

Review of Significant Price Reporting Guidelines

Australian Energy Regulator (AER) | 12 Aug 2025



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CONSUMERS

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Prepared by	G.H. Thorpe, gthorpe@oakleygreenwood.com.au M Currie, mcurrie@oakleygreenwood.com.au
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1. Executive Summary

Oakley Greenwood has been engaged to assist the Australian Energy Regulator (AER) review the Significant Price Guideline required under cl 3.13.7 of the National Electricity Rules (NER).

A rule change introduced into NER rule 3.13.7 amended the previous static thresholds of \$5,000/MWh for energy and \$5,000/MW for FCAS to a principles-based rule subject to AER developing and publishing the Significant Price Reporting Guidelines (Guidelines). For the first Guideline the AER retained the original thresholds as settlement of the NEM Spot Market was about to shift from a 30-minute to 5-minute basis. The AER is now reviewing the Guideline.

In this report we:

- Assess potential objectives for reporting on significant prices in the energy Spot Market. These include providing insight into market design, assessment of market power (which was a consideration in the initial setting of \$5,000/MWh in 2001), compliance and an objective we have labelled 'we are watching' (which aligns with a concept noted by AEMO to 'make traders think twice' before submitting bids and rebids).
- Draw on potential criteria noted in the request to us from the AER and variations we have developed to assess criteria that may form a threshold for reporting and discuss how they support each of the objectives. These included:
 - simply raising the static threshold, assessing whether a high price was forecast and how it compared with historical prices; and
 - a hybrid approach which changes the concept of high price from the status quo's focus on prices above a threshold defined by the criteria to one where a minimum number of reports are made per quarter. A filtering process would screen out events where there is a reasonable probability that the high price was related to a reduction in availability of generating capacity with the aim of making the reports more insightful and an efficient use of AER resources.
 - In all options, the Guidelines should allow the AER flexibility to also report on any price outcomes it considers warrants a report.

On balance we recommend the hybrid approach.

We also propose that FCAS prices should be decoupled from criteria to report on energy prices. Meaning FCAS prices should not be a primary criterion for reporting on the basis that FCAS prices are typically low and when they do rise to high levels this will be associated with a high energy price. However, the guidelines should require the assessment of FCAS prices as part of the assessments of high energy prices. The guidelines should also allow AER to add any cases where FCAS prices warrant reporting but are not associated with a high energy price report.

Our thinking assumes that the criteria in Significant Price Reporting Guidelines should inform decisions about which events are to be reported on but not the content of the report.

2. Introduction

The Australian Energy Regulator (AER) has requested Oakley Greenwood (OGW) review the guidelines the AER uses to report on significant prices in the NEM.

The current guidelines retain the criterion in place since 2001 of reporting on each occasion the 30-minute price for energy or FCAS exceeds \$5,000 per MWh or MW, respectively, in a region. Initially this was a prescriptive requirement of the National Electricity Code (NEC) until 1 July 2005 and subsequently the National Electricity Rules (NER). This reporting requirement was a condition of authorisation by the ACCC of the Code provision to move the value of VoLL (later the Market Price Cap) from \$5,000/MWh to \$10,000/MWh¹.

In 2022 the AER proposed a rule change, which was substantially accepted by the Australian Energy Market Commission (AEMC), to alter the NER to a principles-based framework subject to the AER developing, consulting and publishing the Significant Price Reporting Guidelines. The AER has advised that the static \$5,000/MWh and \$5,000/MW initial guideline was retained in the initial guideline as the NEM was about to shift to 5-minute settlement and it chose to wait and observe how this shift might affect the Guidelines. The AER is now seeking to review the Guidelines more broadly to accommodate changes in market and power system conditions and circumstances.

Low or negative prices are also considerably more prevalent than they were in the first years of the NEM. Our review also considers if low prices should be regarded as significant prices but focusses on high prices and also whether the significant price guidelines should be based on 5-minute or 30-minute averages.

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At this time the Code required authorisation from the ACCC. In July 2005 the provisions of the Code were incorporated in the National Electricity Rules as a statutory instrument pursuant to the National Electricity Law and the Australian Energy Market Commission assigned authority to amend the NER.

3. The objective of reporting on significant energy prices

Notwithstanding that the original rationale for requiring reports when the Spot Price exceeded \$5,000/MWh included monitoring the market for misuse of market power, the rule change request from the AER and the AEMC's consideration took a broad view including comparison to forecast, and comparison to historical outcomes. Each of these implies a priority on different issues or objectives of the significant price regime

In this paper we have assessed a number of objectives before moving to consider the implementation matters of the selected options. Objectives we considered were:

- Insights for the evolution of the market design through increased understanding of market operation during elevated prices (i.e. potentially significant price events) or very low prices as an input to review or monitoring of the effectiveness of the market design.
- Preliminary analysis of market power that may have impacted the high prices - similar to the original objective.
- Assessment of possible compliance actions.
- Demonstration to existing and future participants that 'we are watching'.
- A forum for explanation of details of NEM rules and operation.

Obviously, in each case it will be necessary to set quantitative triggers for analysis and a number of the objectives may be achieved from a given implementation.

We also note that analysis of price outcomes on single events/days can only consider the few hours around the time of elevated prices - this is an inherent limitation of the event based significant price provision in the NER. This may be adequate for compliance and some market design considerations (e.g. rebidding activity) but may also point to a need for deeper analysis.

In the following sections we expand on each of the possible objectives and how quantitative thresholds could be set for each and then propose a number of alternatives and assess the advantages and disadvantages of each.

3.1. Historical number of energy prices in excess of \$5,000/MWh, \$10,000/MWh and \$15,000/MWh

As a starting point we charted NEM price data to illustrate the number of times the energy Spot price has exceeded \$5,000/MWh, \$10,000/MWh and \$15,000/MWh based on 30-minute average prices since 2009 and the percentage of the prevailing market price cap since market start, see Figure 1 and Figure 2.^{2,3} The charts count prices exceeding the different thresholds in multiple regions as a single event on the assumption the AER would report on all regions with high price in the same interval in the one report.

² See section 8 for a discussion of whether to base Significant Price reports on 30-minute average or 5-minute dispatch prices.

³ We restricted examination of prices to greater than \$5,000/MWh in order to reduce the volume of data points to high prices only.

