TWG3 - Dispatch mode

Integrating price responsive resources

Technical working group

4 March 2024

AEMC

ACKNOWLEDGEMENT OF COUNTRY

The AEMC acknowledges and shows respect for the traditional custodians of the many different lands across Australia on which we all live and work. We pay respect to all Elders past and present and the continuing connection of Aboriginal and Torres Strait Islander peoples to Country. The AEMC office is located on the land traditionally owned by the Gadigal people of the Eora nation.

Agenda

1	Introductions and competition protocols	2.00 – 2.15pm (15 mins)
2	Overview of NEM dispatch process (AEMO)	2.15 – 2.45pm (30 mins)
3	Worked example of dispatch mode	2.45 – 3.45pm (60 mins)
4	Break	3.45 – 3.50pm (5 mins)
5	Rules or procedures	3.50 – 4.50pm (60mins)
6	Wrap up	4.50 – 5.00pm (10 mins)

COMPETITION PROTOCOL

KEY PRINCIPLES

The AEMC is committed to complying with all applicable laws, including the ***Competition and Consumer Act 2010*** (CCA), during this forum. Breaching the CCA can lead to serious penalties for individuals involved in any breach (including large financial penalties and imprisonment for key individuals involved). This protocol governs the way in which discussions will proceed at this forum, and each attendee agrees to adhere to this protocol in order to comply with the CCA.

Each attendee must make an independent and unilateral decision about their commercial positions and approach in relation to the matters under discussion in this forum.

Attendees must not discuss, or reach or give effect to any agreement or understanding which relates to:

- **pricing** for the products and/or services that any attendee supplies or will supply, or the terms on which those products and/or services will be supplied (including discounts, rebates, price methodologies etc)
- **targeting (or not targeting) customers** of a particular kind, or in particular areas
- **tender processes** and whether (or how) they will participate
- any decision by attendees:
  - about the purchase or supply of any products or services that other attendees also buy or sell
  - to not engage with persons or the terms upon which they will engage with such persons (i.e. boycotting); or
  - to deny any person's access to any products, services or inputs they require
- **sharing competitively sensitive information** such as non-publicly available pricing or strategic information including details of customers, suppliers (or the terms on which they do business), volumes, future capacity etc
- **breaching confidentiality obligations** that each attendee owes to third parties.

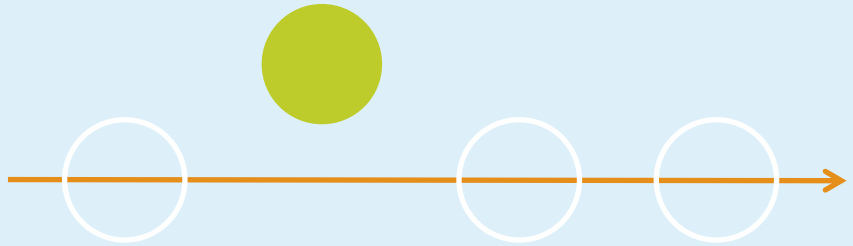
COMPETITION PROTOCOL

COMMUNICATION AND MEETING GUIDELINES

Attendees must ensure that all communications (including emails and verbal discussions) adhere to the ***Key Principles***.

This forum will be conducted in accordance with the following rules:

- The agenda for this forum does not include anything that could contravene the Key Principles set out in this protocol.
- We will read and minute the below *competition health warning*:
  - Attendees at this forum must not enter into any discussion, activity or conduct that may infringe, on their part or on the part of other attendees, any applicable competition laws. For example, attendees must not discuss, communicate or exchange any commercially sensitive information, including information relating to prices, marketing and advertising strategy, costs and revenues, terms and conditions with third parties, terms of supply or access.
  - Participating in this forum is subject to you having read and understood the protocol including the Key Principles.
- We will keep accurate minutes of the forum, including details of attendees.
- If something comes up during the forum that could risk contravening any competition laws, attendees should:
  - Object immediately and ask for the discussion to be stopped.
  - Ensure the minutes record that the discussion was objected to and stopped.
  - Raise concerns about anything that occurred in the forum with their respective legal counsel immediately afterwards.
- All attendees understand that any competitively sensitive matters must be subject to legal review before any commitment/agreement can be given.
- Any decision about whether, and on what terms, to engage with customers and suppliers is an independent and unilateral decision of each attendee.



Introduction

TWG purpose and materials disclaimer

We have established this TWG to gain industry insight and feedback to evolve our policy thinking throughout the rule change

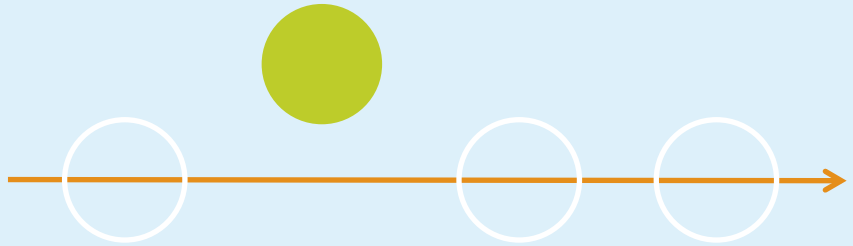
Please note that the information in this pack is the *Integrating price responsive resources into the NEM* project team's initial views. We have included our initial views in places to assist with discussions.

The views expressed by the team in TWG documents or meetings do not necessarily represent the views of the Commission or what will be included in our upcoming Draft Determination.

TWG timeline

Meeting time	Indicative issue areas for discussion*
Wednesday 21 February **3 – 5pm**	TWG1 Introduction to the TWG
Tuesday 27 February **10.30am – 1pm**	TWG2: Visibility #1 Visibility option(s) to continue to draft determination
Monday 4 March **2 – 5pm**	TWG3: Dispatch #1 The overarching framework for the rule and participation
Tuesday 12 March **10am – 1pm**	TWG4: Incentives Incentives for solutions will be discussed
Wednesday 10 April **2 – 5pm**	TWG5: Visibility #2 Contd. Discussion from 27 Feb
Tuesday 16 April **2 – 5pm**	TWG6: Dispatch #2 Contd. Discussion from 4 March
Tuesday 7 May **2 – 5 pm**	TWG7: Wrap up Outstanding issues

* Note that the areas are indicative and could evolve as the project progresses



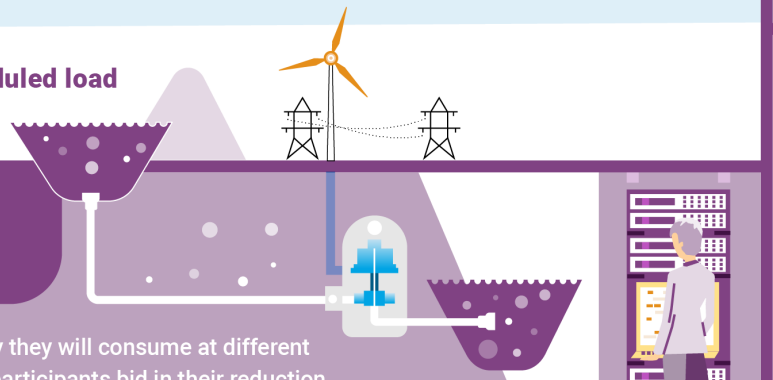
Background and context for the rule change

Price responsive resources can include commercial, industrial and aggregated consumer energy resources that do, or could respond, to price signals. These resources represent a growing proportion of resources in the NEM. The wholesale electricity market would provide consumers with electricity at a lower cost if it integrated these resources more effectively.

Price-responsive resources

These resources can operate in a manner that impacts the wholesale market, but the operation is non-visible to the market operator and the market. These resources can be controlled by the customer's retailer or by a specialist aggregator, either at a single site or across multiple sites. Currently there is no opportunity for these resources to bid into the wholesale market, meaning that prices and dispatch costs may be higher than necessary. These resources can access the contingency FCAS and network services markets, which can provide a level of visibility for the market and network operators respectively.

