



7/9/2023

Ms Rachel Thomas
Australian Energy Market Commission
PO Box A2449
Sydney South, NSW 1235

Dear Ms Thomas,

Thank you for the opportunity to respond to this consultation.

Grids believes that this rule change creates the opportunity to consider holistic integration of price-responsive DER into the NEM. One aspect to consider is reducing costs and barriers to participating through AEMO developing fit for purpose systems, processes, and settings suitable for DER participating in system level markets.

The current AEMO proposal avoids making many of these changes, and instead lumps those costs on potential participants while reducing benefits. This is likely to result in a low uptake in the program, in a similar manner to other initiatives such as the wholesale demand response mechanism.

Some potential improvements that could be explored during this process are:

- Developing fit for purpose market interfaces,
- Reducing bidding increments in all markets to 100kW, and
- Reducing minimum registration sizes and improving registration and portfolio update processes for higher throughput and lower cost.

These improvements should also be considered for other markets such as FCAS and WDR.

Thanks,
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Principal Consultant

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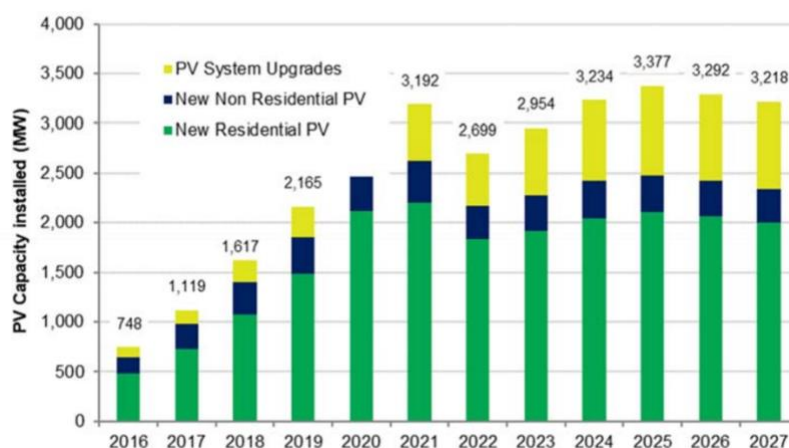
The State of Play

Transmission projects are struggling¹, investors are holding back on deploying large scale assets², and delays are rife throughout the electricity system³. This has caused governments to enter deals with existing assets to keep them on⁴ and considering extending the life of others⁵.

Distributed energy resources represent large amounts of currently untapped or underutilised capacity that could be offered into the market for the benefit of owners of DER and all energy users.

DER continue to be installed at high rates, driven by more robust and resilient supply chains, and increasing energy costs. Short term forecasting reports for the Clean Energy Regulator expects 3GW p.a. of small solar to be the low water mark for the foreseeable future.

PV Capacity installed by sector



Source: [Small-Scale STC Creation Report 2022, GEM](#)

Additionally, governments are unveiling policies to increase the speed of electrification, the federal government is rolling out \$200m for 400 community batteries with state government also supporting this technology rollout⁶, and electric vehicle uptake is beginning to enter the rapid growth stage of the S-curve.

¹ [Australia’s energy transition is short-circuiting. Here’s why, AFR](#)

