

# Wholesale Demand Response

June 2023

## Annual Report

A report on the operation of the arrangements for the provision of wholesale demand response





# Important notice

## Purpose

AEMO publishes the Wholesale Demand Response Annual Report under clause 3.10.6 (a) of the National Electricity Rules.

This publication has been prepared by AEMO using information available at 13 June 2023. Information made available after this date may have been included in this publication where practical.

## Disclaimer

This document or the information in it may be subsequently updated or amended. This document does not constitute legal or business advice, and should not be relied on as a substitute for obtaining detailed advice about the National Electricity Law, the National Electricity Rules, or any other applicable laws, procedures or policies. AEMO has made every effort to ensure the quality of the information in this document but cannot guarantee its accuracy or completeness.

## Version control

Version	Release date	Changes
1	29/06/2023	

# Executive summary

This report provides information on the second year of wholesale demand response (WDR) operations, including on baseline methodologies, WDR performance and WDR trends, as required under the National Electricity Rules (NER) clause 3.10.6 (a) for the period of 1 July 2022 to 13 June 2023.

The report finds that overall, the four available baselines methodologies and the eligibility assessment, compliance testing and non-conformance processes are all functioning as expected. AEMO is not currently developing any new baseline methodologies outside of the existing CAISO 10 of 10 framework and believes that the baseline accuracy and bias thresholds remain appropriate.

In terms of WDR operations, there has been a slow build of WDR capacity registered since the start of the mechanism. Most of the WDR events to date have been in the NSW and VIC regions, concentrated in the May to October periods, with very little WDR over summer seasons. The key operational statistics for WDR are shown in Table 1.

**Table 1 WDR operation – key statistics as of 13 June 2023**

Key statistic	Value
Baseline methodologies available	4
Baseline methodologies used by participants	3
Total DRSP registered	1
Total WDRUs registered	13
Total NMIs registered	34
Regions in which NMIs are registered	NSW, VIC, SA, QLD
Total capacity registered (MW)	65.3 MW
Number of NMIs not passing compliance testing – July 2022 to June 2023	4 (Summer 2022-23), 3 (Winter 2023)
WDR event days – July 2022 to June 2023	26 days
Region of WDR events	NSW, QLD, SA, VIC
Total WDR dispatched - July 2022 to June 2023 (MWh)	222 MWh
Average Volume Weighted Price for WDR - July 2022 to June 2023 (\$/MWh)	284 \$/MWh to 2,193 \$/MWh
Non-conformance frequency - July 2022 to June 2023	None
Non-conformance extent - July 2022 to June 2023	9 MW

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# 1 Background

The WDR mechanism commenced on 24 October 2021, implementing the AEMC's WDR Mechanism rule<sup>1</sup> of June 2020. The WDR mechanism allows demand side (or consumer) participation in the wholesale electricity market. 'Demand Response Service Providers' (DRSP) classify and aggregate the demand response capability of large market loads for dispatch through the NEM's standard bidding and scheduling processes. The DRSP receive payment for the dispatched response, against a baseline estimate, at the electricity spot price.

## 1.1 Rules requirements

Under NER clause 3.10.6 (a), within six months after the end of each calendar year, AEMO is required to publish an annual report including the following information on DRSP-led wholesale demand response (without disclosing any confidential information):

- the number of registered DRSPs
- the number and capacity of loads classified as wholesale demand response units
- the amount of demand response dispatched in the wholesale market under the wholesale demand response mechanism, as well as the frequency of dispatch
- analysis of the spot price levels at which wholesale demand response was dispatched
- analysis of the impact of wholesale demand response on the procurement and use of market ancillary services
- relevant trends, including year-on-year changes over time

## 1.2 Procedural requirements

Under clause 2.8 of AEMO's WDRM Baseline Eligibility, Metrics and Compliance Policy<sup>2</sup>, AEMO has committed to undertake an annual review of the suitability of the eligibility and compliance methodology as well as the metrics thresholds (See Section 2.7 of the Report).