Existing market mechanisms: scheduled load and wholesale demand response

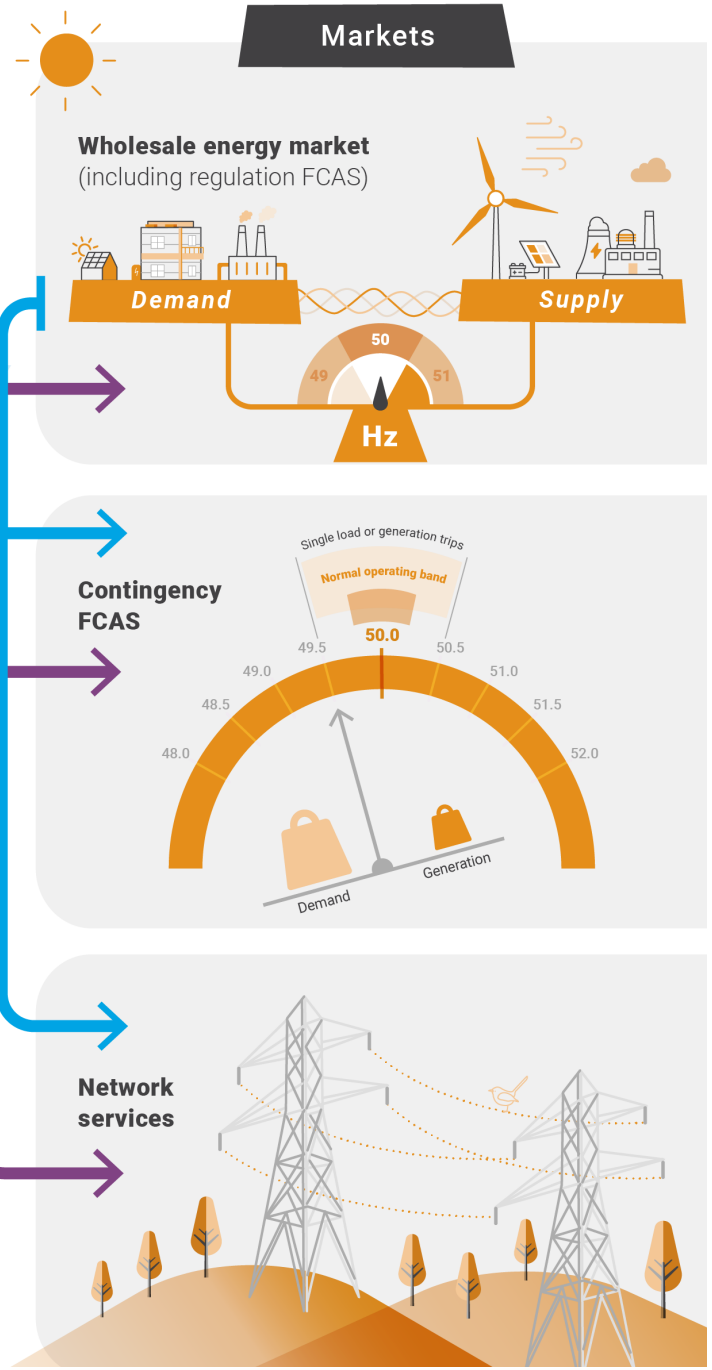


Existing mechanisms have had limited participation to date and may not be suitable for all price-responsive resources.

Scheduled loads bid in how much electricity they will consume at different price points. Wholesale demand response participants bid in their reduction in consumption relative to a baseline. This means that their intentions are effectively incorporated into the wholesale electricity market.

Existing non-market mechanism: RERT

RERT enables out of market resources to be contracted by AEMO where there is a forecast breach in the reliability standard. This response is coordinated by the market operator and can be factored into the operation of the market. While not the focus of this rule change, better integration of price responsive resources may encourage out of market participants to move into the market.



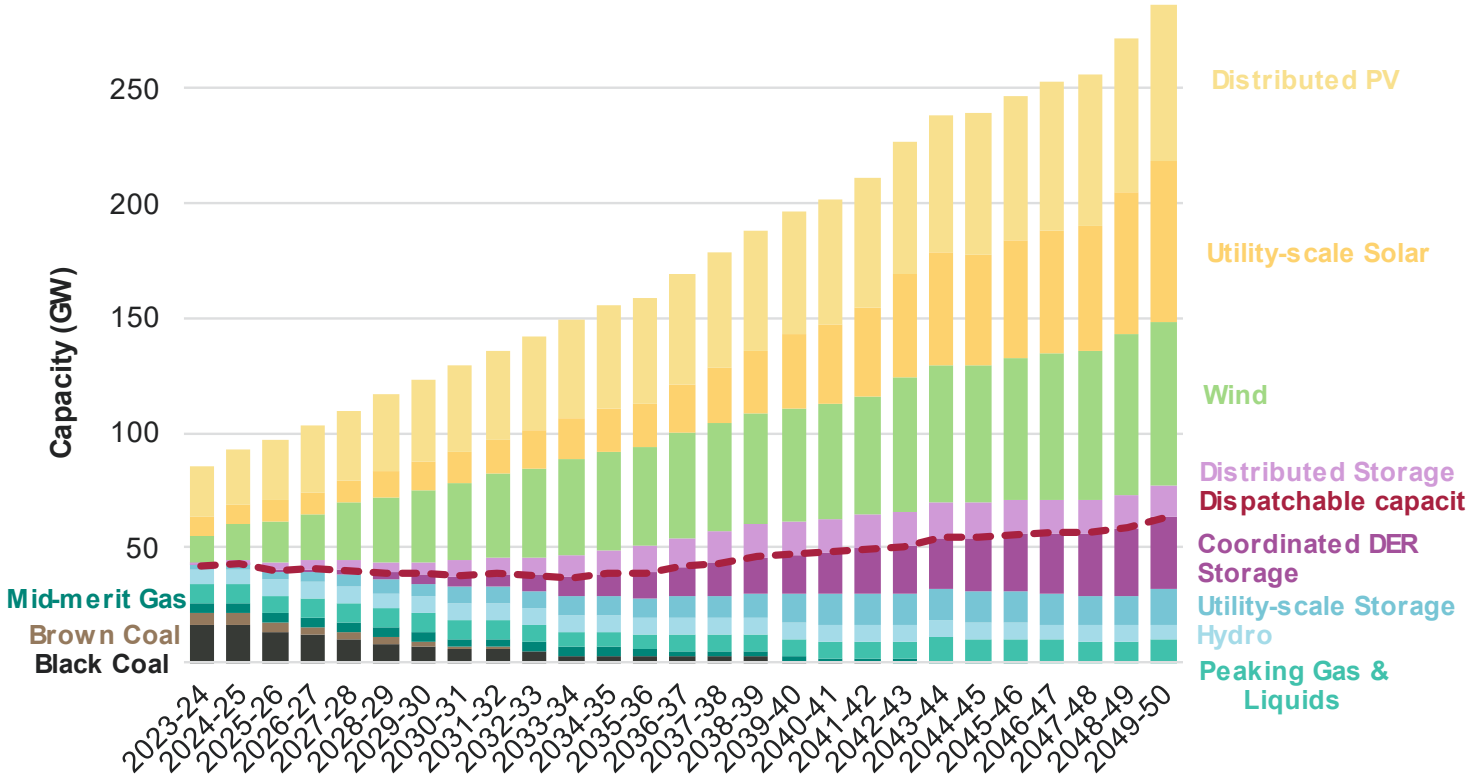
Price-responsive resources are used to provide some market and non-market services

But aren't scheduled in the wholesale market or generally visible to the market or AEMO

Context for this rule change

By 2050 the 2022 ISP forecasts that there will be 31GW of coordinated CER storage.

Our rule change process is focused on ensuring that these resources can support the operation of the market and the power system as a whole.



IES modelling results

Benefits across reform cases

- $12.5 to $13.9 billion
- Approximately 2.5% of total wholesale energy and FCAS costs over the modelling horizon

Benefits across cost categories

- Generation: $170 million (average)
- FCAS: $1.3 to $1.6 billion
- RERT: $121 million
- Emissions: $514 to $720 million
- Energy: $10.4 to $11.3 billion

Benefit type split

- Social benefit: $1.5 to $1.9 billion
- Wealth transfer: $11 to $12 billion
- Wealth transfer overstated as generation investment not accounted for

Benefit across PRR types

- VPP: $6.8 to $8.3 billion
- DSP: $5.7 billion
- DSP benefits are almost as high as VPP and concentrated across small subset of intervals across the year

Timing of benefits

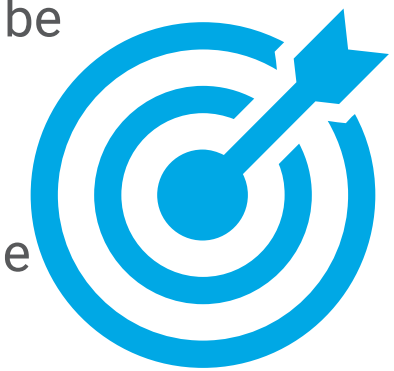
- Total benefits of approximately $300 million in 2025, and increasing four-fold to $1.3 billion by 2030
- Benefit trajectory gradually increases to 2050

Dispatch design objective

Dispatch mode aims to facilitate price-responsive resources to participate in the central dispatch process. This will ensure the participants and their resources are treated similarly to other resources, providing access to the full value stream (such as reg FCAS).