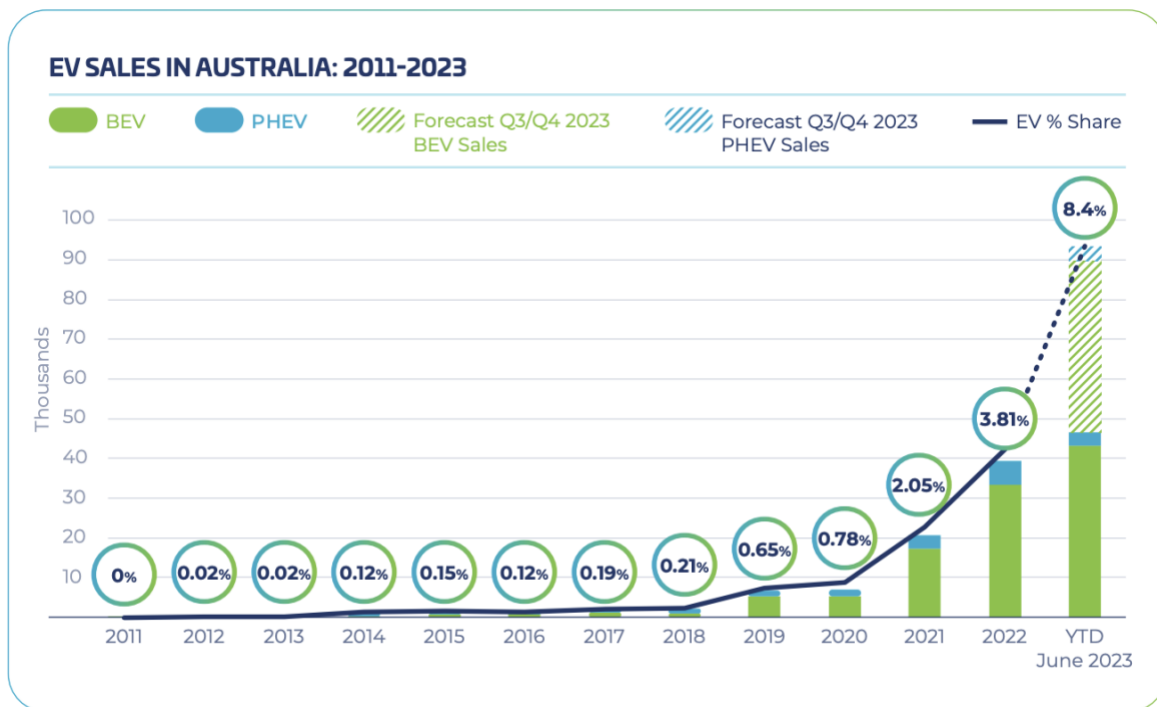
² [“Worrying numbers:” Wind and solar come to grinding halt, putting targets at risk, RenewEconomy](#)

³ [SNOWY 2.0 – PROJECT UPDATE, Snowy Hydro](#)

⁴ [Loy Yang - Structured Transition Agreement, AGL](#)

⁵ [Giant coal-fired power station should stay open, NSW review finds](#)

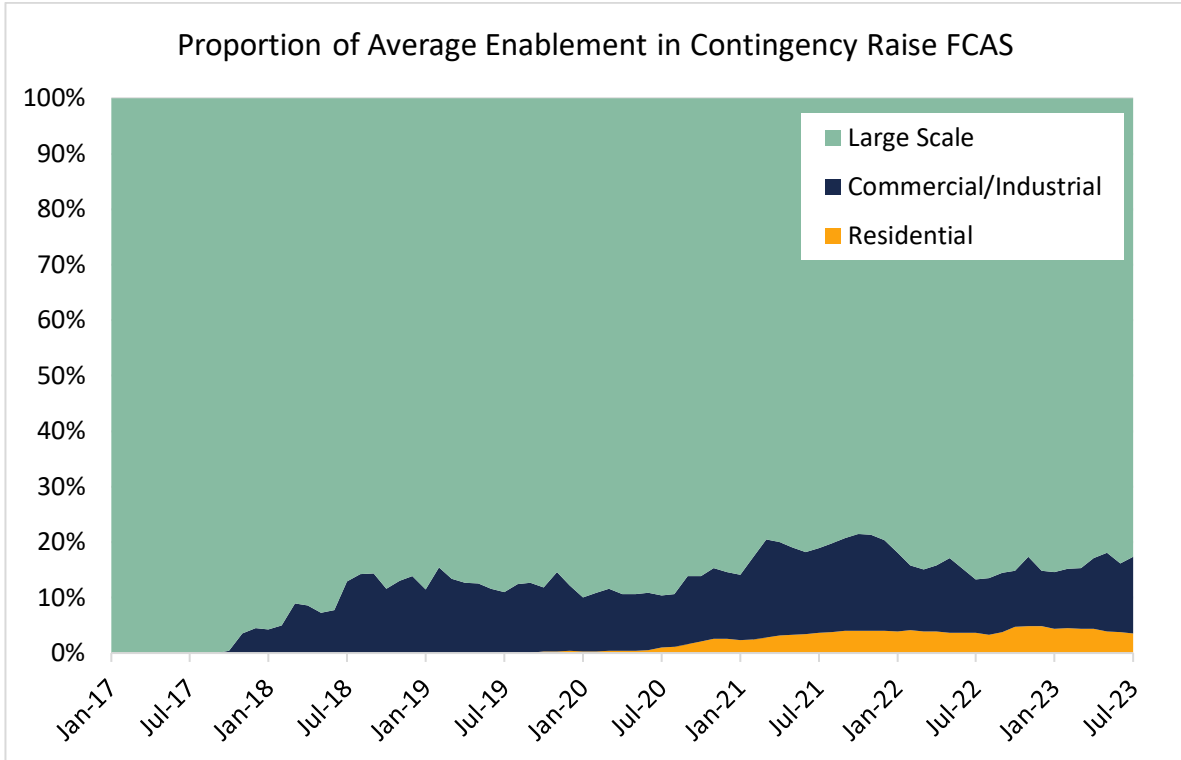
⁶ [Neighbourhood batteries, DEECA](#)