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<sup>1</sup> <https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism>

<sup>2</sup> [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2020/wdrm-becm-policy/first-round/baselines-eligibility-compliance-and-metrics-policy.pdf?la=en](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/wdrm-becm-policy/first-round/baselines-eligibility-compliance-and-metrics-policy.pdf?la=en)

## 2 Baseline methodologies reporting

Under NER 3.10.6 (b) AEMO is required to report on outcomes relating to the use and accuracy of baseline methodologies, including on the following:

- Baseline methodologies available
- Baseline methodology use
- Proposals for new baseline methodologies
- Baseline methodology assessment
- Baseline non-compliance
- Improvements to WDR provision
- Timing of any improvements

### 2.1 Baseline methodologies available

The four baseline methodologies (and their associated key settings) available for use currently under the wholesale demand response guidelines are shown in Table 2. They are outlined in the Baseline Methodologies Register<sup>3</sup>.

**Table 2 Baseline methodologies – key settings summary table**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Business + Non-Business Days Composite (BM4) <sup>4</sup>
<b>BM ID</b>	BM1	BM2	BM3	BM4
<b>Framework</b>	CAISO 10 of 10	CAISO 10 of 10	CAISO 4 of 4	CAISO 10 of 10 CAISO 4 of 4
<b>Day type</b>	All days.	Business days only.	Non-business days only.	Business days and non-business days.
<b>Baseline window</b>	50 days	50 days	50 days	50 days
<b>Selected days</b>	Most recent 10 days (minimum 5).	Most recent 10 business days (minimum 5).	Most recent 4 non-business days (minimum 4).	Most recent 10 business days (minimum 5). Most recent 4 non-business days (minimum 4).

<sup>3</sup> <https://aemo.com.au/initiatives/trials-and-initiatives/wholesale-demand-response-mechanism/wdr-participant-toolbox/wdr-baseline-methodology-register>

<sup>4</sup> The Business + Non-Business Days Composite baseline methodology (BM4) will be referred to as 'Composite' in the tables in the report in the interest of brevity.

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Business + Non-Business Days Composite (BM4) <sup>4</sup>
<b>Unadjusted baseline energy for TI</b>	Average metered energy for TI for selected days.	Average metered energy for TI for selected days.	Average metered energy for TI for selected days.	Average metered energy for TI for selected days.
<b>Baseline adjustment</b>	Multiplicative adjustment with $\pm 20\%$ cap.	Multiplicative adjustment with $\pm 20\%$ cap.	Multiplicative adjustment with $\pm 20\%$ cap.	Multiplicative adjustment with $\pm 20\%$ cap.
<b>Baseline adjustment window (settlement)</b>	3 hrs ending 1 hr prior to the first TI of WDR.	3 hrs ending 1 hr prior to the first TI of WDR.	3 hrs ending 1 hr prior to the first TI of WDR.	3 hrs ending 1 hr prior to the first TI of WDR.
<b>Baseline adjustment window (PoL)</b>	3 hrs ending 1 hr prior to TI.	3 hrs ending 1 hr prior to TI.	3 hrs ending 1 hr prior to TI.	3 hrs ending 1 hr prior to TI.
<b>Required number of eligibility days</b>	50	50	20	50
<b>Eligibility TIs window</b>	3pm to 8pm (market time)	3pm to 8pm (market time)	3pm to 8pm (market time)	3pm to 8pm (market time)
<b>Required number of compliance days</b>	50	50	20	50
<b>Compliance TIs window</b>	3pm to 8pm (market time)	3pm to 8pm (market time)	3pm to 8pm (market time)	3pm to 8pm (market time)

## 2.2 Baseline methodology use

The extent to which each of the four the baseline methodologies are being used is shown in Table 3. Most of the registered NMIs to date are using baseline methodology 4 (Business + Non-Business Days Composite). Table 4 shows that correspondingly, most of the WDR capacity is also registered under BM4. There has been a decrease in both the number of NMIs and capacity registered for BM4 from 2022 to 2023. This is due to some NMIs changing their baseline methodology from BM4 to BM1. There have also been six NMIs that have declassified, which have been from both BM1 and BM4. There have been a total of 16 NMIs registered in the past year, the majority of which have been under BM1.

