Renewable Integration Study (RIS)

Action Update

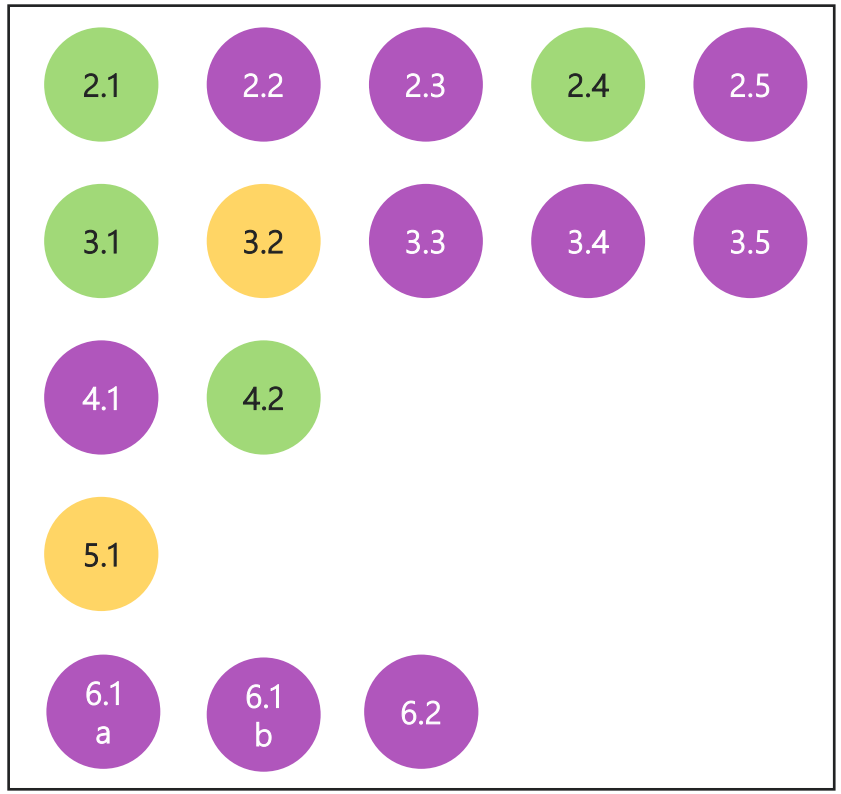
September 2021

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Renewable Integration Study | Action Update

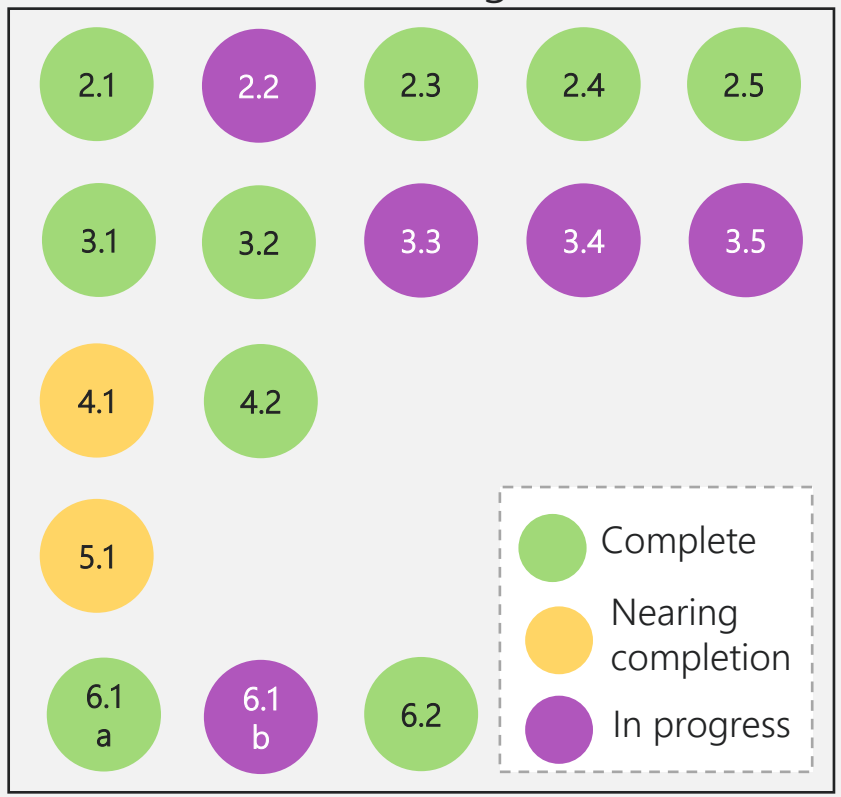
DEC 2020

- 4 actions complete
- 2 nearing completion



NOW

- 9 actions complete
- 2 nearing completion
- Progress has continued on all remaining actions



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Key action update highlights are:

- ✓ Nine actions are complete.
- ➡ Two actions are nearing completion.
- ➡ Progress has been made on the remaining actions.

