

11 November 2021

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Dear Kate,

Low Load Responses – Distributed Photovoltaic Generation Management

AEMO welcomes the *Low Load Responses – Distributed Photovoltaic Generation Management – Discussion Paper* (19 October 2021) published by Energy Policy WA (**October report**) and supports the proposed changes to enable the management of distribution network-connected solar PV systems (**DPV Management**) to maintain the security of the power system. The DPV Management scheme is an important initiative in the State Government’s comprehensive program of Energy Transformation Strategy (**ETS**) reforms for the Wholesale Electricity Market (**WEM**) and South West Interconnected System (**SWIS**). This program of work has materially improved power system security and WEM effectiveness through the numerous initiatives that have already been delivered, with good progress being made on many more.

The capability to manage the output of newly installed and upgraded DPV in conditions such as periods of extreme low system load will be vital for maintaining power system security and reliability, ensuring the ‘lights stay on’. DPV Management will enable an affordable, reliable electricity supply to be maintained as more renewable generation is connected to the SWIS.

In March 2019 AEMO published its *Integrating Utility-scale Renewables and Distributed Energy Resources in the South West Interconnected System*¹ report which flagged that emergency DPV feed-in management would likely be required along with other complementary actions to address periods of low system minimum load. This solution offered a preferred alternative to disconnecting a distribution feeder or substation to mitigate against high DPV output and net exporting into the grid, the resultant effect being the disconnection of associated load.

AEMO’s subsequent report published in September 2021, *Renewable Energy Integration – SWIS Update*² confirmed that the emerging conditions which were posing challenges to managing system security, as identified in the March 2019 report, had become more prevalent. In particular, the change in the energy supply mix to more renewable generation was continuing

¹ https://www.aemo.com.au/-/media/Files/Electricity/WEM/Security_and_Reliability/2019/Integrating-Utility-scale-Renewables-and-DER-in-the-SWIS.pdf

² <https://aemo.com.au/initiatives/major-programs/wem-reform-program/latest-news/renewable-energy-integration-swis-update>

at record rates and contributing to low system load conditions that are now a permanent feature of the SWIS.

The September 2021 report made 13 recommendations for maintaining power system security, three of which were identified as priorities for implementation in the near-term. Swift action on the recommendations would enhance the ability of the SWIS to manage the technical challenges associated with the transformation of the generation supply mix.

Recommendation 5 identified the management of DPV in emergency operational conditions as a priority action:

As soon as practically possible, enable the capability to manage newly installed and upgraded DPV (i.e., for output reduction and/or curtailment) on instruction from AEMO to a third party to assist in managing power system security and reliability in all emergency operational conditions, including during extreme low system load conditions and black start, as a measure of last resort (i.e., backstop capability). This may require the development of separate methodologies for managing DPV output, depending on the operational condition of the power system.

AEMO supports the timings associated with the roll-out of DPV Management capability for all new and upgraded DPV systems as outlined in Energy Policy WA's Discussion Paper, specifically the application of technical requirements from mid-February 2022. This will help the management of low load conditions by preventing the situation from deteriorating to the point where power system security is compromised, as well as helping to build capability towards ensuring there is sufficient available capacity to provide an effective response when required in the future.

Where implemented alongside the other recommendations and the State Government's ETS reforms, DPV Management in emergency operational conditions, as a measure of last resort, is likely to be required infrequently. When it is activated, DPV Management will only reduce DPV export to the grid, and consumer supply will remain uninterrupted. This is a far better outcome than disconnecting a distribution feeder or substation to maintain system security during periods of low load, which would result in interruptions to power supply at all associated connection points.

AEMO supports the proposition that the capability to remotely communicate with Distributed Energy Resources (**DER**) as developed through DPV Management will provide greater opportunities in future for customer devices to provide electricity services for payment.³ AEMO's September 2021 report suggests that the management of DPV could, in future, potentially

³ Energy Policy WA (2021), *Low Load Response – Distributed Photovoltaic Generation Management – Discussion Paper*. 19 October, p.7.

extend to the orchestrated participation of DER (which includes DPV) in the WEM and through other incentivised arrangements. Enabling DPV Management is therefore a crucial step along the path to a future where the full capabilities of DER are realised for the benefit of all electricity customers.

Consistent with Recommendation 5, AEMO welcomes further consideration on how DER and DPV Management interacts with schemes that support system security including System Restart and Under Frequency Load Shedding schemes. Such interactions will be crucial to enabling increasing reliance on DER and DPV over time.

AEMO supports the proposed timings for implementing the model contained in item 4 of the October report. AEMO will continue to work with Energy Policy WA, Western Power and Synergy as part of ETS reforms to implement DPV Management as well as the DER Roadmap launched in December 2019. This work is fundamental for improving the integration of DER, so that opportunities can be realised while the technical challenges of increasing DER penetration are resolved. Related DER Roadmap actions that are already underway including technical demonstration of DER Orchestration through Project Symphony and adjusting AEMO's operational tools and capabilities to cater for high DER operating conditions. As these operating conditions exist now, the implementation of advanced controls such as those being implemented for DPV Management will continue to support the secure operation of the SWIS as DPV penetration increases.

AEMO welcomes the opportunity to discuss this submission with Energy Policy WA. Should you wish to do so, please feel free to contact Tom Butler, Manager Distributed Markets WA on +61 431 248 097 or Tom.Butler@aemo.com.au.

Yours sincerely



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Executive General Manager WA