This will support the operation of the power system by providing sufficient levels of resources that can be dispatched — comprising controllability, firmness and flexibility.

To meet this objective, the resources participating in Dispatch mode would need to be highly forecastable and/or controllable.



Resources that would not meet these criteria are likely better considered through the Visibility mode.

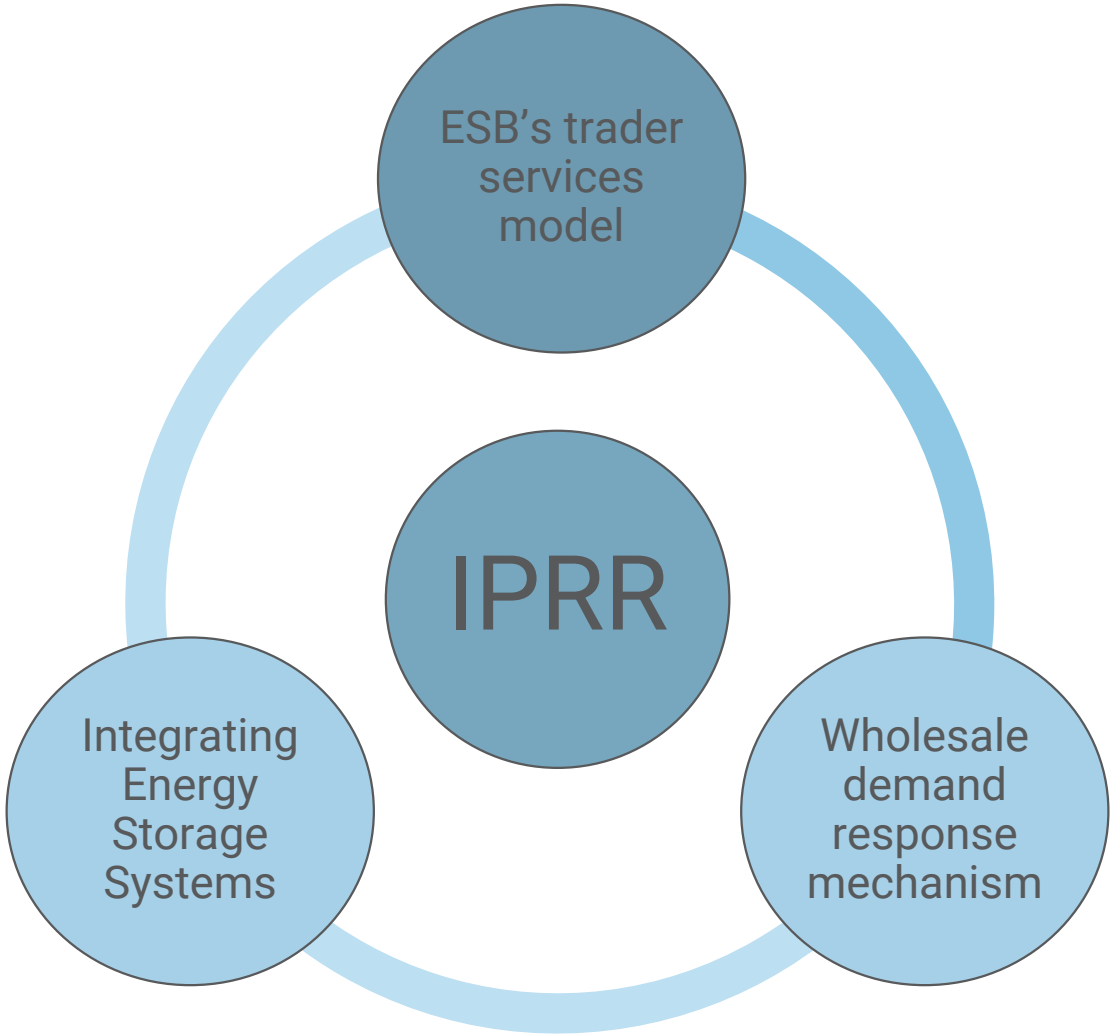
Who would participate?

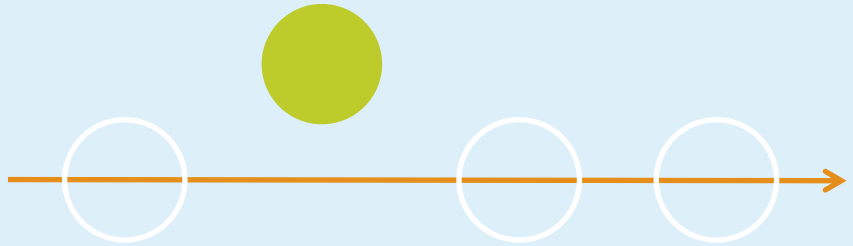
To address some key themes we have heard through the process to date, it is worth highlighting who we expect to participate in dispatch mode and what kind of resources we expect to participate:

- Dispatch mode is focused on providing participants who are or will be controlling unscheduled price-responsive resources an avenue to participate in dispatch processes.
    - For example, a VPP operator (retailer) who has contracted with many households to control their batteries to manage their spot price exposure.

- Dispatch mode isn't looking at forcing a consumer to act a certain way, but rather to capture existing arrangements and allow these arrangements to be represented in central dispatch.

Dispatch mode builds on related market reforms





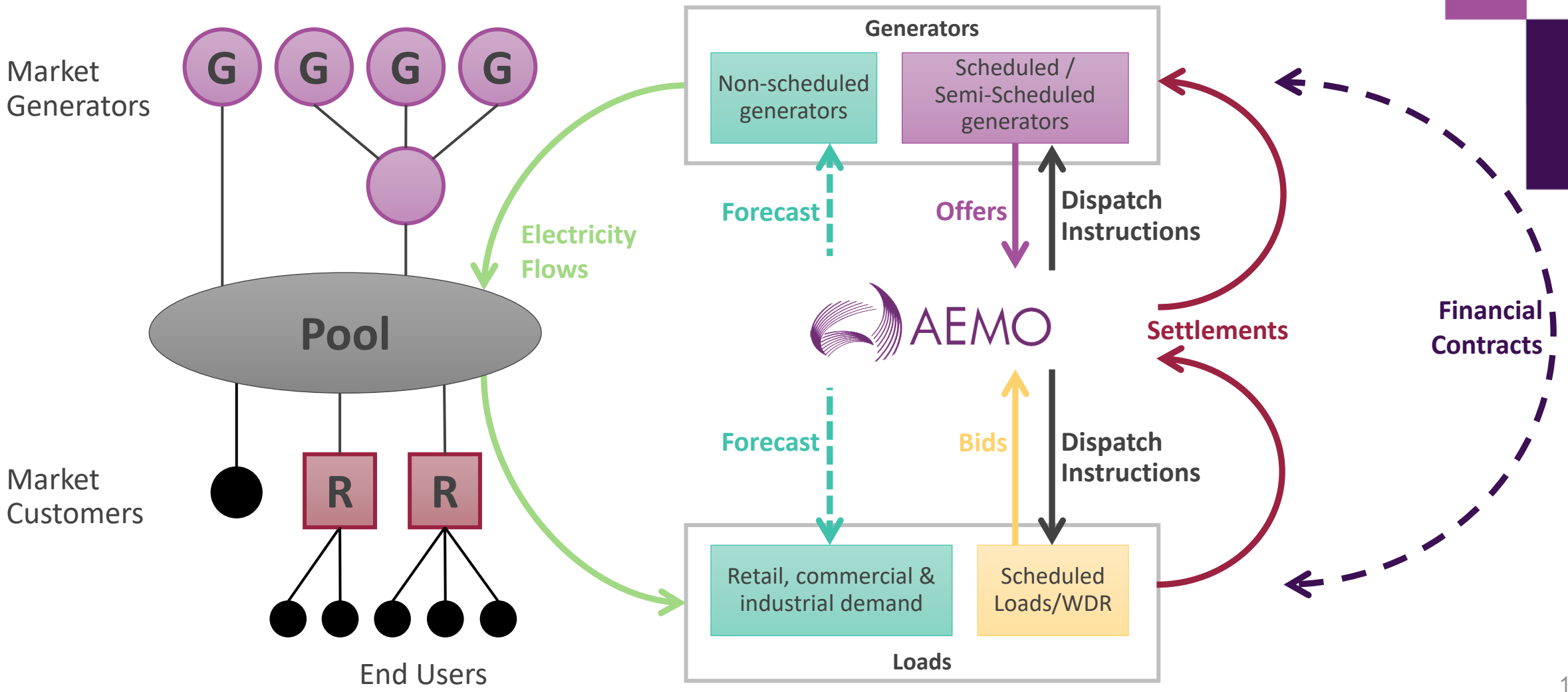
Overview of NEM dispatch process

AEMO

Overview of NEM Dispatch Process

Tyce Barton – Senior Analyst, Electricity Market Monitoring, Operations.