**Table 3** Number of NMIs per baseline methodology

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)	Total number of NMIs
<b>June 2022</b>	-	2	-	23	25
<b>June 2023</b>	14	2	-	18	34



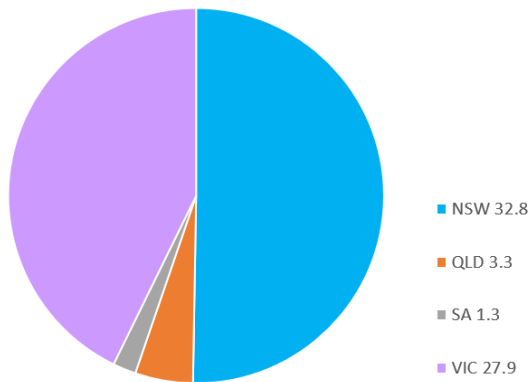


**Table 4 Total capacity (MW) per baseline methodology**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)	Total Capacity
June 2022	-	1.0	-	60.6	61.6
June 2023	9.9	1.0	-	54.4	65.3

The breakdown of capacity by region is shown in Figure 1. It is split largely between the NSW and VIC regions, with a small amount of capacity in the SA and QLD regions.

**Figure 1 Capacity by region (MW)**



## 2.3 Proposals for new baseline methodologies

Under NER clause 3.10.6 (b) (1) (ii) AEMO is required to outline any proposals for new baseline methodology received by AEMO and new baseline methodologies being developed.

AEMO has had discussions with market participants and other interested parties regarding potential new baseline methodologies. However, AEMO did not receive any detailed official submissions for new baseline methodologies from any market participant during the reporting period.

## 2.4 Baseline methodology assessment

NER clause 3.10.6 (b) (2) outlines that for each baseline methodology, an assessment against the baseline methodology metrics as measured during the wholesale demand response unit classification process and baseline compliance testing must be completed for this Report.

To participate in WDR, the DRSP must demonstrate that the baseline methodology, when applied to the load and using the proposed baseline settings and historical metering data for the load produces a baseline that satisfies the baseline methodology metrics. The two baseline methodology metrics used to assess a baseline’s eligibility

for WDR (baseline eligibility assessment) and continued compliance (baseline compliance testing) are accuracy and bias.

- Accuracy is the measure of deviation between the actual load and its baseline.
- Bias is the systematic tendency of a baseline method to over- or under-predict actual loads.

Table 5 to Table 7 outline the minimum, maximum and average accuracy and bias scores for the baseline methodologies currently in use (BM1, BM2 and BM4), both under baseline eligibility assessment and baseline compliance testing. Baseline compliance testing was conducted as outlined in the WDRM Baseline Eligibility, Metrics and Compliance Policy on the 29<sup>th</sup> and 30<sup>th</sup> of November 2022, and then again on the 30<sup>th</sup> and 31<sup>st</sup> of May 2023. The compliance testing results shown below are for the May 2023 compliance test, as they are the most recent/relevant.

Any NMs which failed compliance testing have been excluded from the compliance testing statistics shown in this section. More details about the NMs that failed compliance testing can be found in Section 2.5.

The results for BM1 can be seen in Table 5. The average accuracy score was well below the 20% accuracy threshold at under 11%, for both eligibility assessment and compliance testing. There is also a wide range of accuracy scores across eligibility/compliance testing, ranging from as low as 5.1% to nearly hitting the threshold at 19.8%. This suggests that there are many different types of loads participating in WDR with different load profiles and hence accuracy scores.