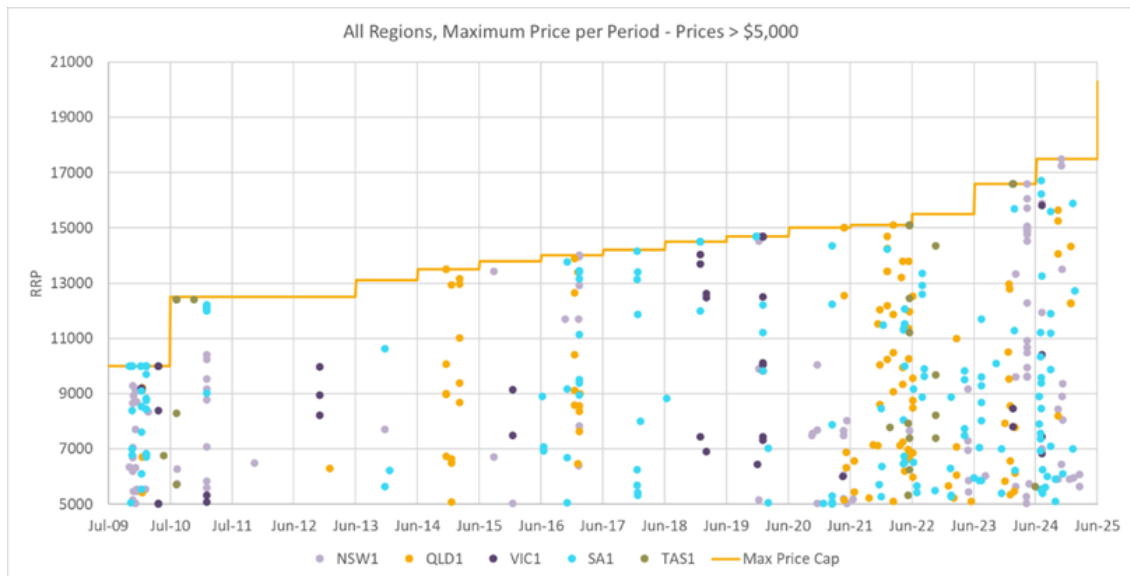


Figure 1: Frequency of periods where the RRP is greater than \$5,000/MWh

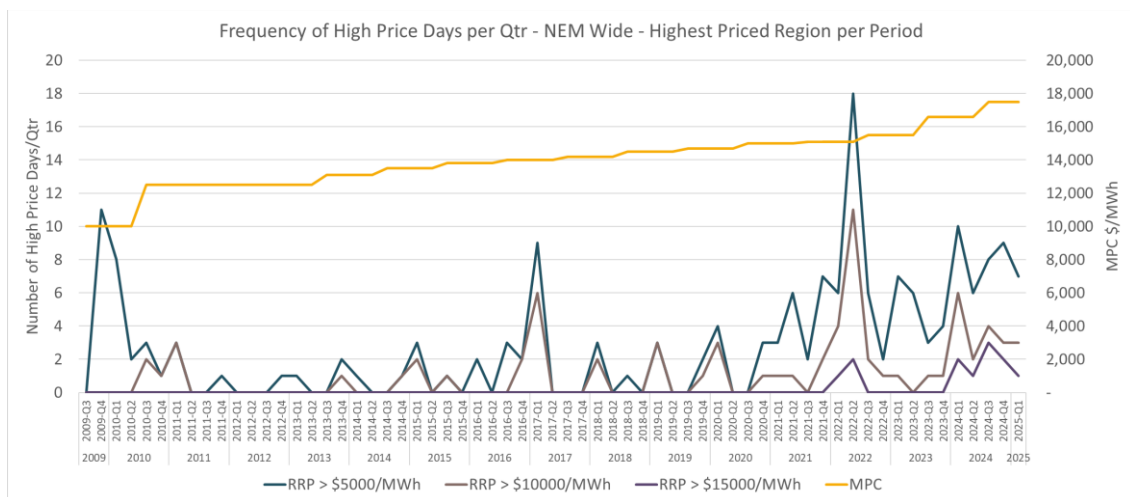


Figure 2: Frequency of high prices per quarter (1 price per day) 30-minute average

Figure 1 illustrates the frequency of half hourly pricing above \$5,000/MWh from Q4 2009 to Q1 2025. The colours represent high prices within each of the NEM regions. Within this chart we observe the clustering of high prices at certain periods. This can be seen in Queensland during summer 2014/2015 and Q4 2016 for example.

Figure 2 shows elevated numbers of high prices in 2009, which coincided with the drought of 2008-09 when cooling water for thermal stations was reduced and hydro reserves were also reduced. From that time there were occasional high prices until around 2021 when prices became increasingly volatile.

Figure 3 shows the mirror image to the previous set for low prices and show a clear increase in the incidence of prices at \$0 and also at -\$40/MWh (which has been a level that renewable generation has commonly bid while holding Renewable Energy Certificates).

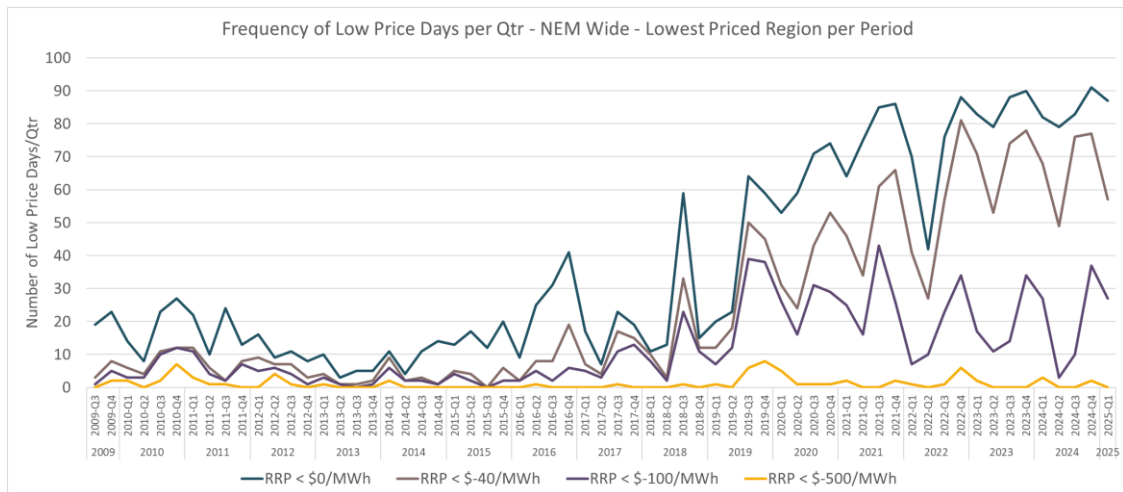


Figure 3: Frequency of low prices per quarter (1 price per day) 30-minute average

We have also investigated whether the frequency of occurrence was related to the change in the technology mix. Figure 4: Frequency of high price periods compared to average generation mix in those periods per quarter. illustrates how the energy mix has changed over time.

Note that the energy mix is a NEM wide total, averaged across all half hourly periods where the price has exceeded \$5,000/MWh (for convenience of presentation.) This averaging somewhat clouds the specific energy mix observed during each high price half hour. The amount of generation required has reduced over time, which we expect to be largely due to the increase in, behind the meter roof top solar generation offsetting requirements from the scheduled suppliers in the market. We also note the decrease in coal, gas and hydro generation during times of high pricing, with intermittent solar, wind and BESS generation growing over this period increasing volatility in both generation and demand. Further analysis would be required to fully understand these relationships and the frequency of high prices. For example, in the period from around 2011 to 2019 although high prices are evident at times, the frequency increased late in the decade. This may be a result of progressively increasing low-cost intermittent generation taking market share from black and brown coal generating units which remained in service but were taken out of service from around 2017 starting with coal in SA and Hazelwood in Victoria. At the same time the 'duck curve' characteristic of demand became more prominent as additional rooftop solar PV was added increasing volatility of demand to be met from the market. Fuel costs, in particular for gas also rose over this time as Bass Strait fields began to fall away and gas production primarily for LNG export in Queensland led to local gas prices being linked to international benchmarks.