Bidding, dispatch and pricing in the wholesale electricity market



WDR = wholesale demand response

Solving the NEM – NEM Dispatch Engine (NEMDE)

Inputs

Bids

Offers

Region Demand

Interconnector Loss factors

Network Constraints

Interconnector Constraints

Ancillary Service Constraints

Outputs

Region energy Prices

Region AS Prices

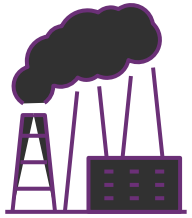
Unit Energy Targets

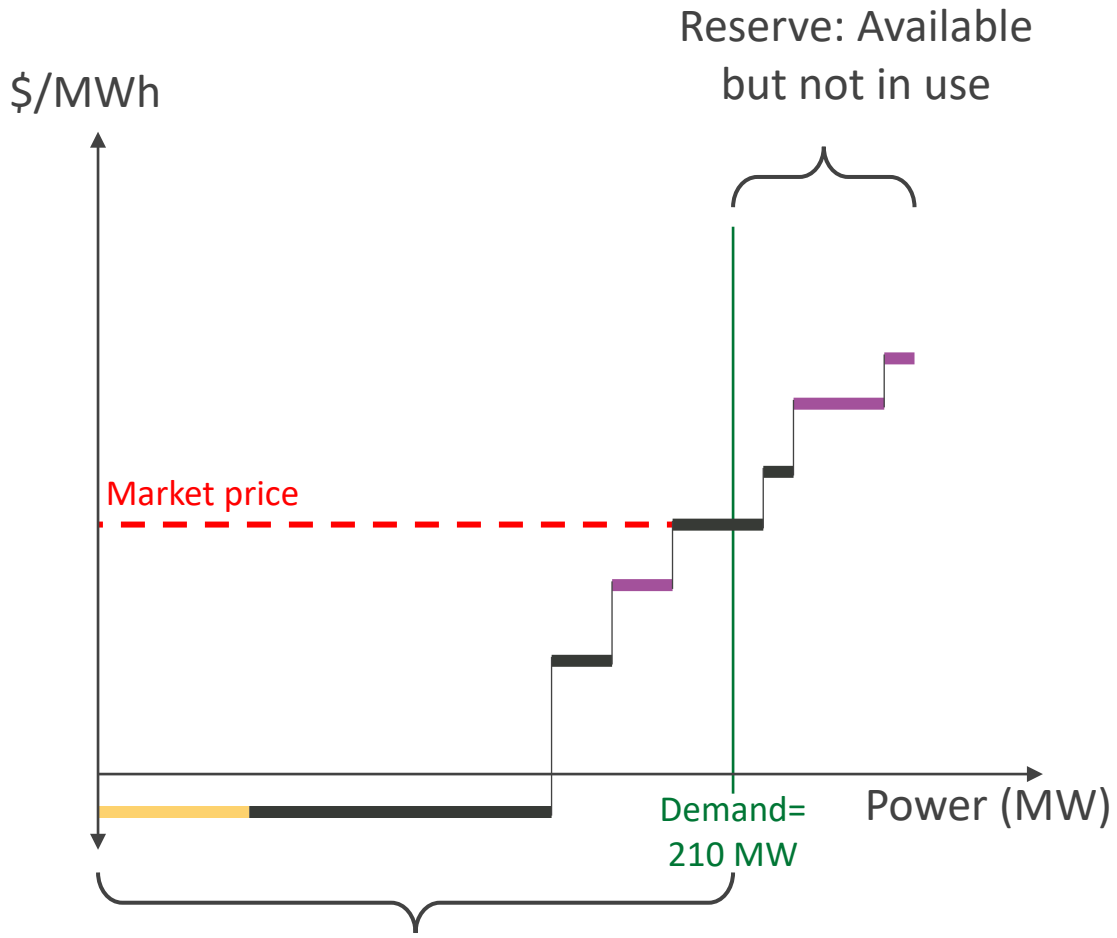
Unit AS Targets

Interconnector Flows

What does the solver do?

Calculates the price and determines dispatch targets

Station	Bids	Dispatch target
	• 50 MW at -$10	• 50 MW
	• 100 MW at -$10 • 20 MW at $30 • 30 MW at $50 • 10 MW at $60	• 140 MW
	• 20 MW at $40 • 30 MW at $70 • 10 MW at $80	• 20 MW



- All these bids are dispatched
- Everyone is paid at the market price

Dispatch target vs Bid

How could a dispatch target be different from the bid?

- Unsuccessful bid (higher than market clearing price)
- Physical constraints in bid:
  - maximum availability, ramp rate, fixed loading, fast start inflexibilities, enablement limits
- Network constraints
- FCAS constraints
- Other constraints applied in special circumstances.

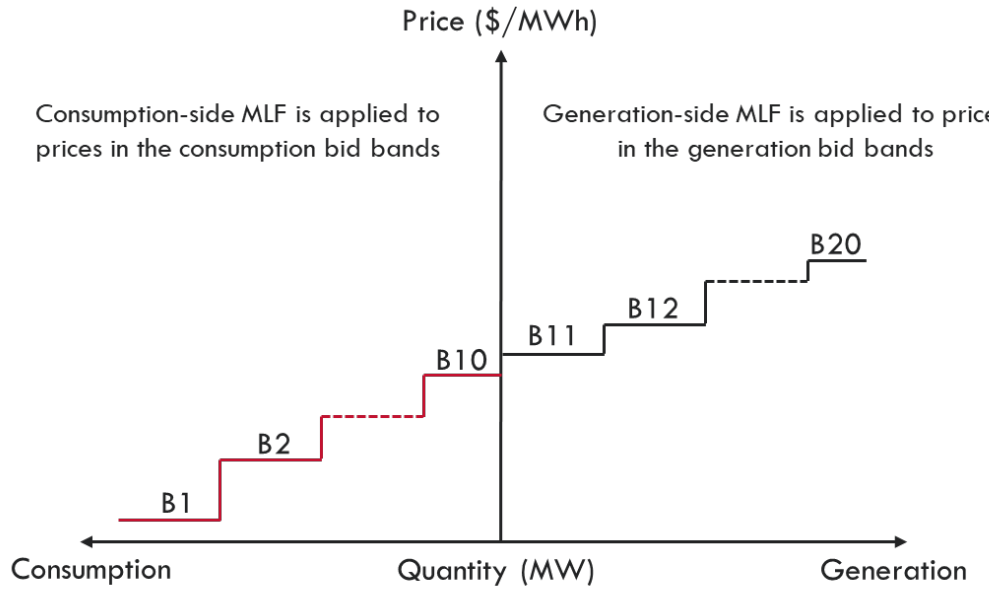
Conformance must be to the dispatch target.

