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NEM Reform Program Team,
Australian Energy Market Operator

Development of the Voluntarily Scheduled Resource Guidelines

Thank you for the opportunity to provide input into the design of the Guidelines for Voluntarily Scheduled Resources (VSRs). SwitchDin is a technology provider helping enable the renewable energy transition by facilitating innovative participants to make broader use of Consumer Energy Resources (CERs) in energy markets. We have a keen interest in ensuring consumers can use their resources in ways that benefit not just themselves, but also the grid as a whole.

The effective integration of price-responsive energy resources into the markets offers an opportunity to encourage new entrants and increase competition to benefit all energy consumers. Existing systems have been designed for dispatching a small number of large resources rather than large numbers of much smaller resources. We believe these VSR Guidelines should, over time, remove these limitations, as they perpetuate biases that favor larger established market participants, to the detriment of new participants with novel models that differ significantly from the established gen-tailers.

We look forward to working with AEMO to ensure the Australian power system continues to provide a reliable energy supply, and value for all throughout this transition.

Sincerely,

Mario Vecchio
CEO
SwitchDin

1. What should be the effective date of the VSR Guidelines and why?

We have no specific suggestions about commencement dates, however the guidelines should be published far enough in advance to enable participants to implement them.

2. Do the proposals in this consultation paper strike the right balance between ease of participation for VSRs in central dispatch and the need to maintain a secure and reliable NEM power system?

Some key aspects of the proposed guidelines are driven by limitations in existing systems. These limitations perpetuate biases that favor larger established market participants, and present barriers to entry for new participants with novel models that differ significantly from the established gen-tailers.

It is claimed that these limitations are required to ensure power system security, as current operational systems cannot deal with scheduling large numbers of smaller resources.

These limitations place boundaries on the scale of participation from smaller and potentially-more-innovative retailers, who may be able to offer better solutions to power consumers. The paper does reflect a tendency to regard these restrictions as permanently embedded and unable to change.

There should, therefore, be an active plan to examine and lift these restrictions in future, so the VSR mechanism can foster competition via the entry and growth of new smaller market participants.

3. How appropriate is AEMO's proposed structure for the new VSR Guidelines?

The proposed document structure appears suitable.

4. To what extent do you agree with all VSRs, independent of zone, being allocated a loss factor of one?

The loss factor approach was developed to model the connection of large generators to single points on the transmission network. This may not be the most appropriate approach for modelling a large number of widely distributed CER connected to the distribution network (which is how a VSR is expected to be formed).

One possible issue with using a loss factor of 1 is that it ignores any constraints between the distribution & transmission networks, or within the distribution network where CER are actually connected.

We suggest, therefore, that the operational data for connected CER systems should be reviewed to evaluate the suitability of this approximation.

5. Other than the NEM zonal classifications presented, what other zonal classifications could be appropriate to use as the basis of VSR zones?

See answer for Q6.

6. What are the key factors to consider when setting VSR zones now and in the future as the industry gains more experience with and information on dispatch mode?

Having VSR Zones reflect network constraints is a good approach for managing network stability.

The considered options for VSR zones largely ignore distribution network topology despite the constituent CER being connected to the distribution network. The expectation is that distribution level constraints will become more impactful as a more significant share of total generation is distribution connected. And there is international evidence that ignoring local network constraints in wholesale / national market responses can cause problems (e.g. p30. Eurelectric "Grids For Speed" report).

Future VSR zone design should consider this. Further work should be done to understand how aggregated DER behaves at the VSR zone level and how any dispatch commands are translated into individual DER responses (including the application of individual Dynamic Operating Envelopes - DOEs). Some possible ways to reflect distribution network topology could be to use Zone substations, or DNSP bulk supply points as the basis for VSR zones.

7. How should VSR zones be set to balance cost and ease of participation for VSR with AEMO's need to manage power system security and reliability?