Action	Timing	Status	Update
System Operability			
2.1 AEMO to identify and evaluate standard operational process, control room tools, and operator training to operationalise market interventions for system strength and inertia services under the current framework.	2020	✓	Operational procedures and tools are available for real time and other relevant operational staff. All staff are sufficiently trained to operationalise market interventions for system strength. The rapidly changing power system necessitates continuous upgrading of tools, procedures and staff training. Future improvements will be captured in the Engineering Framework. In addition, discussions surrounding the need for broader regulatory changes to facilitate procurement of the necessary capabilities and scheduling of relevant resources as part of the dispatch process are being contemplated in the AEMC's consideration of the Unit Commitment for Security (UCS) and Synchronous Services Markets (SSM) Rule changes.
2.2 AEMO to redevelop existing scheduling systems (Pre Dispatch and Short Term PASA) to better account for system needs, including availability of essential system services, cross-regional sharing of reserves and better modelling of emerging technologies.	2022	➡	Phase 1 of the ST PASA Replacement project is complete. This included industry consultation on the business requirements and high level design, and completion of a proof of concept. AEMO also submitted a rule change proposal to the AEMC in late June and is now working on the detailed design of the new ST PASA system including going out for proposals for building part/s of the new system. Further details on the ST PASA project, including progress and stakeholder engagement is available on our dedicated webpage.
2.3 ESB to make recommendations to the COAG Energy Council on high-level design options for the Markets Post-2025 Essential Systems workstream by end of 2020. These essential system services being considered include inertia, system strength, minimum synchronous units, operating reserves, and flexibility.	2020	✓	After publishing its post market design consultation paper in September 2020, the ESB released a directions paper in January 2021 and an options consultation paper for post-2025 market design options in April 2021. These include options on the essential system services and ahead market workstreams. Final recommendations were provided to the National Cabinet Energy Reform Committee on 28 July 2021 and will be released publicly shortly. Further information is available on the ESB's website.
2.4 AEMO to develop a detailed proposal outlining requirements, timing, and steps required to achieve specified NEM high-speed monitoring to allow better visibility of system performance and improve operational understanding.	2020	✓	A detailed proposal is complete. Recommendations were presented to NEM Operations Committee (NEMOC), including strategic installation of PMUs and better AEMO utilisation of existing high-speed data. The Operations Planning Working Group is assisting to develop a technical specification and coordinate outages for phasor measurement unit installation. AEMO's ongoing collaboration with TNSPs to implement high-speed monitoring upgrades in their networks will be monitored through the Engineering Framework.

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2.5 AEMO to develop new ways of managing increasingly complex operating systems. This includes collaboration with industry and leading power system operators to manage system security phenomena and optimisation of renewable resource inputs and emerging technologies.	2020-25	✓	AEMO's engagement with leading system operators and engineering organisations has continued with the progression of the Global Power System Transformation (G-PST) consortium. The inaugural research agenda was published on 26 March 2021 and focuses on addressing bulk system issues arising from the increasing penetration of VRE and DER. The CSIRO has since adapted the research agenda to the Australian context, engaging AEMO and local research organisations to form an Australian contingent to the consortium. The GPST launch event was held in April 2021 with AEMO's COO contributing to the discussion and highlighting the unique challenges of the energy transformation in Australia. The group is also planning for the 2026 climate change conference. Further progress made by the consortium will be captured in the Engineering Framework.
Distributed PV			
3.1 AEMO to fast-track requirement for short duration voltage disturbance ride-through for new DPV inverters in South Australia.	2020	✓	On 28 July 2020, AEMO published the final test procedure for short duration VDRT for South Australia. For further information see the AEMO consultation page. For information on the implementation of this test procedure, see the SA Government website.
3.2 AEMO to progress, through Standards Australia committee, an update to national standard for DPV inverters to incorporate bulk system disturbance withstand and autonomous grid support capability.	2021	✓	Revised and uplifted AS4777.2 was published in December 2020. The updated standard can be accessed through the Standards Australia webstore. For larger size systems not covered by AS/NZS4777.2, AEMO has consulted with DNSP's on disturbance withstand capabilities and will continue to address as part of the Engineering Framework.
3.3 AEMO to collaborate with the ESB, AER, AEMC, and industry to: • Submit a rule change establishing the setting of minimum technical standards for DER in the NEM. • Improve compliance with new and existing technical performance standards and connection requirements for DPV.	2021	→	• Following AEMO's submission of a rule change request in May 2020, the AEMC made a final rule change determination on 25 February 2021 available on the AEMC website. The final rule amends the NER to require all new or replacement micro embedded generators – primarily rooftop solar systems – connecting to distribution networks to be compliant with the DER Technical Standards. • The ESB submitted a rule change on 21 September 2020, proposing new governance arrangements for DER technical standards under the NER. This includes the development of DER Technical Standards, and to provide a level of compliance enforcement of those Standards. This Rule has not yet begun, AEMO will contribute to this once initiated.

