectively integrated into the load forecasting process.
Balancing VSR volume risks to system security over time	• Likely that VSRs will initially be small and unlikely to have a material impact on power system security in the short term. • Therefore leniency on zoning likely comes at a lower risk in the early years of dispatch mode operations.
Stability	• Change to VSR zones should be minimised because they would likely be disruptive to VSR operations and development for VSRPs, AEMO and DNSPs. • Under the NER, zones cannot change for the first three years.
Support future dynamic operating envelope (DOE) integration	• DNSPs will need to appropriately manage and estimate the individual market connection point responses that could be given for a VSR in their network.

What other factors should be considered when setting VSR zones?

Determining VSR zones: Initial views for consultation

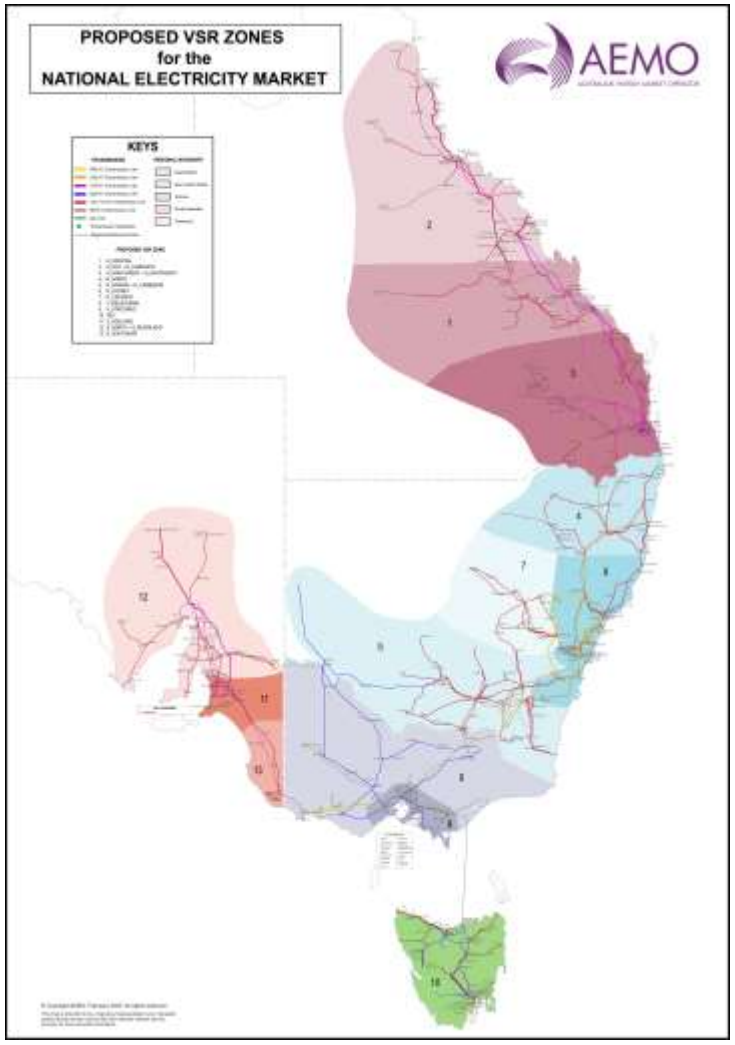
Considering these key factors, AEMO's initial views for consultation on the use of existing zone classifications are:

- NEM regions are the largest zones that could be considered, particularly in the early years to support VSR growth.
- Over time as VSR volumes increase, using NEM regions as the basis of VSR zones could compromise the effective management of power system congestion.
- AEMO's early view is that using congestion modelling zones as VSR zones would best support managing power system needs (security, reliability, congestion and stability), but note that their size could compromise VSR development in the early years.
  - Size: Some of the less congested zones could be amalgamated to form a total of 13 VSR zones.
  - Stability: Changes to congestion zones are not common, last change occurred >10 years ago.
- Other NEM zonal classifications would not be appropriate as the basis of VSR zones:
  - Using ISP sub-regions, load forecasting areas or distribution network areas would not support power system management.
  - Size and ease of VSR participation would likely be affected by the smaller size of some distribution networks areas, particularly in Victoria.
  - REZs don't provide sufficient geographic coverage to be considered as VSR zones.