The average bias scores were also significantly lower than the 4% threshold for both eligibility and compliance testing, at under 0.5%. There was also a wide range of bias scores from 0% to 2.5%.

**Table 5 All Days (BM1) – Eligibility assessment and compliance testing results**

	Eligibility Assessment		Compliance Testing <sup>5</sup>	
	Accuracy	Bias <sup>6</sup>	Accuracy	Bias
<b>Minimum</b>	5.1%	0.0%	5.6%	0.0%
<b>Maximum</b>	16.7%	2.5%	19.8%	1.4%
<b>Average</b>	9.7%	0.4%	10.8%	0.4%

Currently there are only 2 NMs registered under BM2, with no new NMs registering under this methodology between July 2022 and 13 June 2023. As such, there is no eligibility data for BM2 for this report. Additionally, one of the NMs under BM2 failed compliance testing during the May 2023 compliance test. Consequently, due to confidentiality issues, there is no data available for this report for BM2.

<sup>5</sup> Only NMs that passed the compliance test were included in the accuracy and bias statistics.

<sup>6</sup> Minimum, maximum and average values calculated from absolute bias scores.

**Table 6 Business Days (BM2) – Eligibility assessment and compliance testing results**

	Eligibility Assessment		Compliance Testing	
	Accuracy	Bias <sup>7</sup>	Accuracy	Bias
<b>Minimum</b>	N/A	N/A	N/A	N/A
<b>Maximum</b>	N/A	N/A	N/A	N/A
<b>Average</b>	N/A	N/A	N/A	N/A

As shown in Table 7 for BM4, the average accuracy score was well below the 20% accuracy threshold at under 11%, for both eligibility assessment and compliance testing. There is also a wide range of accuracy scores across eligibility/compliance testing, ranging from as low as 0.7% to 15.8%. This suggests that there are many different types of loads participating in WDR with different load profiles and hence accuracy scores.

The average bias scores were also significantly lower than the 4% threshold for both eligibility and compliance testing and a wide range of bias scores from 0% to the top of the limit at 4.0%.

**Table 7 Composite (BM4) – Eligibility assessment and compliance testing results**

	Eligibility Assessment		Compliance Testing <sup>8</sup>	
	Accuracy	Bias <sup>9</sup>	Accuracy	Bias
<b>Minimum</b>	6.8%	0.1%	0.7%	0.0%
<b>Maximum</b>	12.5%	4.0%	15.8%	0.7%
<b>Average</b>	10.0%	1.4%	6.9%	0.2%

### 2.4.1 Trends in accuracy and bias

The average accuracy and bias scores for eligibility assessment over the past two years for each BM are shown in Table 8 and Table 9. As shown, there has been an increase in both the average accuracy and bias scores for BM4 over the past 2 years. There are no trends evident for the other baseline methodologies due to lack of data at this time.

<sup>7</sup> Minimum, maximum and average values calculated from absolute bias scores.

<sup>8</sup> Only NMs that passed the compliance test were included in the accuracy and bias statistics.

<sup>9</sup> Minimum, maximum and average values calculated from absolute bias scores.

**Table 8 Eligibility assessment – average accuracy score over time**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)
Nov 21 - Jun 2022	-	14.7%	-	8.8%
Jun 2022 – Jun 2023	9.7%	-	-	10.0%

**Table 9 Eligibility assessment – average bias score over time**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)
Nov 21 - Jun 2022	-	3.0%	-	0.4%
Jun 2022 – Jun 2023	0.4%	-	-	1.4%

The average accuracy and bias scores for compliance testing over the past two years (compliance testing completed in June 22 and May 2023) for each BM are shown in Table 10 and Table 11. As shown, for BM2 both the average accuracy and bias scores increased slightly over the past 2 years. For BM4, there has been a slight decrease in the average accuracy and bias scores. There are no trends evident for the other baseline methodologies due to lack of data at this time.