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3.4 AEMO to collaborate with industry to: • Mandate minimum device level requirements to enable generation shedding capabilities for new DPV installations in South Australia • Establish regulatory arrangements for how distribution NSPs and aggregators could implement this. • Investigate the need for updating the existing DPV fleet to comply with regional generation shedding requirements.	2021		• The SA Government introduced new technical requirements for DER in SA from the 28 September 2020 through the Regulatory Changes for Smarter Homes , based on AEMO advice via the report on minimum operational demand in SA. This has led to the establishment of a generation shedding process between AEMO, ElectraNet and SAPN. On 14 March 2021, this generation-shedding mechanism was used effectively to maintain system security during a planned outage of the Heywood Interconnector where demand trended lower than forecast. • Progress has been made on regulatory arrangements for shedding capabilities under the ESB's post 2025 program, in collaboration with State Governments to establish these arrangements. Extensive stakeholder engagement has been undertaken on the design of a NEM-wide implementation framework, if approved by the jurisdictions. • AEMO is also working closely with other select jurisdictions to develop initiatives that are timely and fit-for-purpose for their regions.
3.5 AEMO to collaborate with DNSPs to improve visibility and predictability of DPV systems available for curtailment, including real-time SCADA visibility for all new commercial scale systems.	2021		For SA, this work was progressed by SA Power Networks as part of Regulatory Changes for Smarter Homes. For other regions, this will be considered as part of separate DPV curtailment requirements by jurisdiction. AEMO is also currently considering a review of the Power System Data Communication Standard, to consider operational visibility of larger, commercial scale DER systems.
Frequency			
4.1 AEMO to facilitate implementation of the Mandatory Primary Frequency Response rule. This is an important part of maintaining and strengthening system resilience.	2020-21		AEMO has published a dedicated page on implementation of the Mandatory Primary Frequency Response rule, including documentation on requirements, implementation updates and FAQs. The implementation of PFR Settings has been rolled out to 85% of Tranche 1 (> 200 MW) facilities. The roll-out for smaller Tranche 2 (80 – 200 MW) and Tranche 3 (< 80 MW) facilities has begun with the majority of self-assessments from facilities received by AEMO with implementation achieved for over a third of facilities in both these tranches. AEMO has provided final Technical Advice to the AEMC, and a draft determination on the rule change was made on 16 September 2021. More information can be found on the AEMC website.

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4.2 AEMO to publish a detailed frequency control workplan.	2020	✓	AEMO published the Frequency Control Work Plan in September 2020 and provided a detailed update in March 2021. The work plan aims to facilitate effective communication of technical issues, prioritising the most urgent issues, and allowing them to be addressed in a cohesive way across industry. The progression of this large volume of work is critical to supporting the changing power system. AEMO will continue to report on the progress of these activities via periodic updates to the work plan and Engineering Framework.
System Strength			
5.1 AEMO to contribute to ESB and AEMC reviews of system strength frameworks and follow through with recommendations from these reviews.	2021	→	For ESB update see action 2.3. On 15 October 2020, the AEMC completed its investigation into the effectiveness of system strength frameworks in the NEM. The AEMC used the TransGrid Efficient management of system strength on the power system rule change request to develop implementation details of the recommendations made in their review. The draft determination for this rule change was published on 29 April 2021. AEMO submitted feedback supporting the change and recommending a streamlined regulatory approval process for transmission services and joint planning arrangements. A final rule determination is due by 21 October 2021.
Variability and Uncertainty			
6.1.a AEMO to improve understanding of system uncertainty and risk, particularly during ramping events, through research on a ramping forecast and classification prototype.	2020-21	✓	A forecasting project is now underway to move AEMO to a multi-faceted approach to managing ramping, uncertainty and variability in forecasts. This project is progressing and implementation will be tracked through the Engineering Framework.
6.1.b AEMO to improve understanding of system uncertainty and risk by deploying fit-for-purpose weather observation infrastructure.	2020-21	→	Work has been progressing on options for the deployment of and access to strategic weather observation infrastructure.
6.2 Improve the reliability of information provided by participants to support security-constrained dispatch.	2020-21	✓	On 15 October 2020, the AEMC initiated the AER's rule change proposal on semi-scheduled generator dispatch obligations under a fast-tracked process. The final determination for this change was published on 11 March 2021 with the rule change effective from 12 April 2021.

For more information

please visit www.aemo.com.au

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