How should VSR zones be established to support both VSR growth and system security over time?

Could there be a transitional approach to setting zones as VSR volumes increase? What would the transitional impacts be?

Determining VSR zones: How and when would zones be reviewed?



- VSR zones cannot change for the first three years
  - NER 11.180.5
- A review of VSRs zones can occur via:
  - VSR Guidelines review, to take place by May 2030
  - Subsequent reviews using the NER 8.9 'Rules consultation procedures'
- If AEMO and industry are considering changes to VSR zones, AEMO will provide guidance for VSRPs on the processes and timing for implementing these changes, including a minimum lead time before changes would take effect.

What is the impact of using different types of zonal aggregations for VSR zones?
For example, are there impacts to VPPs currently operating across NEM regions or VSR proposed zones?

What is a suitable minimum lead time for changes to VSR zones to take effect?

Nomination: Minimum threshold for VSRs

VSR minimum size is a **key parameter** for dispatch mode participation.

- We need to get the balance right, noting:
  - The smaller the minimum size, the easier it is to form a VSR.
  - The administrative and operational challenges arising from a larger number of smaller VSRs.
- Factors to consider include:
  - → How VSR capacities and numbers could change over time
  - → WDR, where WDRUs have a 'max responsive component' minimum of 1 MW, aligned with the 1 MW bid threshold.
  - → Contingency FCAS, where SRUs need to be a minimum capacity of 1 MW to provide, aligned with the 1 MW bid threshold.
  - → Existing standing exemption from registration, which is set at 5 MW.
- AEMO's initial preference is for a minimum threshold of 5MW to manage operational challenges noting this could compromise VSR development in the early years.

What other factors should be considered when setting a minimum VSR threshold?

How else could we encourage participation of smaller aggregators in dispatch mode?

Do you agree with a minimum threshold of 5 MW? If not, why not?

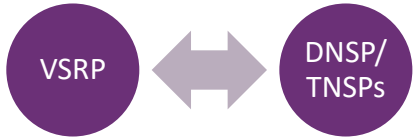
How do you see VSR capacities and numbers changing over time?

Could the minimum size be set lower and then increase as the volume and capability of VSRs increases? What would the transitional impacts be in this scenario?

Data & information sharing

IPRR rule requires AEMO to establish the following data and information sharing processes in the VSR Guidelines.

- Next slide indicates types of data & information sharing for consultation
- Particularly interested in supporting DNSPs to appropriately:
  - Manage and estimate the individual market connection point responses for a VSR in their network.
  - Manage DOE calculations.



Industry and AEMO considering how data sharing may align with other current reform initiatives, including:

- MITE program
- CER Data Exchange

Do the VSRPs have any privacy concerns related to the sharing of particular datasets, either directly or via AEMO?

What data do NSPs believe they require and for what purposes? Do they have a preference regarding the processes for sharing this data?

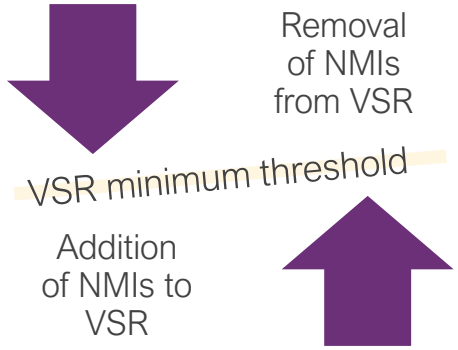
Data & information sharing for consultation