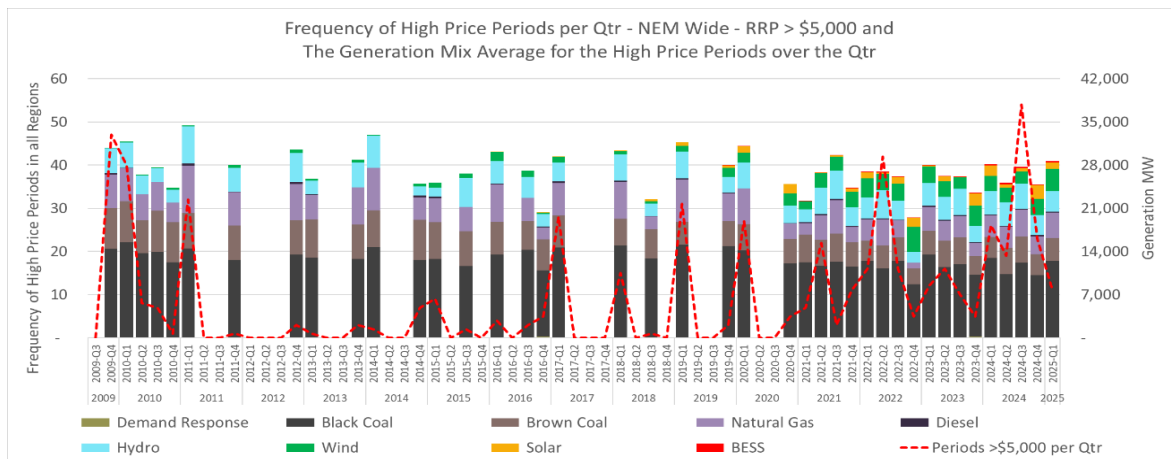


Figure 4: Frequency of high price periods compared to average generation mix in those periods per quarter.

4. FCAS

FCAS prices are typically low, often below \$10/MW but can rise to the MCP and be volatile - see Figure 5 and Figure 6 for South Australia - chosen because volatility was exacerbated in 2016 by separation from other regions of the NEM for an extended time.

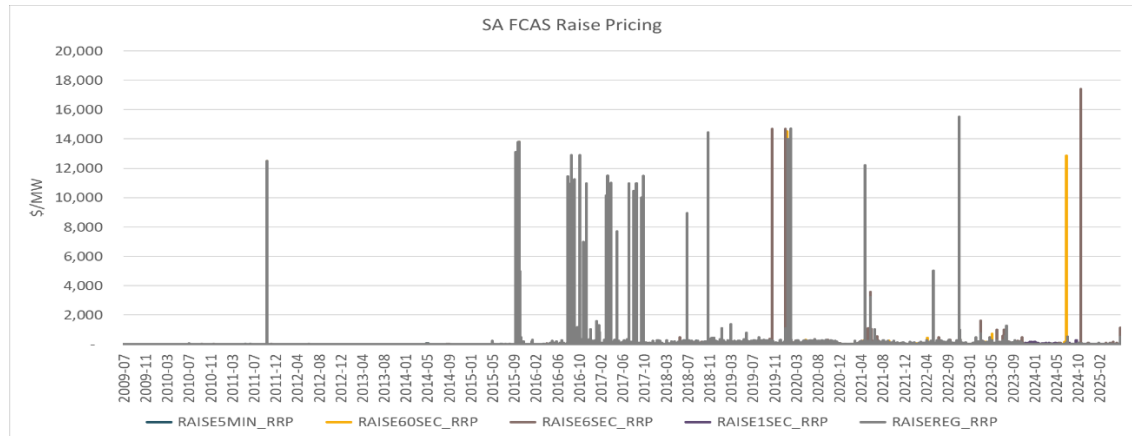


Figure 5: Raise FCAS prices for South Australia

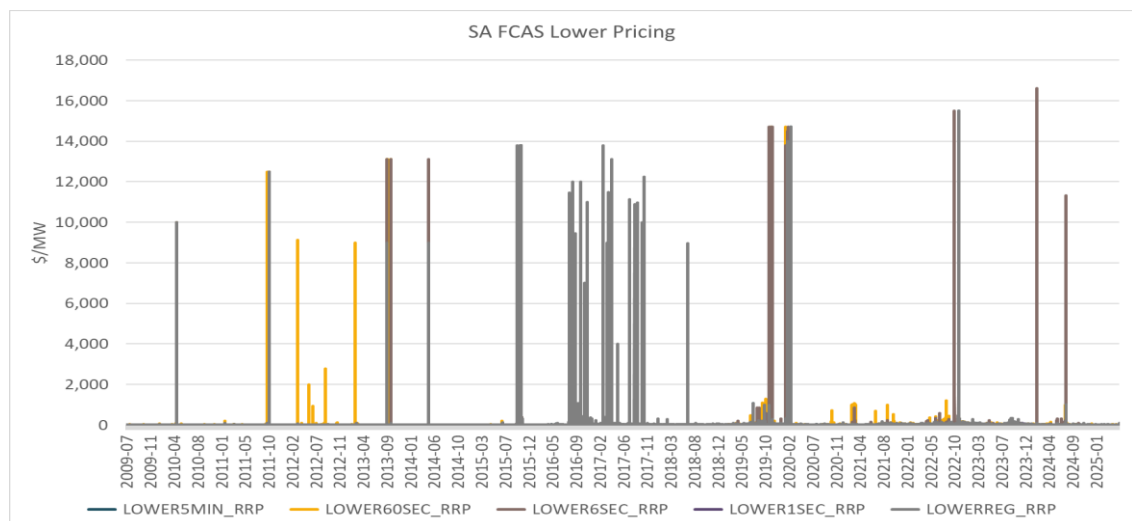


Figure 6: Lower FCAS prices for South Australia

High FCAS prices are generally based on the opportunity cost of energy as reflected in the prevailing RRP. As a result, comparison to forecast, history or assessment in multi-factor criteria (presented later) are not practical. Further, requiring a minimum number of reports per quarter is likely to be inefficient.

Our view is that the criteria for reporting on FCAS should be as simple and pragmatic as possible and target gaining insight into market design.

Reports on significant energy prices include analysis of associated FCAS prices and the criteria for reporting on FCAS in the absence of a reportable energy price should be a multiple of the prevailing energy price, say twice. The guidelines can be written so that the multiplier can be adjusted in light of experience.

5. Criteria for reporting on significant energy prices

5.1. Insights for evolution of market design

This objective would focus on whether the event exposed issues with the mechanics of bidding, dispatch, price formation and settlement were as efficient as they could be. In addition, the analysis may provide insights into the functioning of hedging mechanisms and other contract forms such as PPAs. Notable changes to the NEM since the original significant price reporting provisions were introduced which could have some influence of the occurrence of high prices include:

- The change from 30-minute to 5-minute settlement, meaning that high prices in one or two 5-minute dispatch intervals are not averaged out but on the other hand individual prices have less effect on generator revenue and customer cost.
- The evolving generation mix including an increasing proportion of weather dependant generation, which increases volatility on the supply side and the need for firming (dispatchable) generation.
- Reducing reliability of ageing thermal generation, which also leads to more volatility on the supply side and also creates a need for firming generation.
- Growing occurrence of very low operational demand that can be below the minimum operating level of the aggregate of firming generation, which can impact the number of units on-line to respond to unexpected events and the need for firming generation.
- Higher reliance on FCAS and system security services.
- Increasing use of features such as auto bidding and end to end deployment of optimisation technology.
- Increasing amount of data and complexity, which can impact short term decision making by traders.