**Table 10 Compliance assessment – average accuracy score over time**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)
June 2022	-	14.7%	-	8.9%
May 2023	10.8%	16.1%	-	6.9%

**Table 11 Compliance assessment – average bias score over time**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)
June 2022	-	0.9%	-	0.3%
May 2023	0.4%	1.3%	-	0.2%

## 2.5 Baseline non-compliance

When AEMO conducted baseline compliance testing, a small number of NMIs (see Table 12 and Table 13) failed to pass the baseline compliance test. This means that these NMI's baselines no longer meet the required accuracy and/or bias thresholds. This can occur for a number of reasons, such as a significant change in plant operations or business model or a seasonal characteristic of the particular load. Such NMIs are set as non-

complaint in AEMO's systems and are unable to partake in WDR until they pass baseline compliance testing at a future date. A DRSP may also re-submit an amended application for compliance testing if appropriate, using 'exclusion days' to remove any abnormal loads from the baseline compliance testing calculation.

All NMIs that were found to be baseline non-compliant have provided an available capacity of zero for the WDRU. There have been no periods in which a baseline non-compliant WDRU has bid in, or was dispatched.

For Summer 2022/2023 compliance testing, there were originally four NMIs under BM4 that failed the compliance test. The DRSP re-submitted amended applications for each of these NMIs on the day of testing and they all subsequently passed.

**Table 12 NMI compliance testing - November 2022**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)	Total
<b>Total number of NMIs</b>	12	2	-	20	34
<b>Number of NMIs that failed compliance testing</b>	1	2	-	1	4
<b>% of NMIs failing compliance testing</b>	8%	100%	-	5%	12%

For Winter 2023, three NMIs failed the compliance testing. All three failed to meet the accuracy threshold and one NMI also failed to meet the bias threshold.

**Table 13 NMI compliance testing - May 2023**

	All Days (BM1)	Business Days (BM2)	Non-Business Days (BM3)	Composite (BM4)	Total
<b>Total number of NMIs</b>	14	2	-	18	34
<b>Number of NMIs that failed compliance testing</b>	-	1	-	2	3
<b>% of NMIs failing compliance testing</b>	0%	50%	-	11%	9%

## 2.6 Improvements to WDR provision

Under NER clause 3.10.6 (b) (4) any potential improvements to the provision of WDR under the Rules, together with the associated timing and process for making any improvements (NER 3.10.6 (b) (5)) needs to be included in this Report.

AEMO completed minor improvements to the functionality of the Portfolio Management System (PMS) used by DRSPs in May 2023.

## 2.7 Suitability of eligibility and compliance methodology

Under clause 2.8 of AEMO's WDRM Baseline Eligibility, Metrics and Compliance Policy<sup>10</sup>, AEMO committed to undertaking an annual review of the suitability of the eligibility and compliance methodology as well as the metrics thresholds.

### 2.7.1 Eligibility assessment

With 34 NMI's registered and 26 event days of WDR in the past year and a total of 47 since the beginning of WDR, it is still difficult to draw firm conclusions regarding the long-term efficacy of eligibility and compliance methodology or the accuracy and bias thresholds. However, as shown in Section 2.4, the NMI's registered for WDR, when tested for eligibility, have a wide variety of accuracy and bias characteristics, with an average accuracy and bias values well below the 20% and  $\pm 4\%$  thresholds respectively. This suggests that WDR and baseline methodologies employed, together with the eligibility assessment methodology is suitable for a variety of load types.

AEMO has not encountered a large number of NMI's bought forward by market participants that have failed to pass eligibility assessments, or encountered loads which should be suitable for WDR but have been excluded due to the eligibility assessment criteria or the thresholds. There has been a steady stream of NMI's being registered and passing eligibility assessment. There is no indication that the supply of NMI's suitable to participate in WDR have been exhausted, particularly in regions other than VIC and NSW, or that further participation in WDR is limited by the eligibility assessment methodology or the accuracy and bias thresholds.