Scheduled BDU- Bid structure

Integrated Energy Storage Systems goes live 3 June 2024:

- A new universal category is introduced – the Integrated Resource Provider.
  - Use by participants with storage resource and hybrid systems
  - Can classify end user connection points (nominate as FRMP)
- Accompanied by a new resource type – the bidirectional unit (scheduled BDU).
  - Resources that **produce and consume** energy (excluding auxiliary load)
- S-BDU will receive a single dispatch instruction covering generation and consumption
- S-BDU will have 20 bid bands for energy
  - 10 for load-side capacity
  - 10 for generation –side capacity

DI	Band 1	Band 2 …	Band 8	Band 9 …	Band 12	Band 13 …	Band 19	Band 20
Prices	-$999	-$300	$29	$149	$30	$150	$1000	$15000
…	…	…	…	…	…	…	…	…
15:00	-100	-50	-50	**-50**	0	0	**50**	100
15:05	-100	-100	**-50**	0	0	**50**	0	100
15:10	-100	**-150**	0	0	**50**	50	50	0
…	…	…	…	…	…	…	…	…

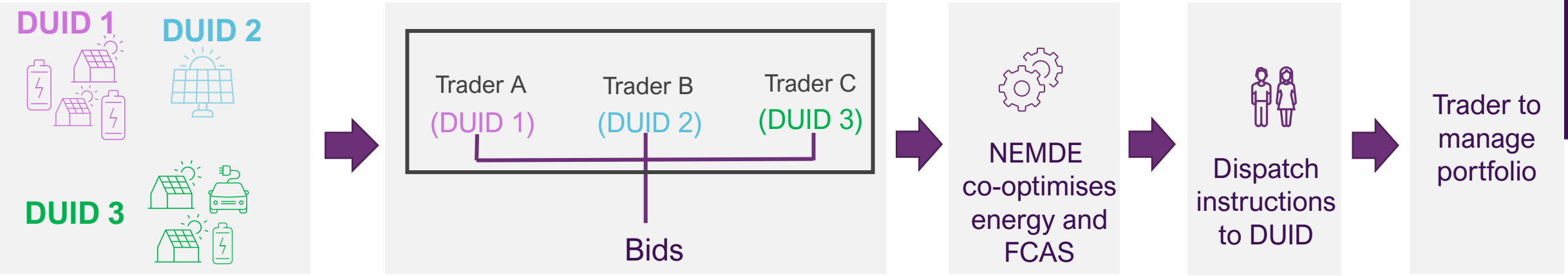


Dispatch Mode – Overview of Dispatch Process

Dispatch - Proposed Design

Proposal: Consistent with existing framework for scheduled resources

Dispatch Process Overview



Every 5 min Traders will receive a dispatch instruction per DUID:

- A single bi-directional dispatch instruction representing the net flow to be achieved by its DUID
- Enablement for each FCAS

Traders will need to disaggregate the dispatch instruction to manage its portfolio accordingly and comply with the MASS and the NER with respect to the services they provide

Where to find out more

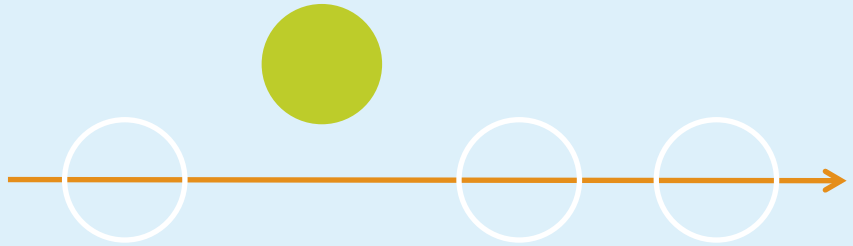
AEMO's website is a great resource for information on:

- Energy Systems (NEM / WEM / Gas)
- IESS Project
- Consultations
- Contact / Market Notices / Subscribe
- Data Dashboards

AEMO's Energy Education program has a number of courses dealing with the various energy markets and systems AEMO operates.

Courses are available in a variety of technical levels and delivery modes.

See the Industry Courses section of AEMO's website for more detail



Worked example of dispatch mode

AEMC

Worked example of dispatch mode – Ralph Energy

Retailer Ralph Energy has signed up 1,200 households with behind-the-meter batteries with a contract that allows Ralph to control their batteries. The aggregated capacity of these resources is 12 MW/15.5 MWh.

Ralph Energy is already registered as a Market Customer (or IRP) and is the financially responsible market participant (FRMP) for the NMIs it is aggregating. Both passive load and controllable load are behind a single NMI, meaning Ralph Energy is responsible for all resources (passive and controllable) behind the meter at each participating site.*

Working assumptions

- Ralph Energy complies with all relevant requirements (e.g. applicable performance standards, minimum aggregated portfolio threshold) and therefore its registration application will be approved. Relevant requirements would be specified in an AEMO guideline.
- Ralph Energy's customers have a flat load profile of 2MW

Battery optimisation

- Ralph Energy maximises wholesale market returns by controlling its customers' resources. These returns are expected to be shared with the customers through their contract.

Market scenario

- Batteries are in a neutral state of charge and have capacity to either discharge or charge at an aggregated rate of 10 MW in the next interval.
- 2 MW of the battery capacity is reserved to smooth out the passive load and manage unexpected changes to customers' load.
- Energy spot price spikes suddenly.

For TWG feedback

1. Do you have any questions on the overall scenario? Is anything unclear about the scenario?

*From the CER benefits draft determination, a secondary settlement point could be established to separate resources and potentially assist a retailer to participate in this mechanism without having to account for passive loads.

Creating a light scheduling unit (LSU) – 1/2

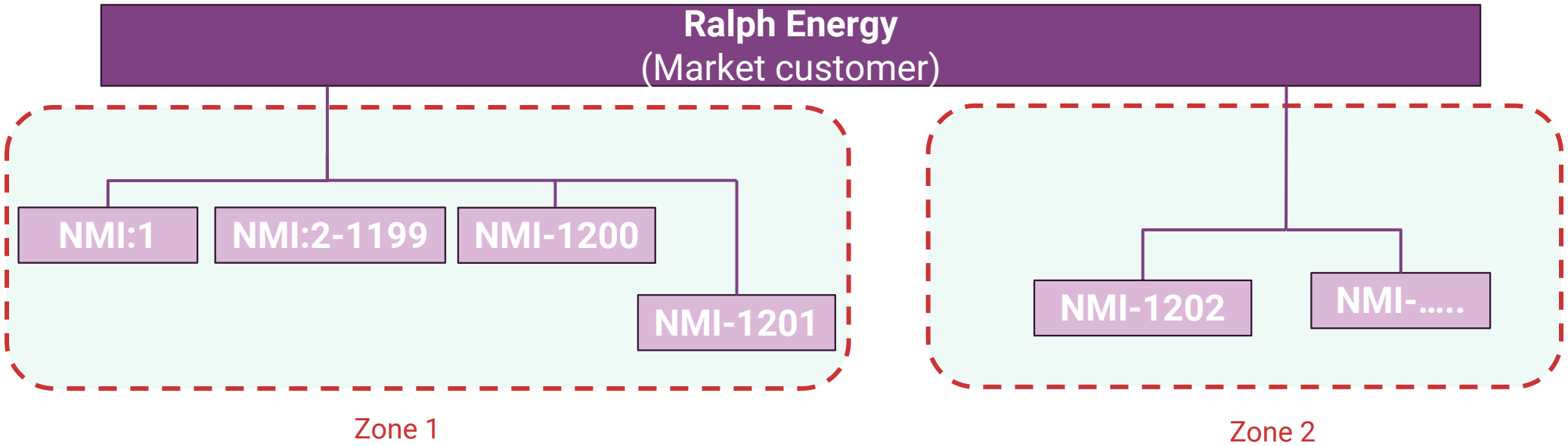
Ralph Energy's NMIs are first grouped into sub-regional zonal areas:

- This zonal aggregation was proposed to support forecasting and system security requirements. A similar process exists already for aggregating NMIs into wholesale demand response units.
- Otherwise aggregating at a regional basis would require AEMO to disaggregate light scheduling unit (LSU) bid information and forecasts to a zonal level, introducing error.
  - This process is proposed to be largely automated with details to be defined through a new AEMO guideline.

For TWG feedback

1. Do you understand the requirement for zonal aggregation?

2. What are the implications of this requirement for:
   a) Specific business models
   b) implementation costs
   c) Anything else?