More importantly high prices are the source of investment incentives in the NEM. High prices, in excess of SRMC, are expected to provide significant remuneration of generating plant that rarely operates and sits at the top of the dispatch order and is also expected to be an input into contract pricing. An often-overlooked feature of the energy-only design is that these prices also provide remuneration for infra-marginal resources by paying them the prevailing marginal price.

Periods of higher prices therefore are expected in a well-functioning energy only market. These prices, or more accurately the expectation of them, creates incentives for investment in generation and demand side response essential for reliability. Ideally these investments are supported by financial hedges or other instruments and therefore the risk of high prices can be said to create incentives for parties to enter into these instruments and influence the cost of those instruments. Similarly, retailers/consumers will seek insurance against high price by entering into the buy-side of these instruments⁴.

Notwithstanding the above, we note that a number of NEM jurisdictions have concluded that currently the pricing signals from the NEM are not incentivising sufficient response to meet their objectives for introduction of renewable energy and reduction in CO_{2-e} emissions. Further, immediately prior to publication an interim report of a major review of the NEM was published which made no recommendations to change the pricing and incentive regime.

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Vertically integrated participants enjoy a natural hedge between their generation and retail activities.

In the NEM the highest prices are expected when dispatch of generation and storage is approaching installed supply capability. Traditionally this was at times of peak consumer consumption but as the technology of the sector has changed, with increasing amounts of intermittent generation and behind the meter solar PV generation, the call on grid connected supply at different times of day, the nexus between peak customer demand and scheduled supply is reducing. This is a factor in how a significant price is evaluated but does not change the basic concept that high prices create incentives for investment as described in the previous paragraph.

Market conditions such as following loss of a major generation unit may also lead to short lived spikes in price and loss of blocks of demand can lead to dips.

Regardless of why elevated prices occur they should be of considerable interest to market authorities and stakeholders in general. As noted in the brief for this work the current threshold for reporting on elevated prices of \$5,000/MWh 30min has been unchanged for over 20 years but market conditions and the market price cap have changed significantly, begging the question of whether the current threshold is appropriate. As the analysis of events above \$5,000/MWh, \$10,000/MWh and \$15,000/MWh show there is no easily identifiable static threshold. While a threshold for reporting could for example be a percentage of the Market Price Cap or be set a static number below the prevailing cap, these options all involve an arbitrary judgement in some form. In addition, the reports may not include events that did not involve a high price but were worthy of analysis – albeit AER would be able to undertake such analysis as part of other activities.

For the reasons discussed above, while high prices are integral to the functioning of the NEM, they are also pointers to possible market misconduct.

5.2. Preliminary assessment of possible market power

In electricity markets a standard means to assess misuse of market power is whether a party has operated in a manner that returns it revenue above its LRMC over a period of time⁵. Price spikes may indicate transient or occasional use of niche market power which is generally not regarded as an inappropriate exercise of market power where it does not materially change annual (or longer term) revenue. In fact, peaking generation in the NEM only creates enough revenue to cover its costs by bidding high as the system approaches scarcity – this an inherent feature of the design. While cap contracts may mitigate the prices seen in the market, it is the threat of high prices that drives retailers into these contracts meaning they have an incentive to be available if the price is high. As a result, misuse of market power cannot be assessed from prices in one interval or even a full day.

However, investigations of multiple days with elevated prices can point to the possibility of misuse of market power and a need for further investigation. Any investigation would need to be much wider than review of prices if significant price reporting were to be more than an initial indication of possible misuse of market power. For example, it would be necessary to examine the bidding and revenue of individual units and also the portfolios in which they sit. This is no small task.

We are aware other markets that mitigate the potential for price spikes on an event basis, that is, the rules call for a lower price or bid cap under specified circumstances such as network congestion which reduces the number of suppliers in the congested region to a low number. Assumptions about risk of market power of pivotal supplier(s) in the congested areas is the basis of these provisions. In these markets peaking generators must be provided with other sources of revenue in order to be commercially whole unless the measures are rarely used, which is problematic to guarantee. There is no similar mechanism in the NEM.

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NERA and OGW report to AEMC to inform consideration of Rule Amendment request ERC0123.

For this reason, we do not consider that significant price reports should have a primary objective of investigating market power but may provide contributing analysis for market power investigations.

5.3. Preliminary assessment of compliance

In our view rebidding activity and failure to comply with dispatch instructions are the most likely provisions of the NER that may lead to high prices due to non-compliance and we note AER has taken legal action against generators in these areas in the past.⁶ However our expectation is that publication of preliminary assessments of compliance may compromise later actions and therefore AER will not set compliance as a primary objective of significant price reporting. That said, information gained from any form of significant price reporting is likely to be informally useful to AER staff who may assess compliance.

5.4. Demonstration to existing and future participants and stakeholders that ‘we are watching’

This objective would require only high-level analysis of data, just enough to show AER can analyse data and understands market mechanics. It would also be consistent with the Australian Energy Market Operator’s (AEMO’s) submission to the AEMC in relation to the rule change to establish a principles-based reporting arrangement where AEMO felt that there was benefit in ‘making a trader think twice’ about submitting a high-priced bid. While there will be some benefit in demonstrating AER is indeed watching, we do not expect it will be adopted as a primary objective and the other options noted above will also achieve this anyway. Accordingly, we will not consider this option further as a primary objective.

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See for example decisions in relation to enforcement actions with respect to Callide PS February 2025, AGL subsidiaries October 2023 and Engie with respect to Dry Creek PS Dec 2016.

6. Analysis of criteria for significant price reporting

6.1. Static MW reporting threshold

The current single, static, price threshold for reporting on significant prices could simply be raised. But to what level? As the data in the previous sections has shown a static threshold results in a variable number of reports per quarter – however we note the most recent changes to NER cl 13.3.7 are framed to require one report per quarter covering all reportable prices. Setting the threshold too low obliges the AER to report on multiple events that consume resources and while they provide an opportunity for the AER to analyse a range of market operating conditions, at the lower end if there are too many these are unlikely to be insightful. Setting the price too high runs the risk that valuable insights will go unreported. This was a failing of the previous provisions of the NER which set the static \$5,000/MWh threshold. The choice could be made on the basis of average number of reportable events or typical levels of price where AER judges that there will be useful insights to be gained and published – noting AER would be free to conduct internal analysis at any price level. There would be significant judgement required about what static level should be adopted. The amendments to the NER in 2022 removed this failing and allows more flexibility and gives rise to this review of guidelines for reporting.