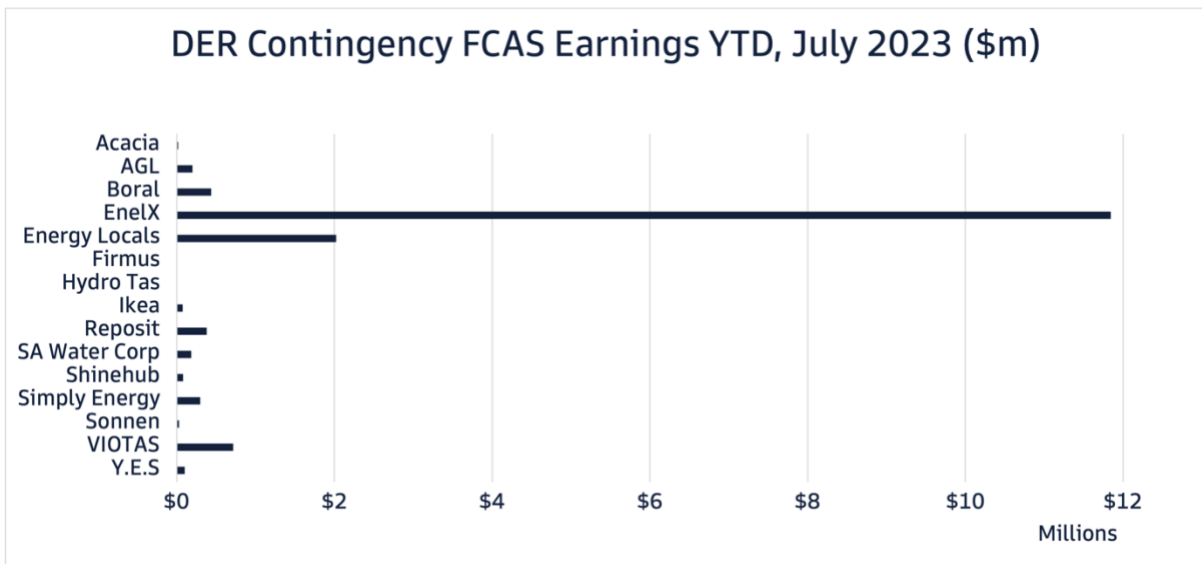
Source: [State of Electric Vehicles July 2023, EVC](#)

While most of the work in integrating DER into markets will be for intermediaries such as retailers and technology providers to create thoughtful, compelling, and trusted energy products and develop capable technology solutions, we must also ensure that those intermediaries can efficiently offer services and capacity into markets.