We believe participation should be encouraged as much as possible, and having larger zones makes it easier for smaller aggregations to form a VSR meeting threshold requirements.

Smaller zones, that better reflect network constraints, make it easier to manage power system security and reliability. The paper outlines many technical issues in the management systems and processes that limit participation of VSRPs and the types of VSR that can be incorporated..

These technical limitations should be examined and addressed to encourage participation by players with smaller aggregations of VSR. For example, the zones could be made larger or the threshold requirements could be lowered to remove these limitations.

a. What are your views on the potential use of NEM regions as VSR zones in the early years of dispatch mode when VSRs are expected to be small with a transition to VSR zones that better support system security as VSRs grow? In this scenario, what would the transition impacts be?

Starting with NEM regions is a good approach to support VSR formation in the early phase when participation is expected to be limited.

If the expectation is that individual resources would be reporting at 4s then this will significantly increase the implementation burden for non-SCADA systems and reduce the likelihood of participation being taken up voluntarily.

b. What are the existing or potential issues with having an inconsistent approach to zonal classifications between VSRs and WDRUs?

No specific insights. However, while the participation in the WDRM is low any potential issues are likely to have limited consequences.

c. What impact/s do DNSPs see from the proposal to use congestion zones as the basis for VSR zones rather than distribution network boundaries?

Not applicable.

8. Does the selection of VSR zones impact your existing VPP portfolio?

Not applicable — we do not directly operate a VPP portfolio, we build a platform our customers use to operate their own VPP portfolios.

9. Do you currently have a VPP portfolio that operates across the NEM regions and/or distribution networks?

Not applicable — we build a platform that our customers use to operate their VPPs

10. To what extent do you agree with the requirements, conditions and processes for VSRPs forming VSR aggregations within the proposed VSR zones?

See previous responses for the issues we perceive.

11. Do you agree with AEMO's minimum lead time of six months for a change in zones?

Yes. Six months should be long enough to reconfigure software systems.

12. What other factors should be considered in setting the minimum VSR nameplate rating threshold and why?

Exclusionary barriers to entry should be given more weight in the strategy. Ideally the VSR mechanisms would make it easy for new entrants to participate in the market. This would increase competition with established players and offer consumers better options.

It is claimed that technical and security concerns currently rule out many options for lowering thresholds and allowing players with portfolios of large numbers of small capacity VSRs to participate. While this may be the current reality, AEMO should be actively working to remove these barriers.

13. What are your views on an initial lower VSR nameplate rating threshold that adapts as dispatch mode capability and capacity grows?

We support setting the threshold as low as possible to encourage participation. The current value of 5MW is way too high for this and AEMO should consider a lower value, even if only initially.

We believe this, and the current minimum bid threshold of 1MW, is a significant barrier to enabling the full participation of CER in the market. Any technical limitations behind it should be addressed, along with any other technical constraints that limit the number of generators which can be effectively managed by the dispatch engine.

The proposed AEMO plan is to start with a lower nameplate rating but grow it over time. We support lowering the initial nameplate rating, but suggest that it be maintained or even reduced over time to allow for broader participation.

14. What are the options for aggregations of >1 MW to participate in dispatch mode, given the 1 MW bidding threshold?

Assuming this question was intended to address aggregations of **less than** 1MW, given the bid increment has less impact on aggregations >1MW…

We believe the minimum bid threshold should be lowered (to say 100kW), as this would provide tangible benefits to smaller aggregations, and support them in incremental growth. As it stands, it is not possible for aggregations <1MW to participate.

15. Do you have any feedback you would like to provide on the nomination process for a VSR?

We believe one objective of this change should be to enable participation of a larger number of smaller aggregations, and as such, support any measures to reduce the management overheads, such as developing integration APIs and opportunities for automation.

16. What issues do you see with AEMO's requirements for qualifying resources within a VSR or for a VSR?

There will obviously be device level requirements to support forming a compliant aggregation, however the focus on centrally managing the VSR resources at an individual NMI level is burdensome and discourages participation from potential VSRPs with a larger number of smaller-capacity NMIs.