One way to choose the threshold would be to require reports when price was within a specified level of the MCP. Figure 7 below shows the number of reports that would be required when the reporting threshold is \$5000/MWh and \$2,500/MWh below the MCP at the time from 2009-present

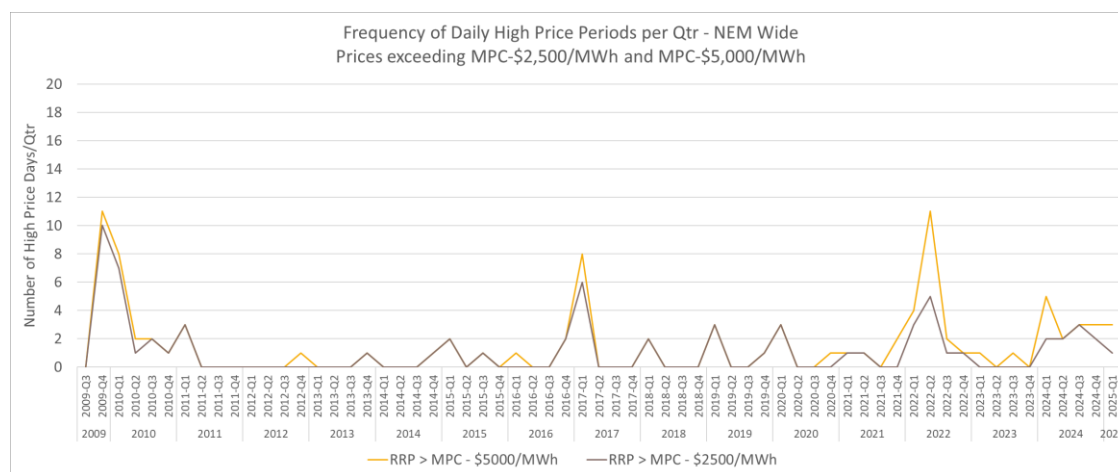


Figure 7: Frequency of quarterly price (30-minute average) exceeding MPC less \$2,500/MWh and \$5,000/MWh

Measured against the potential objectives listed earlier, a single static threshold:

- Quarters with prices below the threshold limit the AER from reporting on why potentially important investment signals were absent or to provide evidence that the AER 'is watching' or provide an opportunity to educate.
- As Figure 7 shows, in most quarters there would be zero, one, two or three events to report. This number could be increased by, for example, making the threshold larger (e.g. MPC less \$7,500/MWh or on the basis of 5-minute prices. However, there will still be quarters with no reports, which we assume will defeat the purpose of the significant price concept.

A static threshold could also become an incentive for market participants to manage their bids for dispatch in a way that avoids being implicated in setting a high price – for example by setting prices for their high-level dispatch bands just under the reporting threshold.

We investigated whether the current \$5,000/MWh threshold had resulted in any noticeable grouping of prices just below \$5,000/MWh. We did this on a 30 minute basis up for period from 2009 and also from October 2021 on a 5-minute basis reflecting the date settlement changed to 5-minutes Figure 8 and Figure 9. By inspection, 30-minute average prices show only a weak clustering below \$5,000/MWh however, 5-minute prices in South Australia (only) regularly cluster around \$4,000/MWh. Whether this clustering in South Australia is linked to the threshold for significant price reporting is difficult to judge especially because it is not particularly close to the \$5,000/MWh threshold and is only evident in South Australia. From this analysis we conclude that while it is possible there is a link to the threshold it is far from conclusive.

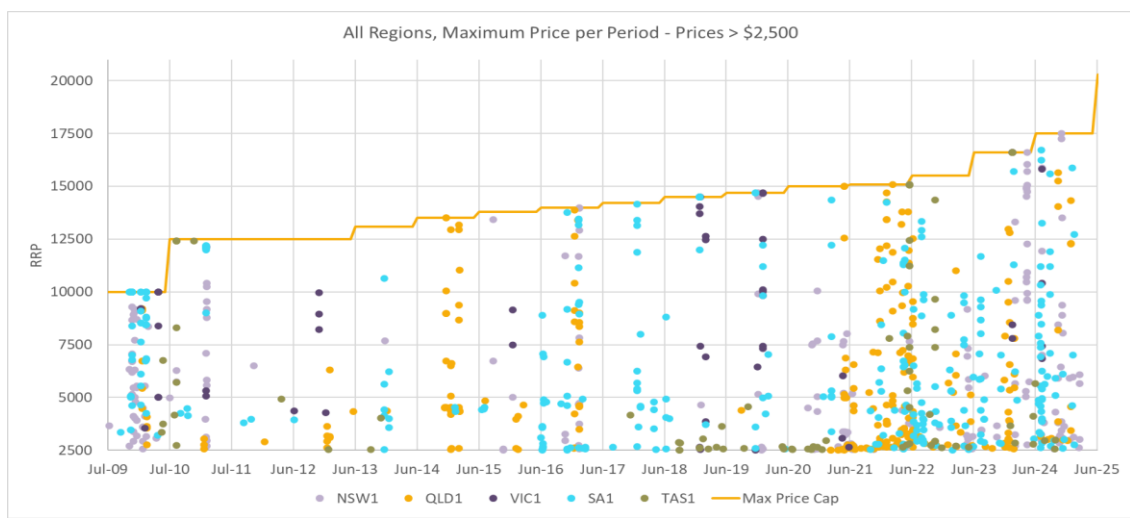


Figure 8: 30-minute prices above \$2,500/MWh

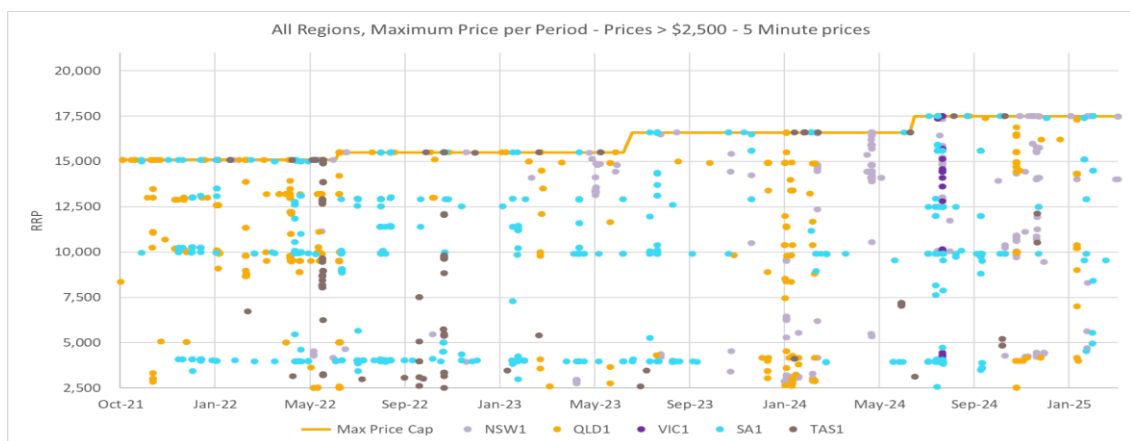


Figure 9: 5-minute prices above \$2,500/MWh from October 2021

On balance, we consider that although continuation of a single static threshold (at a specified value greater than \$5,000 MWh) would be simple to implement and retain the same framework for reporting it would be very limiting, especially compared to other options including ones which have a variable price threshold described below.

6.2. Flexible MW threshold

By flexible threshold we are thinking of a threshold that AER might specify to apply for a period of time, which would mean market participants would be able to adjust their bidding behaviours to avoid being implicated in setting a reportable price. This option would also be simple to implement but arguably would circumvent the intent of the NER requirement for a guideline. It is therefore not recommended and is not considered further. However other options (see below) result in dynamic price threshold that varies with the conditions.