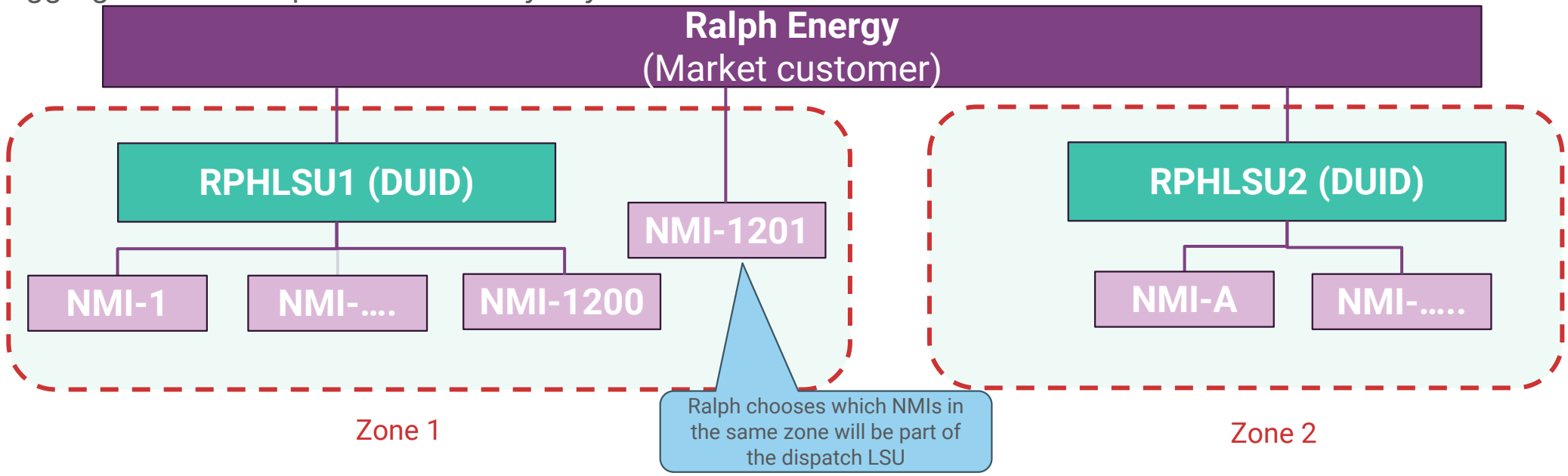
Creating a light scheduling unit (LSU) 2/2

To register for Dispatch mode Ralph Energy classifies the NMIs it wishes to aggregate within the same zone into an LSU, which would receive a dispatchable unit identifier (DUID). It is proposed that this process would be managed through AEMO's portfolio management functions developed for WDRM.

- 5MW is proposed as an initial minimum threshold to support operational requirements with preparing scheduling inputs, this was recommended through the ARENA VPP Demonstrations final report. This threshold could be defined post-rule change in an AEMO guideline.
- This threshold also aligns with existing WDRM requirements for individual and aggregated units to provide telemetry beyond 5MW.

For TWG feedback

1. Is the proposed process for creating an LSU clear?
2. Should there be a minimum threshold required to participate in dispatch?
3. If so, is this threshold best defined in a Guideline (set by AEMO) or in the Rules (set by AEMC)?



Data exchange and telemetry

Ralph Energy would need to provide information about its LSU to AEMO when registering as well as in real-time during operation. Specifics on how this data would need to be structured and transmitted to AEMO are likely to be dealt with through a Guideline.

A high-level overview of the data requirements is outlined in the table below:

For TWG feedback

1. Are the requirements for static/ standing data and telemetry clear?
2. Are the purposes for providing this data clear?
3. Are these requirements best defined through a Guideline or in the Rules?

Data	Description	Unit / granularity	Implications for Ralph
Static or standing data	Site data that changes infrequently, for each connection point. Such as the capacity of the resources and price-responsive capacity.	Specific data requirements would be outlined in a proposed new light scheduling unit guideline.	Every NMI that Ralph wishes to include in its LSU will need to provide this standing data to AEMO.
Availability forecast (PASA)	Aggregated available capacity of generation, load and storage.	Availability in MW and storage in MWh, across short-term horizon.	Ralph will submit the expected availability of its LSU across the ST PASA horizon.
Bids	Per IESS, a bi-directional offer that includes both generation and load, up to 20 price bands per LSU.	20 price/quantity pairs i.e. $/qty ($/MWh, MW) for each dispatch interval	Ralph will use existing market systems to submit bids to AEMO. **See next slide for more information**
Telemetry/ SCADA	• Aggregated (per LSU) instantaneous period ending measurement of active power flow at NMI. • Aggregated actual generation, actual load and actual energy stored.	Data requirements would be defined in the power system communication standard.	Ralph will be required to set up appropriate communications to ensure it can provide the required data to AEMO

Bidding intentions and structure of bids

For RPHLSU1, Ralph Energy bids to charge its aggregated batteries during negative prices and discharge when prices > $300 and nothing at all other times. It will comply with existing bidding rules, such as bidding in good faith.

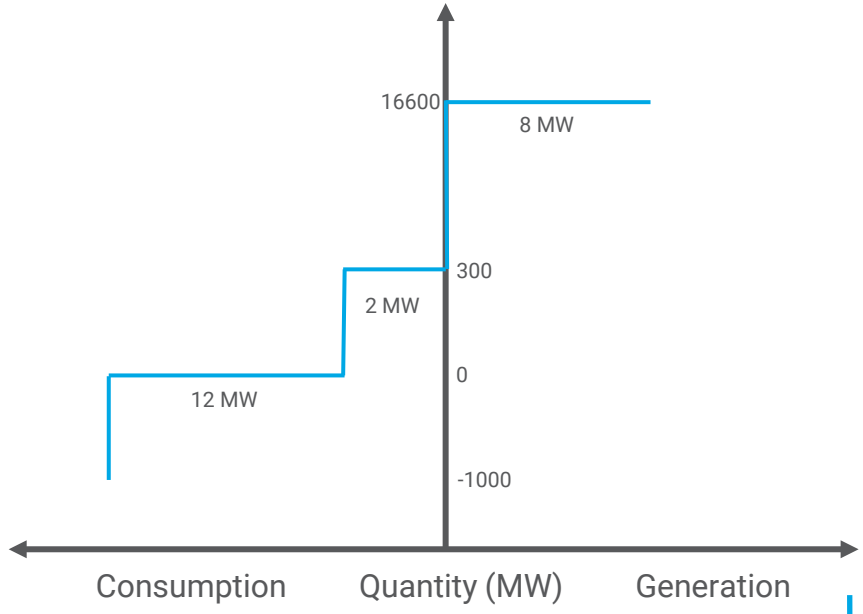
2 MW of the aggregated battery capacity is reserved to smooth out the passive load and manage unexpected changes to customers' load to comply with dispatch instructions.

These intentions are reflected in the table and chart below:

Market price range ($/ MWh)	Ralph Energy intention
< 0	Customer batteries: Charge at the maximum rate, i.e. 10MW. Assuming all batteries in the fleet have a state-of-charge (SOC) available to charge. Underlying customer load: no change (2MW load) **Bid intention: -12MW**
0 to 300	Customer batteries: no action. Underlying customer load: no change (2MW load) **Bid intention: -2MW**
Above 300	Customer batteries: discharge at the maximum rate, i.e. 10MW. Assuming all batteries in the fleet have SOC available to discharge. Underlying customer load: no change (2MW load) **Bid intention: +8MW**

For TWG feedback

1. Do you have any questions on the proposed bidding process?



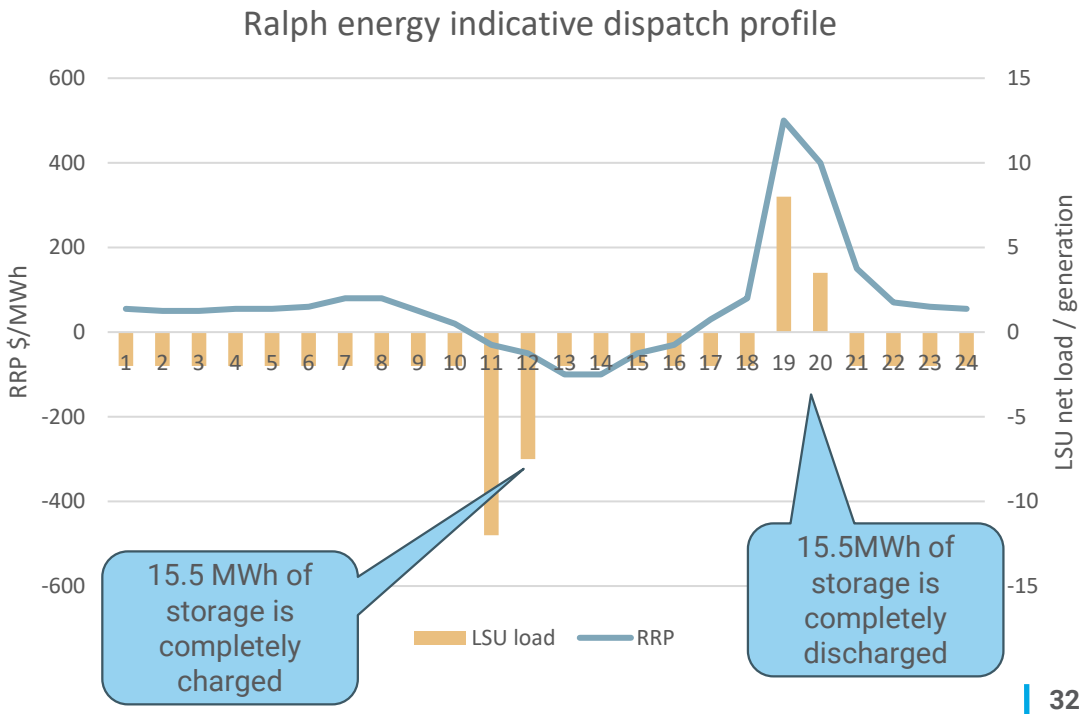
Dispatch

Ralph Energy's bids are sent to AEMO and fed into NEMDE. Where dispatched Ralph will receive a single bi-directional dispatch instruction per LSU.