17. Do you see any issues with AEMO's circumstances where it may request VSRPs that have aggregated qualifying resources to declare individual qualifying resource availability and operating status?

Yes, this approach of exposing individual resources to AEMO is not scalable, and other elements in the proposal indicate AEMO's systems are already taxed to their limits.

What other factors would be considered?

AEMO should hold the VSRP accountable for managing their portfolio within appropriate bounds (as per section 3.5.9) and have any remedies managed at the portfolio level (as section 3.5.9 outlines). AEMO should not try to manage individual resources at the NMI level.

In cases where a VSRPs portfolio needs to be disaggregated, this should be done in consultation with the VSRP, and the VSRP should not unreasonably refuse to negotiate on such a request.

18. What are your views on the processes and settings AEMO should establish to deal with cases of NMI churn that result in a VSR dropping below the minimum threshold?

Churn is an expected feature of aggregated systems, and processes should be put in place to facilitate consumers churning to enable retailer selection (much like with the NBN). It's reasonable for the VSRP to be held accountable for handling churn and maintaining a minimum level of capacity (with some reasonable leniency) in the VSRs they manage, and that there should be consequences for dropping below this minimum. A sustained capacity below the minimum would reasonably imply suspension or removal from the scheme.

19. Are there any other matters AEMO should consider in relation to the proposed telemetry requirements?

There is a significant difference in implementation burden between 60s and 4s telemetry, however not all of the conditions around 4s telemetry are clear. For example: how large are the "areas of the power system" that would meet the curtailment threshold conditions outlined in section 3.5.4, and will those areas be known beforehand so as to be included in VSRP planning? How do these areas relate to VSR zones, and what happens if only part of a VSR zone meets the conditions?

Furthermore, the requirements and expectations around aggregate telemetry should be detailed, as many candidates for qualifying resources will be reporting telemetry at a much slower rate (e.g. CSIP-Aus implementations are typically reporting telemetry in the range of once every few minutes, and other common CER systems might report on the order of every 30—60s). Guidance around AEMO's expectations for how telemetry is aggregated from slower sampled resource telemetry will be important for implementors (e.g. data freshness; usage of actual vs. extrapolated resource values; when to exclude an individual resource from aggregation, etc).

This is especially important for energy-only systems on the wholesale market, which might reasonably expect to participate in the program that would be possible with less stringent telemetry response times.

20. To what extent does the proposed approach to telemetry appropriately balance between minimising barriers to VSR development and system security considerations?

The proposed telemetry requirements are driven by a desire to align with existing AEMO systems and processes. However, aggregations of large numbers of small systems behave very differently from traditional SCADA connected plant. Further detail on how AEMO expects aggregate telemetry to be formed from individual resources (which may be reporting slower than the proposed aggregate telemetry rates) is needed.

21. To what extent do you agree with AEMO's proposed approach to the:

a. Initial capability assessment?

b. Periodic capability assessments, including any views you have on the triggers and frequency of such assessments?

c. Operational requirements for telemetry and communications equipment for VSR?

We believe that further refinement to these conditions may be necessary based on operational experience, but we have no further input at this stage.

22. Do you agree with AEMO's notice periods for switching between VSR participation modes?

a. Are you able to provide examples of how the proposed notice periods may impact your participation in IPRR?

Not applicable.

b. Are there any other considerations AEMO should include in setting its notice periods and information requirements?

Automation should be used where possible, and offering APIs is a key enabler for this. The expected use cases for switching modes should guide the timing restrictions, these use cases should be detailed in the guidelines (including any measures to avoid participants gaming the system).

The guiding principle should be for AEMO to delegate responsibility for managing the individual qualifying resources to VSRPs as much as possible. The alternative of AMEO trying to manage at the individual NMI level is not scalable. Instead the focus should be on monitoring & audit so AEMO can have high confidence that VRSPs are effectively managing this responsibility.