6.3. Comparison to forecast

We do not recommend this option as the principal threshold. It would mean potentially highly significant price outcomes, that were forecast, would not be reported on, which would defeat our understanding of the purpose of reporting on significant prices. This approach would change the concept of significant price reports into a regime of significant deviations from forecast which is only one reason for high prices. It could however be used with an option for AER to add events of interest for example where significant differences emerge and the price is significant. More importantly the design of the NEM assumes that traders will respond to forecasts of Spot Price (in pre-dispatch) to improve the efficiency and short-term reliability of operation but also to optimise their own commercial position. The intent is that improved efficiency of operation will mean that lower cost resources will be brought to market and lower wholesale price which will flow on to reduction in price for consumers over time. Accordingly, many instances of variation from forecast will likely conclude that the variations were consistent with market incentives working correctly. High price outcomes where price rose or did not change would of course be of interest.

6.4. Comparison to historical price

We consider this option to be an overly coarse criterion as there are many factors that can result in price changing from one year to the next, for example different weather affecting both demand and performance of solar PV and wind, entry of exit of generation plant and shifts in fuel costs. It would also mean that the reports would be on quarterly price - a single number - which we expect would be seen as inconsistent with the intent of the reporting requirement related to single price outcomes. Further if prices were down on the previous quarter there would be no report even if the prices were 'significant'. This option may be better suited to be part of an annual report or the AER's State of the Market Report.

6.5. Minimum number, variable price hybrid

6.5.1. The status quo is a static threshold

The status quo defines significant price as prices above the \$5,000/MWh and \$5,000/MW for Energy and FCAS respectively threshold. Meaning the number of events per quarter will vary, including none.

6.5.2. Minimum number but variable price hybrid

After considering each of the options discussed above, we have developed an approach that defines significant prices to be a specified number of prices in the quarter that are not related to an obvious cause - which we have assumed to be reduction in generation availability, plus as many additional events as the AER considers warrant a report. Meaning the minimum number of events reported on will be a minimum specified number but may vary from quarter to quarter above that, including events with relatively very low or 'normal' prices depending on additional events AER chooses to add.

Under this option significant price(s) to trigger a report would be defined as:

- the highest price in 5 days per quarter (i.e. 1 price per day) NOT associated with a power system event that would be expected to lead to a price spike - excluding these prices avoids creating a requirement to prepare reports on all such events when a number may conclude that price was elevated as expected in the circumstances; PLUS
- as many discretionary days as AER considers relevant -this may see days with power system events that may have been excluded by the first paragraph reinstated because in AER's opinion there was merit in reporting on the particular event.

While analysis of outturn prices to trigger a significant price report would be based on the single highest price for the day, we would expect AER reporting should cover the full day and if necessary adjacent days, for example, to analyse the build-up to the circumstances that trigger a reportable price. Operation of battery, hydro and gas storage facilities would likely be relevant for analysis of the build-up.

AER should also have discretion to report on an ad hoc basis not simply quarterly, for example following a high-profile power system or market event.

In implementing this option there is a need to set the size of reduction in generation availability filter. We assessed the impact of 50MW, 100MW and 250MW generation availability filters. Drawing on 2024 Q4 data using a filter of 100MW and 5 reports as a minimum. The table below shows that of the Top 5 unfiltered prices (Rank 1-5) only one (highlighted in green) is assessed as reportable and the other four assessed as being explainable because they were associated with decreases in generation of greater than 100MW and therefore non reportable (noting AER has the discretion to include any of these at its discretion). The four assessed as non-reportable were replaced with reportable events from Ranks above 5 (specifically Rank 6, 9, 11 and 17) to ensure the total number of reportable events was restored 5.

Rank	Quarter	Day	Region	High Price RRP	Previous Period	Previous Period Available Generation	High Price Period	High Price Period Available Generation	Available Generation Delta	Include/Exclude
1	2024-Q4	202411-27	NSW1	17,500.00	27/11/2024 15:00	12,113.85	27/11/2024 15:30	12,198.85	85.00	Include
2	2024-Q4	202411-07	QLD1	15,637.18	7/11/2024 18:30	9,564.16	7/11/2024 19:00	9,309.74	- 254.41	Exclude
3	2024-Q4	202411-07	NSW1	14,831.81	7/11/2024 18:00	11,104.88	7/11/2024 18:30	10,879.19	- 225.68	Exclude
4	2024-Q4	202412-02	NSW1	13,501.80	2/12/2024 18:00	11,265.11	2/12/2024 18:30	10,874.61	- 390.50	Exclude
5	2024-Q4	202412-02	QLD1	12,360.47	2/12/2024 18:00	11,007.19	2/12/2024 18:30	10,693.15	- 314.04	Exclude
6	2024-Q4	202412-03	NSW1	9,371.43	3/12/2024 11:30	11,501.66	3/12/2024 12:00	11,952.31	450.64	Include
7	2024-Q4	202412-06	NSW1	8,044.49	6/12/2024 14:30	13,777.74	6/12/2024 15:00	13,664.17	- 113.57	Exclude
8	2024-Q4	202411-26	NSW1	6,447.52	26/11/2024 17:30	10,489.22	26/11/2024 18:00	10,096.55	- 392.67	Exclude
9	2024-Q4	202412-05	SA1	6,095.52	5/12/2024 14:00	2,929.49	5/12/2024 14:30	2,937.50	8.01	Include
10	2024-Q4	202410-22	SA1	5,909.59	22/10/2024 14:30	1,820.10	22/10/2024 15:00	1,584.18	- 235.92	Exclude
11	2024-Q4	202410-23	SA1	5,096.45	23/10/2024 7:00	1,843.42	23/10/2024 7:30	1,864.19	20.77	Include
12	2024-Q4	202410-23	NSW1	4,311.70	23/10/2024 17:30	10,471.62	23/10/2024 18:00	9,989.70	- 481.92	Exclude
13	2024-Q4	202410-23	QLD1	4,183.80	23/10/2024 17:30	10,293.28	23/10/2024 18:00	9,550.00	- 743.28	Exclude
14	2024-Q4	202411-08	QLD1	3,856.93	8/11/2024 17:00	10,330.71	8/11/2024 17:30	9,991.77	- 338.94	Exclude
15	2024-Q4	202411-08	NSW1	3,700.42	8/11/2024 17:00	14,032.28	8/11/2024 17:30	13,328.32	- 703.96	Exclude
16	2024-Q4	202412-12	NSW1	3,643.19	12/12/2024 19:00	10,902.82	12/12/2024 19:30	10,598.78	- 304.04	Exclude
17	2024-Q4	202412-12	QLD1	3,265.17	12/12/2024 19:00	10,346.66	12/12/2024 19:30	10,390.12	43.46	Include

Table 1: Operation of generation filter

We assessed the impact of 50MW, 100MW and 250MW generation availability filters in terms of the date/time of events that would differ from the unfiltered case of no filter in the list of reportable top 5. We judged this metric to be a good measure of the value of different sized filters in avoiding inclusion of reports on events where the primary cause of the high price was 'simply' reduced generation availability, without removing all such cases. The results of these analyses are shown in the figures below.

It is for this reason that more events are retained when the threshold for excluding an event increases. Figures 10 through 12 show the difference between the initial unfiltered list and the filtered list for different sizes of threshold filter. For example, a 250MW filter threshold assumes generation changes of 250MW or less do not warrant an automatic report whereas a 100MW filter assumes events associated with only 100MW or less change in generation warrant a report.