DATA TYPE	SOURCE OF DATA	NSP ACCESS	HOW DNSP/TNSP CAN ACCESS	FREQUENCY	VSR MODE
VSR STANDING DATA					
NMIs (including SSPs) within VSR	PMS	To be determined	AEMO to DNSP/TNSP DNSPs/TNSPs will have right to access SSPs info via MSATS from Unlocking CER Benefits go-live	As frequently as changes occur	All modes
Embedded network on market child NMIs within VSR	PMS	No	DNSPs/TNSPs do not have a right to access NMI information within an embedded network	N/A	N/A
DUID	Website publication of Registration & Exemption list	Yes	AEMO to DNSP/TNSP	As frequently as changes occur	All modes
VSR mode – active, inactive, hibernated	PMS	Yes	AEMO to DNSP/TNSP	As frequently as changes occur	All modes
BIDDING & DISPATCH					
Bid quantity (submitted by VSRP)	Market Portal (VSRP to AEMO)	Yes	AEMO to DNSP/TNSP	Daily – Post market	Active, Inactive
Bid price (submitted by VSRP)	Market Portal (VSRP to AEMO)	No	No need to access	N/A	N/A
Final dispatch quantity	Market summary report (public)	Yes	DNSP/TNSP access to market summary report	Daily – Post market	Active
Final dispatch price	Market summary report (public)	Yes	DNSP/TNSP access to market summary report	Daily – Post market	Active
ST PASA	Market Portal (VSRP to AEMO)	No	No need to access	N/A	N/A
Ramp rates	Market Portal (VSRP to AEMO)	Yes	AEMO to DNSP/TNSP	Daily	Active

Matters that relate specifically to VSRPs

Portfolio management: Managing NMI changes in a VSR

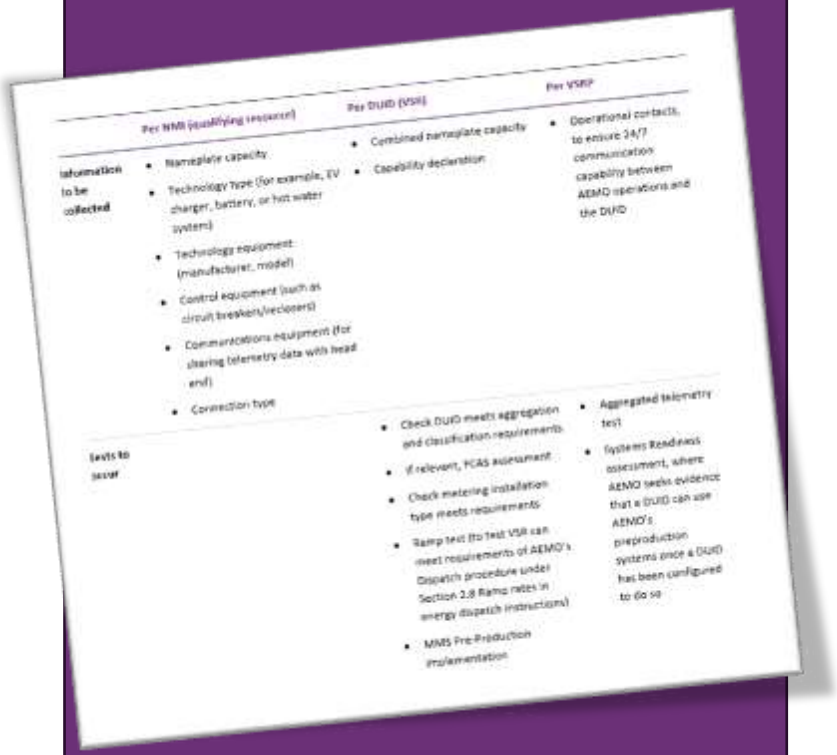
- VSRPs will use the Portfolio Management System to move NMIs in and out of a VSR.
- VSR Guidelines need to set out requirements and processes for scenarios where NMI changes in a VSR trigger VSRP or AEMO activities:
  - → System security impacts: AEMO may require VSRPs to change the NMIs in a VSR if it needs to be represented as two or more dispatchable units in central dispatch to maintain power system security.
  - → Non-conformance: AEMO may require VSRPs to change the NMIs in a VSR if it detects non-conformance with the VSR dispatch conformance criteria.
- AEMO has also identified the need to consider how it will manage and support VSRPs in cases where removal of NMIs cause a VSR to drop below the minimum size.