- Ralph Energy disaggregates the dispatch instruction amongst the NMIs per LSU and controls all batteries to meet the instruction, such as linearly ramping between dispatch targets.
- An indicative example of Ralph Energy's LSU performance across a trading day is shown opposite.[1]
    - Note the aggregated battery charge and discharge response to wholesale prices is limited by aggregated capacity of 15.5 MWh. This limitation would be reflected by Ralph through its rebids.

For TWG feedback

1. Do you have any questions on the proposed dispatch process?



1: Prices have been aggregated to hourly rather than 5-minute for simplicity

Conformance

In the example, it was assumed that Ralph Energy followed its dispatch instructions exactly. In practice, exact conformance will not always occur.

It is important to note that compliance with Rules and guidelines is assessed by the AER after the fact. While conformance is used by AEMO to assess performance against dispatch targets in real time.

We acknowledge that there is a complex trade-off in setting conformance criteria to reduce the barriers to entry by aggregated resources and ensuring reliable participation in dispatch. AEMO has outlined that the proposed Light Scheduling Unit Guideline would specify how a non-conforming LSU would be identified.

- The rule change proposed that the dispatch conformance arrangements would be consistent with the obligations for WDR units, shown on the right.

The proposal also outlines a process for opting out of the mechanism for a period of time. This would enable participants to exit dispatch mode during periods when they expect that they are unable to meet the Dispatch mode requirements.

For TWG feedback

1. Are the proposed conformance requirements for dispatch LSUs clear?
2. Are conformance criteria best defined in a Guideline or in the Rules?

WDRU conformance criteria

- The first trading interval of its dispatch is not assessed
- There is an interval error of + or – 6 MW before non-conformance is flagged
- An error band equivalent to + or – 50% of their dispatch targets across a settlement day is assessed.
- Three or more instances of non-conformance must be flagged before the unit is declared non-conforming

Settlement

Ralph Energy's dispatch LSU (RPHLSU1) would be settled in line with existing market processes.

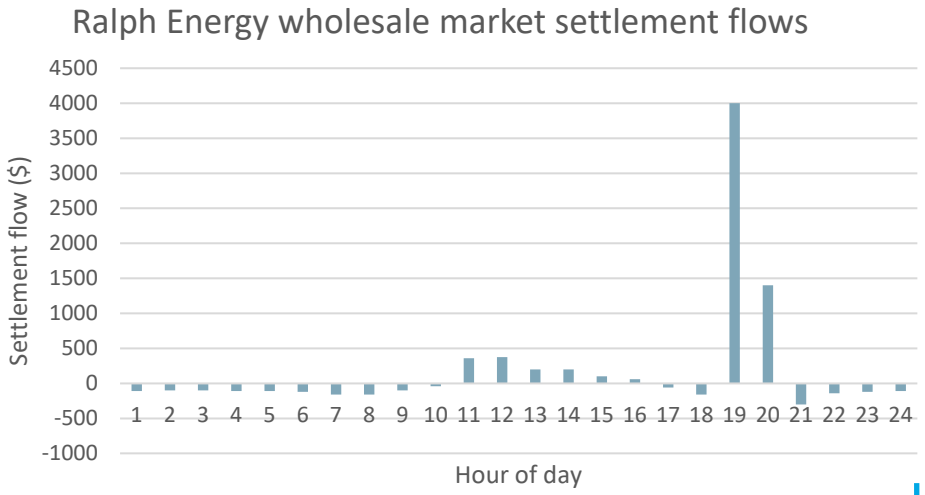
- At a high level, Ralph will pay the regional price when its LSU is a net load and be paid the regional price when the LSU is net generation.
- Assuming that Ralph Energy follows and complies with dispatch instructions, meeting performance thresholds, its settlement amounts from the wholesale market are shown in the chart opposite.

Ralphs's remaining retail customers would be settled normally per the existing arrangements.

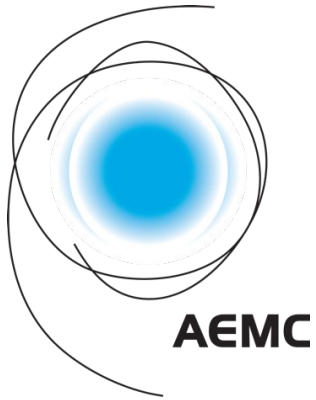
We will further discuss incentives, including FPP payments and costs, in the next TWG.

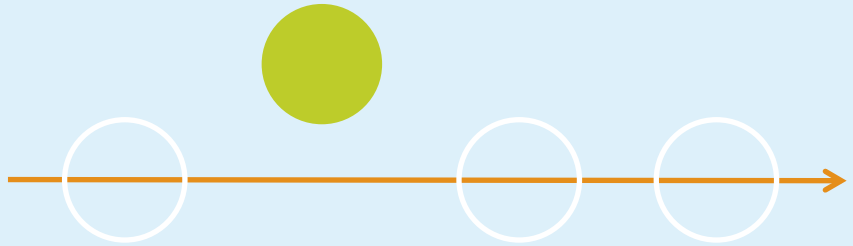
For TWG feedback

1. Do you have any questions on the proposed settlement process?



Break





Rules or Procedures

What we take into account when considering whether details should go in rules or guidelines

When making a rule, our aim is that the rule should be as simple and precise as possible, and consistent with its legal context. To achieve this, we may choose to make a detailed rule or specify that details are to be dealt with through Guidelines established by other market bodies, such as AEMO or the AER.

In considering whether aspects of a policy should be addressed in guidelines we will take into account:

- What degree of detail do participants require? If a high-level, flexible approach is appropriate, is there any need for detailed guidance?
- Is there adequate oversight and requirements for reporting on outcomes under the framework?
- Is there adequate transparency and rigor in the process of developing the guideline or procedure?
- Do the rules need to set out a process for changing the guideline/procedure, a time frame for periodic review, or boundaries around what is included (or not)?
- If it is known early in the rule change process that the rules are likely to be principles-based rather than detailed, Which market body is best placed to consult on and establish the relevant details and are they able to provide information to increase certainty for participants?
- If we require guidelines to be prepared, how does this influence implementation timeframes, and what are the timing and resourcing requirements on the market bodies?

Examples where guidelines or prescriptive rules would be appropriate

The following sets out some examples of questions we would likely consider when deciding whether guidelines or a prescriptive rule would be a better approach. Additionally, where details are specified in a guideline, we may specify in the rules factors that need to be considered in developing the guideline and consultation requirements.

Question	Guidelines likely a better approach	Prescriptive Rule likely better
Are updates likely to be required regularly?	Regularly changing/rapidly developing area. Example: Updating ST PASA rule change.	No, it should be relatively stable over time. Example: Settlement formulas.
What level of detail does the final set of regulations need to include?	A very large amount of detail. Example: MSATS procedures	Limited detail required Example: system strength charge formula
Are the surrounding prescriptive regulations in the rules or guidelines/ procedures?	Surrounding rules are principles-based, with guidelines providing details Example: network regulation incentive schemes	Surrounding regulations are prescriptive Example: market operation and connections
Who has the appropriate expertise, remit, and/or experience to make the required decisions within this topic area?	AER or AEMO are best placed to make decisions Example: AEMO is best placed to make system security/technical aspects of the market	AEMC is best placed to make decisions. Example: AEMC is best placed to make economic and competition assessments

Proposed new guidelines

AEMO has proposed to create the following guidelines which would cover the technical aspects of aggregating NMIs and operating in dispatch mode.