Where the value of offering a service is much larger than the cost and complexity, we see a healthy uptake of DER participation. For instance, contingency FCAS which historically has offered in excess of \$100,000/MW/year sees relatively healthy uptake from DER capable of providing that service. While there are some unnecessary costs and complexity throughout the registration and bidding processes, the fact that AEMO does not need real-time visibility of responses and the relatively simple way of providing the service means there is a relatively low cost to providing it. DER currently provides around 20% of contingency FCAS raise services.



In the first seven months of this year DER contingency FCAS has been provided by fifteen suppliers, totalling \$16.4m in earnings.



A counter example to this is the Wholesale Demand Response Mechanism. It has high costs due to registration and scheduling requirements and excludes a large amount of assets that could participate by prohibiting small customers from participating. To date there is 67MW of capacity and just one market participant.

Fit For Purpose Market Interface

To support the operational integration of DER, the market operator ideally would provide:

- Digital, low-cost interfaces for registration and portfolio updates
- Modern interfaces for bidding, dispatch and operational data

Currently registration and portfolio updates are done through expensive and inefficient pen and paper processes that aren't fit for purposes for DER, e.g. adding an extra 1MW to your aggregation in contingency FCAS requires a fairly involved process.

Not only is this a barrier to market participants participating in this program, manual and inefficient AEMO processes may only be able to handle a certain level of registrations and portfolio updates and become overwhelmed if there is sufficient uptake.

While improving AEMO market interfaces is being considered in various reforms such as the Industry Data Exchange (IDX), Identity Access Management (IDAM) and Portal Consolidation (PC)⁷, further consideration could be given in how AEMO systems could be improved to better incorporate DER participants.

Low Bidding Increments

Lowering bidding increments and registration sizes have clear benefits to the market:

- It increases competition, as participants can enter markets earlier.
- It reduces deadweight loss, as participants can offer more of their capacity into the market.
- It improves scheduling accuracy.

Historically, bidding increments have not been an issue for most energy market participants as scheduled generators or loads are very large in size. Aggregations of DER such as those in VPPs do suffer from these constraints as:

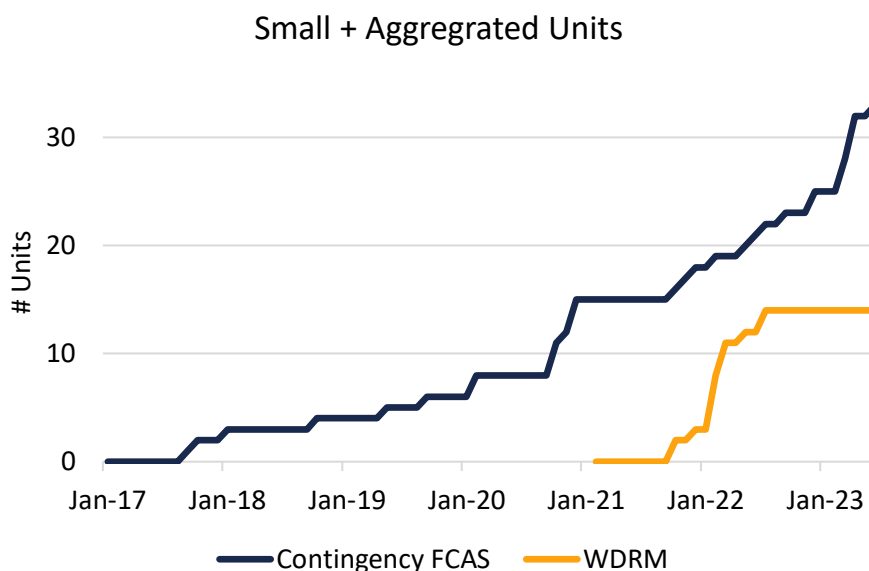
- VPP aggregations often start small and grow, meaning minimum registration sizes can lock them out of markets which makes it more difficult to compete and grow.
- VPPs grow capacity in a much more “continuous manner”, e.g. a big plant may upgrade in a step change from 100MW to 200MW, where as a VPP grows at the size of assets the install (e.g. a VPP of 5kW batteries grows 5kW at a time).