Do you agree with the proposed situations that would trigger AEMO requiring NMI changes in a VSR?

What processes should be established to deal with NMI churn resulting in a VSR falling below the minimum size of a VSR.

Capability assessment: Information and tests



	Per NMI (qualifying resource)	Per DUID (VSR)	Per VSRP
Information to be collected	• Nameplate capacity • Technology type (for example, EV charger, battery, or hot water system) • Technology equipment (manufacturer, model) • Control equipment (such as circuit breakers/reclosers) • Communications equipment (for sharing telemetry data with head end) • Connection type	• Combined nameplate capacity • Capability declaration	• Operational contacts, to ensure 24/7 communication capability between AEMO operations and the DUID
Tests to occur		• Check DUID meets aggregation and classification requirements • If relevant, FCAS assessment • Check metering installation type meets requirements • Ramp test (to test VSR can meet requirements of AEMO's Dispatch procedure under Section 2.8 Ramp rates in energy dispatch instructions) • MMS Pre-Production implementation	• Aggregated telemetry test • Systems Readiness assessment, where AEMO seeks evidence that a DUID can use AEMO's preproduction systems once a DUID has been configured to do so

Information and tests AEMO could collect during initial nomination of a VSR has been summarised in Table 4

VSRPs will undergo an initial capability assessment to ensure their capability to operate VSRs. The consultation paper:

- Lists the proposed information or tests required from VSRPs that would support AEMO's checks
- Proposes 'periodic capability assessments' to check that a VSR is meeting its operational requirements and the quality of telemetry data.
- Proposes telemetry requirements for VSRs.

What information or tests would be reasonable for AEMO to require in the initial capability assessment framework? Should we tailor these to different services (energy dispatch, regulation FCAS, contingency FCAS)

What are your views on the proposed periodic capability assessments?

Capability assessment: Telemetry and communications

Table 5: Telemetry data requirements for VSR

	VSRs below thresholds	VSRs above thresholds
Definition	• VSP's estimate of the power provided by a VSR DUID, representing the sum over all of the NMI connection points within the VSR DUID • No adjustment for distribution or transmission losses • Qualifying resources in a VSR at each NMI connection point = Net metered active power flow at all VSRP-controlled devices behind the connection point	
Dimensional units	MW	MW
Minimum/maximum resolution	• Minimum: 0.001 MW • Maximum: 0.1 MW	• Minimum: 0.001 MW • Maximum: 0.1 MW
Processing	Instantaneous	Instantaneous
Quality flag	Mandatory provision • Set to bad quality if the sum of all NMI VSR associated with NMI VSR meters that have failed or report bad quality measurements exceeds 25% of the DUID-Level nameplate or combined nameplate capacity	Mandatory provision Set to bad quality if the sum of all NMI VSR associated with NMI VSR meters that have failed or report bad quality measurements exceeds 25% of the DUID-Level nameplate or combined nameplate capacity
Validations	Must be a number Range: 0 to DUID-Level nameplate or combined nameplate capacity + 20%	Must be a number Range: 0 to DUID-Level nameplate or combined nameplate capacity + 20%
Minimum update frequency	60 seconds	4 seconds

Proposal for telemetry data requirements for VSRs in Table 5

Proposed telemetry and comms requirements includes:

→ 24-hour, seven days a week operational response capability when in active mode

→ Compliance with 'Power System Data Communications Standard'

→ Minimum update frequency for aggregated telemetry data of:

- 60 seconds for VSRs <30 MW
- 4 seconds for VSRs >30 MW

What are your views on the proposed approach to managing VSR telemetry and communications?