### 2.7.2 Compliance testing

With regards to the compliance testing methodology, the second and third bi-annual compliance test for all NMI's was undertaken at the end of November 2022 and at the end of May 2023, respectively. The compliance testing ran smoothly and did not encounter any issues. Most NMI's tested had very similar accuracy and bias statistics in the compliance test as seen in the eligibility assessment, suggesting that their loads are largely predictable in a way suitable to participate in WDR.

As discussed in Section 2.5, small number of NMI's did not pass the compliance test due to exceeding the accuracy and/or bias thresholds. The reason for not passing the compliance test was not due to any issues with the methodology, but simply a result of changing load patterns or seasonality of load. Some of the non-compliant NMI's may again become baseline compliant, due to changing circumstances and/or seasonality changes in the future, other may choose to declassify.

### 2.7.3 Accuracy and bias thresholds

Based on the data to date, AEMO believes that the baseline eligibility and compliance methodologies, together with the accuracy and bias metrics result in loads that have accurate and unbiased baselines participating in WDR and that the demand response provided under the WDRM is real and additional.

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<sup>10</sup> [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2020/wdrm-becm-policy/first-round/baselines-eligibility-compliance-and-metrics-policy.pdf?la=en](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/wdrm-becm-policy/first-round/baselines-eligibility-compliance-and-metrics-policy.pdf?la=en)

A such, AEMO currently sees no evidence for changing the eligibility assessment or compliance testing methodologies or raise or lower the accuracy and bias thresholds.

#### 2.7.4 Baseline adjustment cap

The baseline adjustment cap is a multiplicative adjustment, set at  $\pm 20\%$  for all baseline methodologies. That is, the adjustment applied to the baseline using meter data to reflect conditions on the day, may be positive or negative and is capped at 20%.<sup>11</sup> The same cap applies to baseline calculations for WDR settlement as well as eligibility assessment and compliance testing.

AEMO is aware that some load types may not pass the eligibility assessment due to the cap on adjustments. However, AEMO believes that the baseline adjustment cap serves its purpose of ensuring baselines are accurate and unbiased and the demand response provided under the WDRM is real and additional and a such do not need to be changed.

#### 2.7.5 Other settings

AEMO believes that all other baseline settings relevant to the eligibility and compliance methodology, including the selected days, baseline window, baseline adjustment window, required number of eligibility days and required number of compliance days are working as intended and require no adjustment at this time.

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<sup>11</sup> Refer to the WDRM – Baseline Methodology Register for capping methodology at <https://aemo.com.au/initiatives/trials-and-initiatives/wholesale-demand-response-mechanism/wdr-participant-toolbox/wdr-baseline-methodology-register>

## 3 WDR performance

Under NER clause 3.10.6 (c), the Report must include, for the period under review the following:

- the number of registered DRSPs and the number and WDRUs
- the amount of dispatched WDR, the frequency of dispatch and the spot market price levels at which wholesale demand response was dispatched
- the frequency and extent of WDRU declared to be non-conforming
- analysis of the impact of dispatched WDR on the procurement and use of each market ancillary service
- analysis of trends, including year-on-year changes

### 3.1 DRSPs and WDRUs

The number of registered DRSPs and the number and capacity of WDRUs over the past 2 years is shown in Table 14 below. As shown, there has been a small increase in WDRUs and WDRU capacity over the past year, with one DRSP continuing to be active in WDR.

**Table 14 DRSPs, WDRUs and total capacity**

Date	Registered DRSPs	WDRUs	Total WDRU capacity
June 2022	1	12	61.6MW
June 2023	1	13	65.3MW

### 3.2 Wholesale demand response dispatch and pricing

To 13 June 2023, there has been a total of 222<sup>12</sup> MWh of WDR dispatched since the start of July 2022 and a total of 570<sup>13</sup> MWh since the mechanism began in October 2021. The WDR dispatch occurred in the NSW, QLD, SA and VIC regions.