In respect of an indicator of possible market power, reduction in generation availability can be due to bona fide drop in capability or due to physical withholding of capacity. *Ceteris paribus*, economic withholding through rebidding of one unit to a higher price band without changing the capability will not be filtered out (that is, will remain in the list of events to be reported on) as the filter only considers total physical capability for either reason.

Distinguishing between physical capability changes and changes due to commercial (and potentially misuse of market power) reasons is beyond what can be achieved from comparison of total market capability as proposed. We judged it was sufficient to focus on total capability as the purpose of the filtering is to assist AER decide on whether to report on an event. Any deeper conclusions would require deeper analysis. Further, notwithstanding the limitations we have noted about analysis of individual events to assess market power, should AER wish to review individual events for possible indicators of market power it would need to identify the capability changes for individual generating units and whether these were associated with rebidding of price bands or total capability on a unit by unit and also across a portfolio managed by one participant. This is more involved than selecting which events are to be reported on as significant price events. However, the logic to associate changes in RRP and individual units (and portfolios) would be similar and could therefore be extended event by event monitoring for possible market power.

In respect of the appropriate size of the threshold for the purposes of selecting events of high price to be reported as significant events, as noted we considered 100MW was large enough to have an impact on price and therefore warrants a report, but not so large that there was a risk of overwhelming the AER and stakeholders or so small as leave very few of the unfiltered list based purely on price.

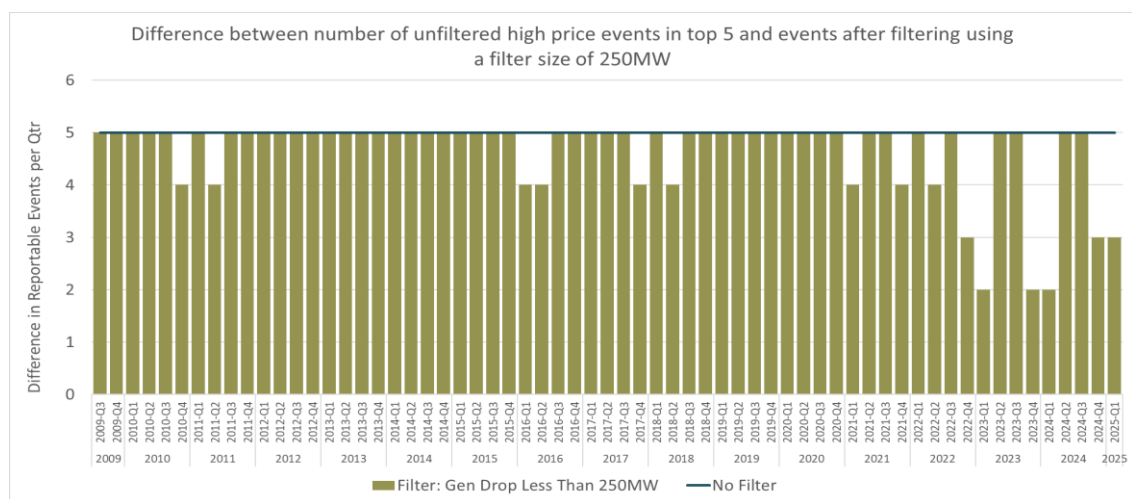


Figure 10: Impact of 250MW filter on number of events retained from initial ranking

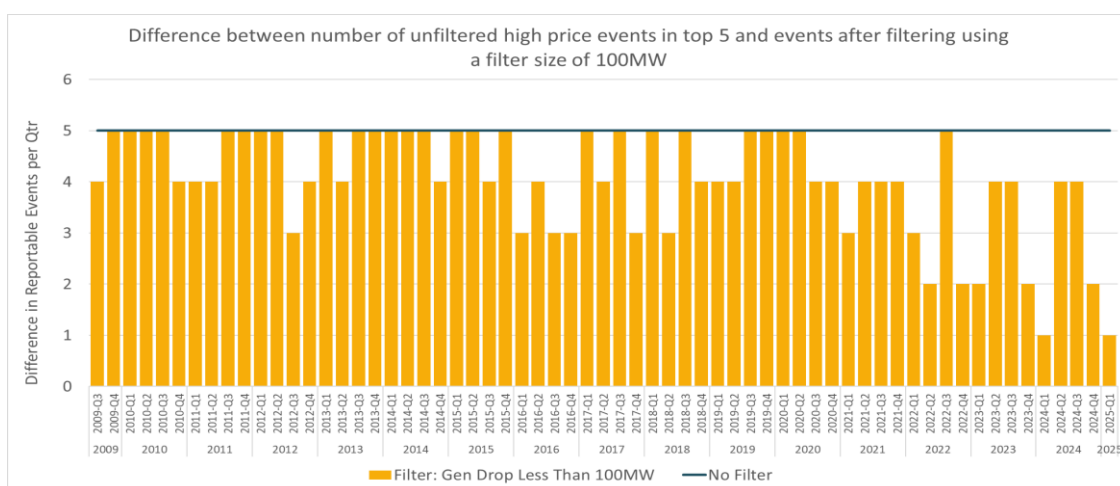


Figure 11: Impact of 100MW filter on number of events retained from initial ranking

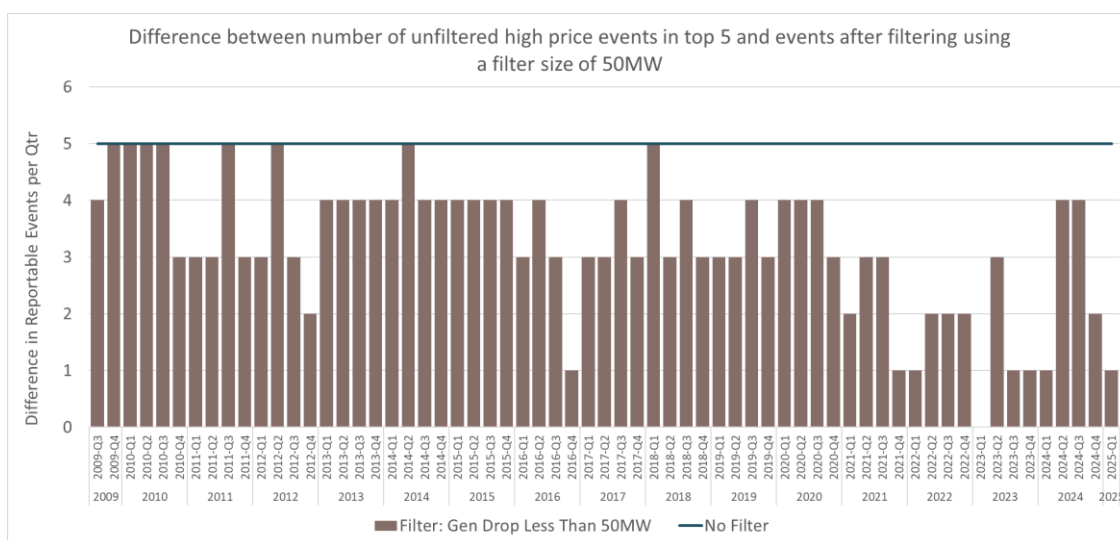


Figure 12: Impact of 50MW filter on number of events retained from initial ranking

6.5.3. Mechanics

The three main steps involved in this option are described below and illustrated in Figure 13:

Step 1.