Notice periods for switching between VSR participation modes

Detailed information on notice period proposals and AEMO's reasoning in the consultation paper Table 7

- The full list of proposed notice periods for VSR participation mode switching is in the consultation paper
- For today's discussion, please note the proposed seven-day notice period for VSRPs for deactivation, hibernation and resumption requests
- Reasoning behind this approach includes:
  - → Aligns with requirements to include VSRs (excluding hibernated VSRs) in ST PASA forecasts
  - → Provides sufficient time for AEMO to make the necessary pre-dispatch updates
  - → Supports proper management of Minimum System Load (MSL) risks and operational impacts across the network
  - → Allows AEMO to make necessary manual changes or, in case of resumption, potentially perform check of technical capability

Do you agree with the proposed notice periods for switching between VSR participation modes?

Should intra-day mode switching be considered? i.e. to nominate the trading intervals within a day for particular VSR modes?

VSR energy dispatch conformance

- VSR energy dispatch conformance will be assessed at the DUID (VSR aggregation) level using aggregated telemetry data.
  - → AEMO may check accuracy of aggregated telemetry data against NMI metering data if it notices repeated cases of non-conformance.
- AEMO is proposing that:
  - → Error thresholds for VSR will be set to be appropriate in relation to the chosen minimum nameplate or combined nameplate rating for VSR.
  - → In the case of non-conformance, AEMO will not declare the VSR as non-conforming or send market conformance notices out to the VSRP.
  - → AEMO will monitor for repeated incidences of dispatch non-conformance by a VSR that it deems to be unacceptable or a threat to power system security.
  - → If required, AEMO will place a non-conformance constraint on the VSR and notify the VSRP it is under a non-conforming constraint until the VSRP advises AEMO that they can meet their dispatch instructions.
  - → Conformance reports will still be published to participants for their applicable VSR to support VSR develop their capability.

Does the proposed approach to VSR energy dispatch conformance suitably balance participation with power system security?

6. Next Steps

Ulrika Lindholm (AEMO)

Next steps

STAGE	DATES	RESPONSIBLE
Final rule determination	Thu 19 Dec 2024	AEMC
Publish final High Level Implementation Assessment (HLIA) for comment	Thu 06 Feb 2025	AEMO
Publish VSR Guidelines consultation paper	Thu 20 Feb 2025	AEMO
Feedback period on HLIA closes	Thu 27 Feb 2025	Industry to provide feedback
Publish final v1.1 HLIA	Thu 20 Mar 2025	AEMO
Feedback period on consultation paper closes	Thu 20 Mar 2025	Industry to provide feedback
Draft report published, including draft Guidelines	Thu 22 May 2025	AEMO
Feedback period on draft report closes	Thu 26 June 2025	Industry to provide feedback
Final report and Guidelines published	Thu 28 Aug 2025	AEMO

AEMO invites feedback on the matters for consultation and proposed collaboration approach.

- Please provide your feedback via nemreform@aemo.com.au
- Your feedback is essential, and the consultation paper (and this presentation) outlines key areas for industry to consider.
- Feedback will inform the draft report where appropriate.

Recap: **Collaboration approach**

To support uptake of IPRR, AEMO seeks to engage industry stakeholders collaboratively in the development of technical and operating parameters for the Integrating Price Responsive Resources reform.

Proposed engagement principles:

- Support broad awareness and understanding of IPRR reform
- Support collaborative problem identification
- Complement statutory consultations on new and existing guidelines and procedures for IPRR (e.g. Voluntarily Scheduled Resources Guidelines consultation)
- Leverage existing programs of work and channels for engagement as relevant to optimise stakeholder touch points with AEMO (e.g. NEM Reform Program forums or existing DNSP working groups)

Indicative approach based on feedback to date:

1:1s		Focus Group(s)
Audience: Prospective Voluntarily Scheduled Resource providers, Industry bodies Topics: Understanding and working through barriers and opportunities Timing: February start	Combined sessions for information sharing on common issues and consolidated positions: NEM Reform Program forums (monthly), dedicated forums (as required)	Audience: Distribution networks Topics: Understanding participant interactions and data sharing Timing: Late March (TBC) start

AEMO is seeking input into this collaboration approach. Have we missed a key stakeholder group? What are your needs? Do you have a view on what is the appropriate approach and timing for engagement?