Proposed guideline	Topics to be covered in the guideline
Light Scheduling Unit Guideline	• Minimum aggregation threshold • Telemetry and communications requirements • Any specific requirements to participate in dispatch • Conformance criteria • Opt in and opt out requirements and process
Zonal aggregation guideline	• Zonal specifications • Requirements and conditions to aggregate NMIs into LSUs • Guidance on automated aggregation process

Light scheduling guideline

Area	Proposed contents	Initial AEMC staff views
Operational requirements	• Minimum threshold for nameplate rating or combined nameplate rating of a Dispatch LSU. Initially it is proposed that the threshold is set at a capacity of 5 MW or greater. • Any specific requirements for how a Dispatch LSU is required to participate in dispatch • Requirements for telemetry and communications equipment for a Dispatch LSU • Compliance criteria and processes for establishing compliance or identifying and remedying non-compliance. • Process for opting out of dispatch mode and re-entering dispatch mode	The initial project team view is that, on balance, the proposed elements to be dealt with in guidelines are reasonable as: • The minimum participation threshold may not change often. However, specific requirements to participate are likely to be updated often, with AEMO best placed to determine these requirements. • AEMO is best placed to determine technical aspects, such as telemetry. This is already the case for scheduled and semi-scheduled generators. • Conformance criteria may require changes as dispatch LSUs mature and grow in size and capability. Conformance for WDRU is also already outlined in a guideline. TWG: 1. Are there elements you consider would be better off in the Rules? 2. Are there any factors that you think AEMO should take into account when formulating these guidelines or how it should be consulted on?

Zonal aggregation guideline

Area	Proposed contents	Initial AEMC staff views

Zonal	• Zone specifications (zonal load forecasting process currently under development by AEMO)
	• Requirements and conditions for aggregation of NMIs into LSUs, such as technical and operational requirements (for example, system security requirements)
	• Guidance on automated zonal aggregation processes for LSUs, including to support:
	  • Initial establishment and configuration of LSUs
	  • Maintenance of LSUs (e.g. addition or removal of NMIs from portfolios)
	  • Changes to zone configurations (i.e. automated disaggregation and re-aggregation of NMIs)
	  • AEMO validation processes.
		It is important to note here that this guideline is separate from the decision to require zonal aggregation of resources, as discussed earlier. We understand that there will still need to be guidance on how NMIs are aggregated regardless of the decision on zonal aggregation.
		The initial project team view is that, on balance, the proposed elements to be dealt with in the guidelines are reasonable as:
		• AEMO is best placed to consider the conditions for aggregation, such as system security requirements when aggregating NMIs. A guideline was used to outline the process for aggregating WDR NMIs.
		• The automated aggregation process is likely to change over time and be subject to AEMO system changes.
		• The guideline is likely to contain high levels of detail
		TWG:
		1. Are there elements you consider would be better off in the Rules?

Proposed rule amendments: Bidding

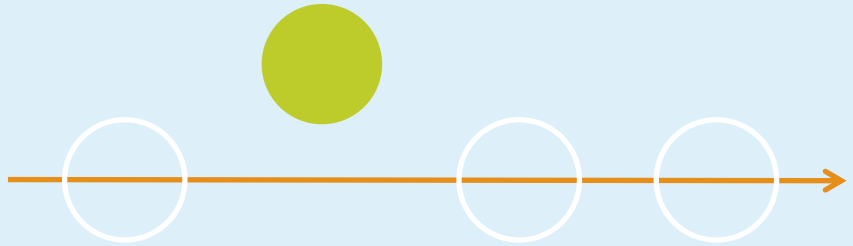
Area	Proposed NER provisions to amend	Proposed amendment	Staff initial assessment based on criteria
Bidding	• 3.8.6 (g1 and g2): Dispatch bids – scheduled bi-directional units • 3.8.6(h): Bid requirements – scheduled and semi-scheduled generating units and scheduled bidirectional units. • 3.8.22: Rebidding • 3.8.22A: Bids and rebids must not be false or misleading	Amendments to cl 3.8.6 would recognise that dispatch LSUs exist and are subject to the same bidding rules as scheduled bi-directional units, and are required to: • Submit a bid that may contain 10 price bands for generation or load. • Submit an incremental MW bid for all 288 trading intervals for each price band • Specify ramp rates in bids Amendments to cl 3.8.22 and 3.8.22A would recognise that dispatch LSUs may submit rebids and all bids must not be false and misleading.	The proposed amendments aim to incorporate dispatch LSUs into bidding and are broadly consistent with the obligations for scheduled bi-directional units. Based on the principles mentioned above our initial assessment is that the proposed rule amendments seem reasonable as: • The bidding requirements are not expected to change often. • The surrounding arrangements for bidding are already in the Rules. Questions for TWG: • Are there any other related factors you consider should be outlined in the Rules?

Proposed rule amendments: Central dispatch

Area	Proposed NER provisions to amend	Proposed amendments	AEMC initial assessment based on criteria
Central dispatch	• 3.8.2(a): Participation in central dispatch • 3.8.3A: Ramp rates • 3.8.19: Dispatch inflexibilities • 4.9.2: Instructions to scheduled generators, semi-scheduled generators and scheduled integrated resource providers • 4.11.1 Remote control and monitoring devices	Amendments to cl 3.8.2, 3.8.3A, 3.8.19 & 4.9.2 would recognise that dispatch LSUs exist and are subject to the same central dispatch obligations as scheduled bi-directional units. Such as: • Submitting dispatch bids for the dispatch LSU • Provide a ramp up and ramp down rate • Advise AEMO if the dispatch LSU is expected to be unable to operate in accordance with dispatch instructions. • Give AEMO the power to issue dispatch instructions to dispatch LSUs Amendments to cl 4.11.1 would recognise the dispatch LSUs monitoring devices would need to be installed in accordance with AEMO's guidelines.	The proposed amendments aim to incorporate dispatch LSUs into central dispatch and are broadly consistent with the obligations for scheduled bi-directional units. Based on the principles mentioned above our initial assessment is that the amendments seem reasonable as: • The central dispatch requirements are not expected to change often • Central dispatch arrangements are already in the Rules. • The existing remote control and monitoring requirements already point to Guidelines. Questions for TWG: • Are there any other factors you consider should be outlined in the Rules?

Proposed rules amendments: Power system operations

Area	Proposed NER provisions to amend	Proposed amendments	Initial AEMC assessment based on criteria
Project assessment of system adequacy (PASA), Energy adequacy Assessment Projection (EAAP), Scheduled capacity	• 3.7.2: Medium term PASA • 3.7.3 Short term PASA • 3.7C: Energy Adequacy Assessment Projection • 3.8.4 Notification of scheduled capacity	The proposed amendments to ST PASA and notification of scheduled capacity set out that dispatch participants would provide: • ST PASA information for their LSUs • available capacity of the dispatch LSU In line with the obligations for other scheduled resources. The request proposes the dispatch LSUs be excluded from MT PASA and EAAP processes. This is because AEMO will use the information provided by the Dispatch mode participants to meet the medium-term forecasting requirements. AEMO proposes to internally process the data provided, to add value to the EAAP process.	The proposed amendments aim to require dispatch mode participants to provide information for short-term planning processes. The longer-term planning responsibilities would be left to AEMO. Based on the principles mentioned above our initial assessment is that the amendments seem reasonable as: • The ST PASA and notification of capacity requirements are not expected to change often. • The exclusion of MT PASA and EAAP appears reasonable while participants learn their capability over a longer time horizon. Questions for TWG: • Are the purposes clear for providing this information? • Are there any elements you consider would be better dealt with through Guidelines?



Wrap up

Further information

Project page

For more information and links to any documents mentioned:

https://www.aemc.gov.au/rule-changes/integrating-price-responsive-resources-nem

Contact

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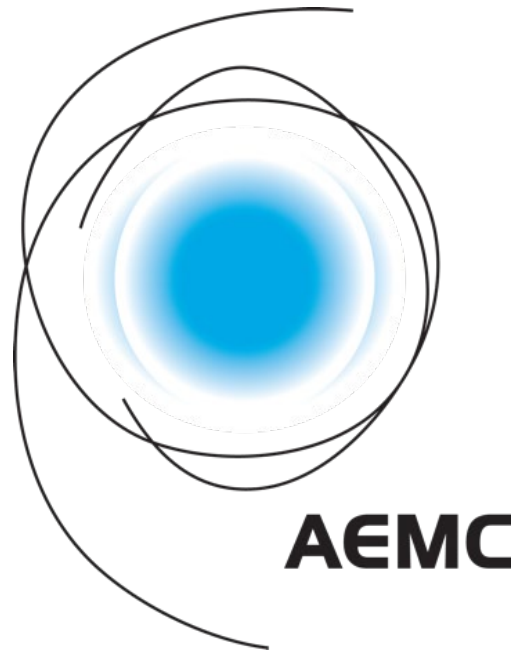
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