Identify the top 10 prices (1 price per day) in the quarter⁷. Note listing the Top 10 is a matter of convenience and has no bearing on how many reports are ultimately developed.

Step 2.

Starting with the highest prices eliminate price events where there was a material associated power system generator trip until 5 reportable events are found.

Note: the generator trip criterion could be replaced with an available reserve test which would eliminate events on the basis of significant change in demand, or network failure resulting loss of reserve.

⁷

As noted earlier, AER should have discretion to report

If necessary, add days beyond original 10 until 5 days are listed as described above.

We anticipate the analysis to produce this data would be automated drawing on data points we understand AER maintains so that AER staff would be presented with the list of top 5 reportable prices.

Step 3

AER to identify any events that have not been listed in Step 2 that AER in its discretion considers warrant a report and add to the list to be reported. Examples of additional events could be from analysis of variation (say 10 percent from the predispach 6 hours ahead), which could be automated as shown in Figure 14.

High price

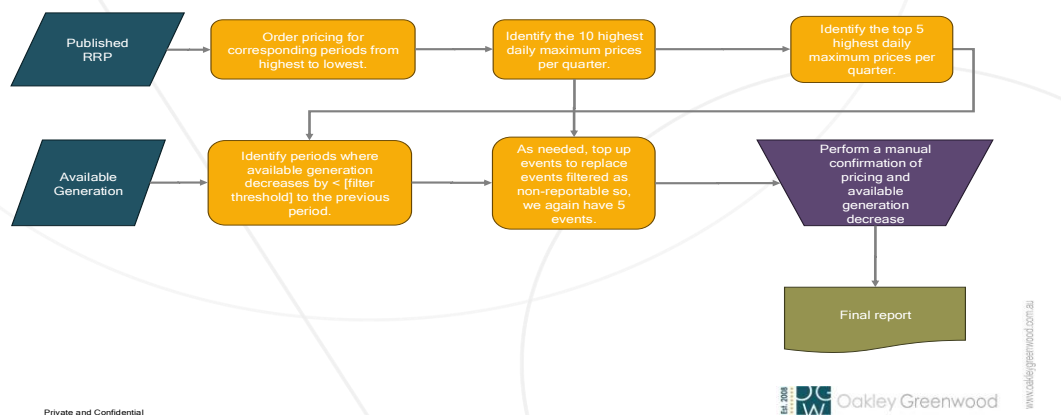


Figure 13: Process flow chart for hybrid option

High price

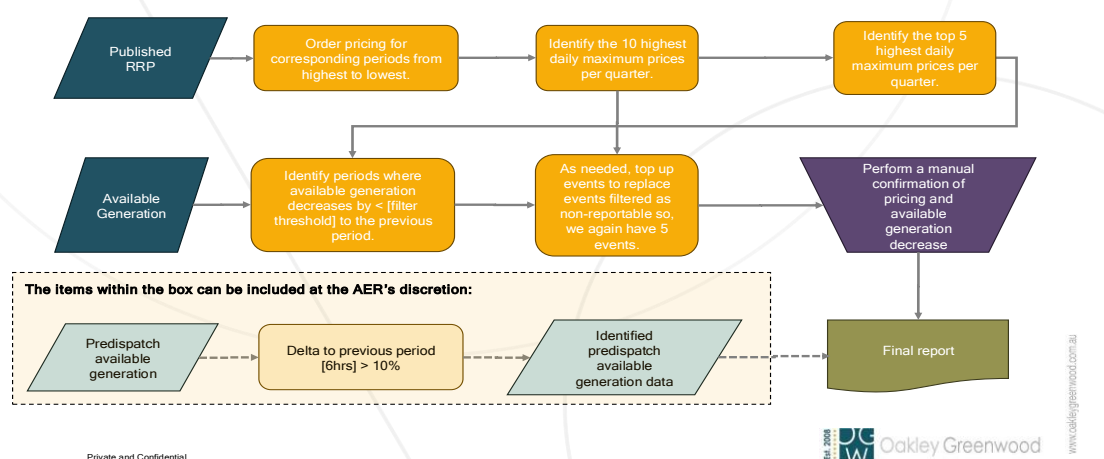


Figure 14: Flow chart for hybrid option with additional analysis for optional difference from predispach forecast of available generation

7. Should low prices be reportable significant prices?

The occurrence of wholesale prices of zero and below (negative) has increased significantly (see Figure 3: Frequency of low prices per quarter (1 price per day) 30-minute average negative prices are a strong incentive for generation to decrease or shutdown and flexible demand (including storage) to increase consumption because the market is in surplus and are thus important, but also, in general occur for uncontroversial reasons. However, there have been instances where generation has reduced so rapidly that security is prejudiced and the operation of many behind the batteries is unaffected by the price signal due to the design of tariffs. Understanding these effects will provide valuable insight about market and tariff design. Our earlier analysis includes options to include low prices in a number of the options considered.

We do note, however, that classifying low prices as significant (reportable) prices does not appear to have been a consideration in the AEMC's most recent changes to rule 3.17. On the other hand, the rule and current guideline permit the AER to report on any prices of relevance. This situation may require advice to ensure the AER has the scope to include low prices as reportable significant prices.

Our judgement is that very low and negative prices are more likely to have a common cause than high prices - that is when the wholesale market is in surplus due to high solar photovoltaic and wind generation both on-grid and behind the meter, such as on domestic rooftops. As a result, detailed reporting on each event is likely to be less valuable than for high price events. For this reason, we consider reporting on low price events should be an option available to the AER under the guidelines on a case-by-case basis or as a general comment on the quarter rather than on individual events. We also consider AER could automate identification of low prices together with region, demand, and relevant generation sources to assist in deciding which cases warrant the preparation of a report.

8. What is the best time interval: 30-minute or 5-minute?

The NEM moved from 30-minute settlement of the Spot Market to 5-minute in 2021. The previous 30-minute settlement interval was based on the time weighted average of the six 5-minute dispatch prices within each half hour. The change required no change to the physical dispatch process. However, as has been well documented elsewhere, the change did affect incentives for bidding behaviours which had been problematic because dispatch bids could be amended at the start of a 30-minute interval and thereby influence 5-minute prices later in a 30-minute settlement interval. Over a number of years, the NER was amended with the aim of limiting this opportunity by imposing additional reporting and justifications to be made by traders.

Our view is that considering the different objectives we presented earlier, reporting on isolated 5-minute Spot Price excursions now that settlement is also on a 5-minute basis will be less informative than reporting on 30-minute average price basis, noting that a number of options described above can allow the AER to include 5-minute excursions in price if warranted. This is because there are many reasons why the 5-minute price may spike up and then down again, for example sudden breakdowns of generation that were immediately responded to, unexpected drop in solar or wind that are similarly quickly responded to. Repeated spikes over the course of a few hours or occurring systematically at the same time of day or associated with the same event may warrant preparation of a report by exception.

On the other hand, 30-minute average prices are more likely to be related to insightful circumstances, although this is a matter of judgement. 30-minute prices, either a rolling 30 minute or a clock-based interval that is the same as the previous settlement period could be used, but as settlement is now on a 5-minute basis there should be little difference in the insight that can be drawn from either approach.

On balance therefore we consider significant price reports should be based on 30-minute averages on the hour and half hour (clock-based average)