Due to this is imperative that these increments and registration sizes be small to maximise benefits for participants and all energy users.

⁷ [NEM Reform foundational & strategic initiatives proposed conceptual target state](#)

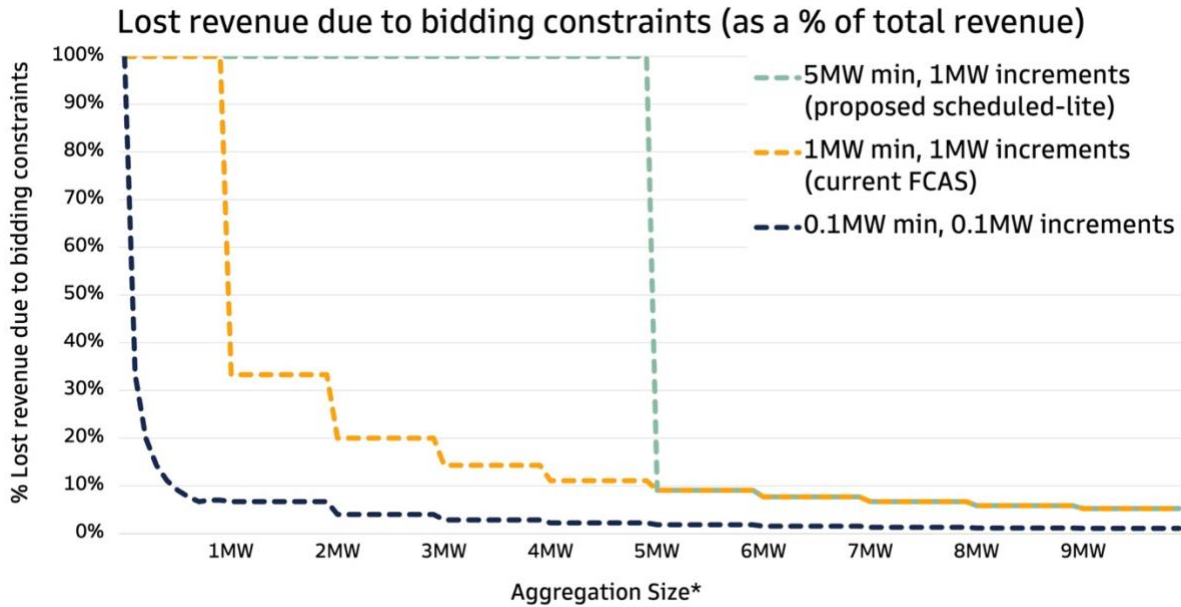
For instance, aggregations will have on average 0.5MW of underused capacity. This means a loss of revenue for each aggregation and loss of capacity being offered into the market.

In the very shallow contingency FCAS market we already see over 30 units being registered, and in the complex WDRM market we see 14 units registered from a single market participant. Based on this it's reasonable to envisage a well-designed scheduled lite mechanism to have over one hundred active units, which means over 50MW of unused capacity on average (assuming >100 units each underbidding by 500kW on average).



The AEMO proposed settings of 5MW minimum registrations and 1MW bidding increments is slightly at odds with their objective to improve efficiency of the system. For instance, if the wholesale price goes high and you have 5.5MW of available battery capacity, what should you do? Should you dispatch at your 5MW target, leaving thousands of dollars in revenue on the table? Or should you dispatch at 5.5MW, which is above your 5MW target. Current incentives suggest that participants should select 5.5MW, which means the aggregated units will deliver more than AEMO expected, and AEMO dispatching more capacity than what was needed. Reducing the bidding increments to 100kW would reduce the negative effects of this by 10x.