Any restrictions on the timing of changes should be for operational security reasons rather than a result of technical limitations in systems and processes.

23. Do you agree that VSR can only switch between modes on a per day basis, rather than per time intervals within the day?

VSR switching modes once per day seems reasonable based on our current knowledge.

The expected use cases for switching between modes should drive the timing constraints. When detailing the limitations around switching between modes, the guidelines should describe use cases for each mode and the expected scenarios when VSRPs might choose to switch modes.

24. Do you agree with the notice information requirements that AEMO proposes?

No comment

25. Do you have any suggestions on AEMO's plans to incorporate VSR bidding into its existing BDU bidding processes, or any other comments on AEMO's proposals for bid validation?

No comment

26. What information do you think it would be useful for AEMO to include in the Guidelines on NEMDE processes to support prospective VSRPs?

The technical limitations of NEMDE appear to drive a number of the proposed thresholds that limit the ability of smaller aggregators to participate. Publishing a development roadmap, or other plans to work around the limitations would help prospective VSRPs with their development plans and assessing the viability of participation.

27. Do you have any suggestions for how AEMO should update its processes to allow VSR to submit dispatch bids and receive dispatch instructions?

No comment

28. To what extent does AEMO's proposed approach to dispatch conformance appropriately balance ease of participation with the secure operation of the power system?

It is a good start, especially the reasonable easing of restrictions for smaller players to help gain operational experience. The suitability of these processes can be reviewed using the operational data.

29. What other factors should AEMO consider in setting dispatch conformance requirements and parameters?

a. Do you have any views on what would be a reasonable error trigger to use in the context of the size of VSRs, or in how AEMO should approach setting this trigger?

The parameters and requirements should be shaped based on operational experience, and adjusted over time to ensure system security is maintained.

30. What are your views on the metering requirements proposed by AEMO for qualifying resources in a VSR?

Consideration should be given to how the metering and telemetry requirements align. For instance if VSR telemetry is expected to come from revenue smart meters, then those meters must be capable of providing data at much finer granularity than 5min.

31. Is AEMO's explanation of the settlement and NECR arrangements for VSR across the participation modes useful information to be included in the VSR Guidelines?

Yes, the fewer places to look for relevant information the better.

32. Do you have any recommendations on the content or processes by which AEMO will adjust its prudential assessments for VSRPs and their VSR?

Not applicable.

33. What data do DNSPs, and where relevant TNSPs, reasonably believe they will require from VSRPs or AEMO and for what purpose/s?

Not applicable.

34. Do DNSPs/TNSPs have a preference for which AEMO system or process they receive data from, or are there alternative ways this data could be provided?

Not applicable.

35. From the prospective VSRP perspective, are there any privacy concerns related to the sharing of NMIs within a VSR with DNSPs and where relevant TNSPs?

As the NMI data is related to the Qualifying Resources, then consent should be obtained from the owners of those resources before data sharing occurs, and there should be a strong operational need for sharing any data beyond the VSRP.

Ideally the spread of NMI enrollment data should be limited, and primary responsibility should rest with VSRPs to manage enrollments.

36. What confidentiality concerns do you have regarding the disclosure of data from VSRPs or AEMO with DNSPs and TNSPs (as applicable)?

Privacy of NMI level data about qualifying resources should be considered and maintained.

If withholding this data from the DNSPs/TNSPs limits participation then, rather than withholding the data, better trust mechanisms (including customer consent) should be established to allow DNSPs/TNSPs to access it.

37. Do you see any issues with the other processes for the disclosure of data collected by AEMO from VSRPs to DNSPs and TNSPs (as applicable)?

Has there been any consideration given to data retention periods — especially once data is no longer required for operation purposes? If so, then documenting the requirements & restrictions around data retention would be useful.