**Table 15 WDR dispatched over time**

Date	WDR dispatched	No. of days with WDR events
Oct 21 - Jun 2022	348 MWh	21
July 2022 – Jun 2023	222 MWh	26
<b>Total since start of WDR</b>	<b>570 MWh</b>	<b>47</b>

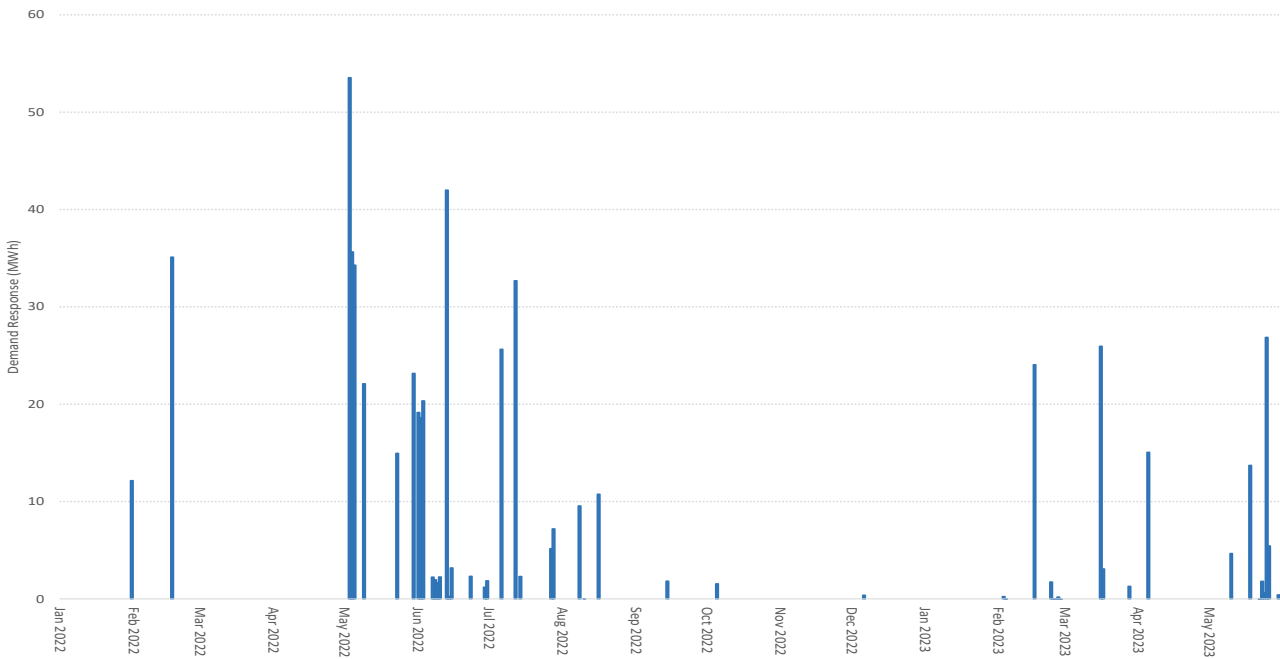
<sup>12</sup> WDR calculated from metered energy minus baseline energy

<sup>13</sup> WDR calculated from metered energy minus baseline energy



The amount of WDR dispatched over time is shown in Figure 2 below. There were relatively few events over both summer periods, likely due to relatively low prices. In 2022, WDR dispatch activity increased significantly from May onwards. This year to date, WDR events have happened sporadically since February, increasing in frequency over the May to June timeframe. This is likely the result of more NMIs and capacity being registered for WDR, together with an environment of sustained higher prices, which has increased the opportunity for WDR dispatch.

**Figure 2 WDR dispatched over time (MWh)**



The average volume weighted price for WDR per region is shown in Table 16. NSW has the highest number of WDR events, the highest dispatch volumes and also the highest average volume weighted price for those events. The VIC region had a significantly lower average volume weighed price for events than NSW and also compared to the previous year in the region. QLD and SA had very small amounts of WDR dispatched, making in hard to draw any conclusions from the average volume weighed price for those regions.