Below shows lost revenue for small aggregations due to bidding increments and minimum registration sizes. E.g. An aggregation between 2-3MW will lose 33% of its revenue due to 1MW bidding increments in contingency FCAS and not be able to attain any of the benefits under the proposed scheduled lite settings as it's too small to register. If the increments were instead 100kW the aggregation would only lose 7% of its revenue due to bidding increments.



* for simplicity, all aggregations above 1MW are averaged to their mid point, i.e. all values between 2MW and 3MW assume an average 2.5MW size.

Reducing bidding increments will only have a minor impact to market participants, as AEMO already dispatches units with fractional megawatts. This means that units can continue bidding in whole numbers if they wish and continue to get dispatch targets sometimes in whole numbers and sometimes with numbers after the decimal point.

Grids suggests changing bidding increments in all markets where its cost effective to do so such as FCAS, WDRM and this Scheduled Lite mechanism. There are many references in the NER to “incremental MW” for various markets which could be changed to “100 kW increments” (or “deci-megawatt increments” if you’d like to demonstrate the versatility of the metric system) to support these changes.

Minimum Registrations

More thought is required for minimum registrations sizes.

Firstly, one of AEMO’s reasons for having a high minimum registration is to create an intentional barrier to registration, as NEMDE can only handle so many DUIDs. From AEMO’s rule change:

“For Dispatch mode, a minimum aggregated portfolio threshold may be required to support participation of aggregated portfolios in the scheduling and dispatch process; for example, a minimum threshold may help to avoid a large number of DUIDs overwhelming the NEM Dispatch Engine (NEMDE).”

This is concerning both towards AEMO’s ability to support DER participation, and participants in the wider energy system. It would be helpful if AEMO outlined how many more DUIDs it can accommodate in its current systems.

Secondly, there are factors supporting minimum registration sizes being the minimum bidding increment such as:

- AEMO has confirmed registration fees are cost reflective: “All registration fees are calculated to reflect time/effort to assess and progress the application through to registration in that market.” This means that if a small aggregator would like to register a small aggregation, they would bear the registration costs of doing so.
- Aggregations that are small and intend to stay small would not be incentivized to register as the fix costs for registering and integrating into AEMO systems would be prohibitive.
- Aggregations that are small but intending to get big and intend to register will eventually register. Therefore, blocking their registration due to size merely defers the time that they will register rather than avoids it.

If an aggregator would like to register at a smaller size, then why not let them? They’re willing to pay the cost reflective registration charges and they’re likely to be registered in the future either way. Blocking their registration due to their current size not only limits competition but also reduces the likelihood of them registering at all, as once they get to a large size they may have higher operational and business priorities and choose to forgo being scheduled. Allowing aggregators to register at any stage of their lifecycle provides the best chance of them participating in the mechanism.

Our Next Chance to Improve This May Be After 2030

While many references are made to this being “stage one”, it’s important to highlight the implications of the timing. If we assume:

- 12 months for the rule change
- 18 months for AEMO and participants to implement changes
- 3 years to gather information on stage one

This timeline likely puts 2029 as the earliest date a stage two could be considered, and early 2030s when it could be implemented. Therefore, it’s important to acknowledge that stage one is likely what we’ll have for the remainder of the decade and potentially somewhat into the next.

Around the world energy systems are taking large steps to support the market integration of DER, for instance FERC2222⁸ is a federal order directing regional operators to support DER market integration with aggregations down to 100kW. In Australia, with an enormously high uptake of DER and over half a decade of experience with DER in scheduled markets, we should explore making the same fit for purpose structures.

There is an argument that making large improvements in market systems and processes for DER is inherently risky, as these improvements cost money and there’s uncertainty in how much DER will participate. This can lead to half measures and compromises in implementation details, which results in low uptake of DER due to high costs and barriers in participating. It’s a self-fulfilling story. Grids encourages the commission and stakeholders to examine whether we can break out of this cycle and

⁸ [FERC Order No. 2222: Fact Sheet](#)

find ways to reduce the costs and barriers of participating to a level where there is at least the possibility of healthy uptake in these mechanisms and markets.