How to get involved

Forums	Forum focus	Cadence	Approach
Executive Forum	Program overview and status update	3 per Year	Nomination
Reform Delivery Committee (RDC)	Long term implementation planning perspective	Quarterly	Nomination
Program Consultative Forum (PCF)	Inflight initiatives status & co-ordination	Monthly	Open
Implementation Forum	Implementation of reforms	Monthly	Open
Electricity Wholesale (EWCF) & Electricity Retail (ERCF) Consultative Forums	Procedures working groups	Monthly	Open
Industry Testing Working Group	Testing	Monthly	Open
Working Groups	Inflight	As appropriate	As appropriate

Focus / working groups for inflight initiatives include:

- Initiative working groups
- Market Integration Technology Enhancement WG (IDX/IDAM/PC)
- Industry Testing Working Group (ITWG) – IT technical implementations

To learn more, please visit:

- AEMO | NEM Reform Program Forums
- AEMO | NEM Reform Program Initiatives
- AEMO | Industry Meetings Calendar
- or contact the program at NEMReform@aemo.com.au.

Subscribe to the NEM Reform Newsletter here

7. Q&A

Ulrika Lindholm (AEMO)

AEMO

AUSTRALIAN ENERGY MARKET OPERATOR

For more information visit

NEMReform@aemo.com.au

AEMO | NEM Reform initiatives | IPRR

Appendix A – AEMO Competition Law Meeting Protocol

AEMO Competition Law - Meeting Protocol

AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA). In any dealings with AEMO, all participants agree to adhere to the CCA at all times and to comply with appropriate protocols where required to do so.

AEMO has developed meeting protocols to support compliance with the CCA in working groups and other forums with energy stakeholders. Before attending, participants should confirm the application of the appropriate meeting protocol.

Please visit: https://aemo.com.au/en/consultations/industry-forums-and-working-groups

Appendix B –Glossary

Glossary

TERM	DEFINITION
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
API	Application Programming Interface
ARENA	Australian Renewable Energy Agency
B2B	Business to business
B2M	Business to market
BDU	Bidirectional Unit
CER	Consumer Energy Resources
COAG	Council of Australian Governments
CRMP	Cost recovery market participant
DER	Distributed energy resources
DNSP	Distribution network service provider
DOE	Dynamic Operating Envelope
DRSP	Demand response service provider
DSP	Demand side participation
DUID	Dispatchable unit identifier

TERM	DEFINITION
ERI	Enhancing reserve information
ESB	Energy Security Board
EV	Electric vehicle
FCAS	Frequency control ancillary service
FEL	Flexible export limit
FPP	Frequency performance payments
FTA2	Unlocking benefits of CER through flexible trading
FRMP	Financially responsible market participant
HLIA	High level implementation assessment
IESS	Integrating energy storage systems
IDAM	Identity access and management
IDX	Industry data exchange
IPRR	Integrating price responsive resources
IRP	Integrated resource provider
ISP	Integrated system plan
MASS	Market ancillary services specification
MSL	Minimum System Load

TERM	DEFINITION
MITE	Market interface technology enhancement
NEM	National electricity market
NEMDE	National electricity market dispatch engine
NEO	National electricity objective
NER	National electricity rules
NMI	National metering identifier
NSP	Network service provider
PASA	Projected assessment of system adequacy
PMS	Portfolio management system
PoL	Predictability of load
REZ	Renewable Energy Zones
SCADA	Supervisory control and data acquisition
ST PASA	Short Term Projected Assessment of System Adequacy
V2G	Vehicle-to-grid
VPP	Virtual Power Plants
VSR	Voluntarily scheduled resource
VSRP	Voluntarily scheduled resource provider
WDRM	Wholesale Demand Response Mechanism

- A comprehensive glossary of terms (and measurements) can be found at AEMO's website: https://aemo.com.au/learn/industry-terminology
- For rules terms, see the relevant industry rules on the AEMC website > Energy rules.