**Table 16 Average Volume Weighted Price for WDR per region <sup>14</sup>**

	Average Volume Weighted Price (\$/MWh) (Jan 22 – Jun 22)	Average Volume Weighted Price (\$/MWh) (Jul 22 – 8 Jun 23)
<b>NSW</b>	\$2,200	\$2,193
<b>QLD</b>	-	\$638
<b>SA</b>	-	\$284

<sup>14</sup> The average volume weighted price is calculated based on dispatch volume and not trade volume.

	Average Volume Weighted Price (\$/MWh) (Jan 22 – Jun 22)	Average Volume Weighted Price (\$/MWh) (Jul 22 – 8 Jun 23)
<b>VIC</b>	\$2,002	\$796

### 3.3 Non-conformance

Dispatch conformance is assessed at an interval (MW) and settlement day (MWh) level as outlined in Section 3 of the Post-Event Dispatch Conformance Policy<sup>15</sup>. Due to the small size of most WDRUs (i.e. 7 out of 13 being under 6MW in size) and the interval MW error non-conformance threshold being 6MW, the interval assessment shows non intervals have been deemed as non-conforming (i.e. demand response is not within 6MW of the dispatch target) over the past year.

From a settlement day perspective, 14 out of 66 dispatch events have been deemed non-confirming (per Dispatchable Unit Identifier (DUID) Settlement Day) over the past year. At the Settlement Day level, there was a total of 9MWh of non-conformance for the reporting period.

There have been a small number of NMIs with non-conformance occurrences, with only one NMI reaching the rules prescribed three event limit over the past year. This NMI reached the limit through sequential non-conformance events, and was set to non-compliant. As these events were spaced over a period of over a year and found to be both over and under achieving, it was determined that they were not a regular or significant occurrence. This WDRU has since been returned to compliant, and has not had further non-conformance.

The frequency and extent of WDRUs declared to be non-conforming under NER clause 3.8.23(a) since the start of WDR is shown in Table 17 below. As shown, non-conformance has been minor over both the 2022 and 2023 reporting periods.

**Table 17 Non-conformance over time**

Non-conformance measure	Oct 21 – Jun 22	Jul 22 – Jun 23
<b>Non-conformance frequency (Trading Intervals)</b>	6 out of 1403 trading intervals	None
<b>Extent of non-conformance – Interval (MW)</b>	Total non-conformance - 20.3 MW Average non-conformance - 3.4 MW	0 MW
<b>Non-conformance frequency</b>	6 out of 51 dispatch events	14 out of 66 dispatch events
<b>Extent of non-conformance Settlement Day (MWh)</b>	37.6 MWh <sup>16</sup>	9 MWh

<sup>15</sup> <https://aemo.com.au/-/media/files/initiatives/wdr/2021/post-event-dispatch-conformance-policy.pdf?la=en>

<sup>16</sup> A large portion of the non-conformance (32 MWh) was due to a single auto bidding error.



### 3.4 WDR effect on market ancillary services

Due the WDR Mechanism only starting in October 2021, and the relatively low volume/size of WDR dispatch to date, there is no perceivable effect of WDR in the procurement and use of market ancillary services.

# Glossary

This document uses many terms that have meanings defined in the National Electricity Rules (NER). The NER meanings are adopted unless otherwise specified.

<b>Term</b>	<b>Definition</b>
<b>AEMC</b>	Australian Energy Market Commission
<b>AEMO</b>	Australian Energy Market Operator Limited
<b>AER</b>	Australian Energy Regulator
<b>BL</b>	Baseline
<b>DRSP</b>	Demand Response Service Provider
<b>WDRU</b>	Wholesale Demand Response Unit
<b>NER</b>	National Electricity Rules
<b>WDR</b>	Wholesale Demand Response
<b>WDRM</b>	Wholesale Demand Response Mechanism
<b>NMI</b>	National Metering Identifier