Appendix C – Additional matters

Some additional matters for stakeholders' feedback, noting that the following slides only reflect a subset of the matters under consultation.

PLEASE READ THE VSR GUIDELINES CONSULTATION PAPER FOR THE FULL SCOPE OF CONSULTATION.

Deactivation and temporary hibernation modes

- Obligations of the VSRP that apply in respect of that VSR when it is either inactive or hibernated are reduced
  - Inactive VSR do not have to comply with dispatch conformance
  - A hibernated VSR is not considered to be a scheduled resource and therefore requirements of scheduled resources do not apply
- The final rule has set *no minimum or maximum period for deactivation of VSRs* and a *hibernation period of 30 days and a maximum period of 18 months*
- The person whose VSR is approved as an inactive or hibernated VSR remains the VSRP of that VSR
- Regardless of mode, the VSRP retains its underlying registration as a Generator, Integrated Resource Provider or Market Customer

Bidding and dispatch differences across the VSR modes

VSRs still required to submit bids when inactive, with AEMO proposing it expects:

- Energy bids are non-zero (to maintain operational visibility for AEMO)
- FCAS bids are zero to prevent inactive VSR from being enabled. Non-zero FCAS bids will be rejected by AEMO.

Feature	NER clause	Active	Inactive	Hibernated
Submit dispatch bids	*3.8.6*	✓	✓	✗
Subject to dispatch bid validation	*3.8.8*	✓	✗ (Not required in the final rule but AEMO proposes to still perform validation)	✗
Conform to dispatch instructions	*3.8.23B*	✓	✗	✗
Bids and rebids must not be false or misleading	*3.8.22A*	✓	✗ (AEMO expects however that inactive bids are as representative as possible of intended VSR behaviour)	✗
Receive and follow a direction issued by AEMO	*4.8.9*	✓	✗	✗
Receive and follow instructions from AEMO at any time	*4.9.2*	✓	✗	✗
Dispatch bid compliance	*4.9.8*	✓	✗	✗

Metering requirements for VSR

- AEMO acknowledges that there are areas where manually read accumulation meters are still common, but under the 'Accelerating smart meter deployment' rule, the number of smart meters is expected to increase in the coming years
- All meters must meet requirements of NER Chapter 7

	Small customer metering installations	Large customers, non-scheduled generators /BDUs, small resource connection points	Secondary settlement points
Proposed VSR metering requirements	• Type 4 category 4S • Capable of recording data in five-minute intervals and that can be remotely read (excludes type 4A)	• NER Schedule 7.4 requirements	• Capable of recording data in five-minute intervals and that can be remotely read • Type 8A: may have different market participant to primary connection point, but must be VSRP/FRMP of VSR • Type 8B: must have same VSRP/FRMP as primary connection point. • Type 9: eligible if can meet all technical requirements

Do you have any views on AEMO's metering requirements for a VSR?

VSR energy settlement

- VSR energy is settled at individual NMI level using revenue meter data. This is the same approach as BAU i.e. a generator's conformance against dispatch instructions is assessed using aggregated telemetry, but its actual generation is settled against revenue meter data.
- FRMP/VSRP is responsible for:
  - Settlement for each NMI in their portfolio.
  - Rewarding/paying customers within their aggregation – this is separate from NEM settlement processes.
- Non-energy cost recovery arrangements for VSRs across the different dispatch modes
  - Active VSRs in final rule excluded from NECR for RERT and energy directions