



# **Distributed Energy Resources (DER) Integration Workplan**

**Updated: Q2 2020 – Q1 2021**

## 1. Update to the workplan

The Energy Security Board DER Steering Committee (DER SC) developed this DER Integration Workplan in late 2019 bringing together all the DER integration work being undertaken across the energy market institutions, identifying related actions being undertaken by industry and other bodies and gaps that needed to be filled. The resulting plan seeks to coordinate DER integration across technical, regulatory and market-related actions.

Over the last six months a number of changes in both internal and external activities have prompted the need to update this plan. These changes include:

- The development of the Distributed Energy Integration Program work programs for 2020 – these are collaborative activities undertaken by the market bodies in conjunction with stakeholders
- Delays to the publication of the final report from the Open Energy Networks (OpEn) project
- The evolution of the ESB's post-2025 market design project such that it is now an umbrella for a number of 'market design initiatives' including ahead and two-sided markets
- COAG Energy Council agreeing in March 2020 to the ESB and AEMO lodging a rule change request to put in place initial DER technical standards
- Interaction with ESB data strategy which is being developed separately, but includes LV data within its scope.

There was also a need to make the workplan more granular, with milestones per quarter for planning and reporting purposes.

The Covid19 global pandemic has changed the timelines for delivery of some activities in the timeline.

In addition, the DER Steering Committee has evolved, now meeting weekly rather than monthly and it is now focused on strategic collaboration, above and beyond its initial coordination role. As a result, the DER SC has decided to choose four strategic priorities for 2020 on which it will work collaboratively to achieve important 'critical path' changes in DER integration.

### **Priorities for 2020:**

1. Technical standards rule change and new governance structure and processes
2. DEIP Network Access and Pricing
3. Distribution-level batteries/'community batteries'
4. DER integration into Post2025 Market Design Initiatives, including open access to markets at the appliance level

In addition, the DER SC has resolved to spend greater time and resources on communicating its vision and objectives for DER integration across the market bodies, jurisdictions and consumer stakeholders.

### **Risk analysis**

Each energy market institution will undertake its own risk analysis and management processes for the Workplan activities for which it is responsible. Jointly however, the DER SC analysed the global risks of not implementing this workplan and found them to be:

- Higher costs, especially from lack of coordination with other processes and designing future markets without sufficient attention to DER and its technical requirements and opportunities
- Higher costs due to not unlocking or optimising the services available from DER (e.g. to provide non-network solutions)
- Higher costs due to prosumers fully or partly disengaging with the grid
- Challenges managing distribution networks, especially due to lack of visibility of DER
- Lower system reliability where there are difficulties in managing minimum demand due to rooftop solar PV (an evolving issue in South Australia)
- Technology lock-in from inadequate standards, potentially causing system security and network operation challenges.

# The plan on a page



## DER Integration Priorities

**Objective: to optimise the benefits of DER for all Australians**

### Market Integration

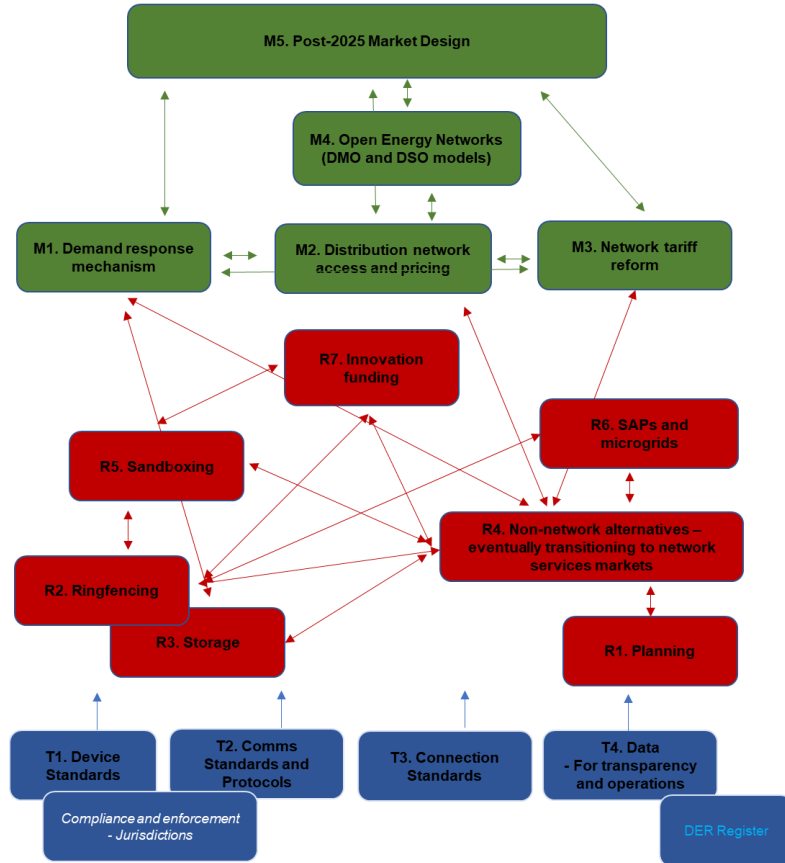
The starting points for DER market integration are enabling DER (including DR) to access markets directly or through third party providers to maximise innovation, consumer choice and outcomes, together with reviewing distribution network access and pricing and tariff reform. Then broader market design – including the role of flexibility, firming, ahead and other market constructs to support both DER and other resources in the system is needed.

### Regulatory Integration

There are diverse areas of regulatory reform needed for DER integration ranging across planning to how distribution-scale storage will be best provisioned to regulation to support the greater use of DER to provide network services.

### Technical Integration

Foundational requirements for all other areas of DER integration - most underway, but need further development.



Trials involving energy market institutions

DNISP revenue regulation

Arrows indicate major interdependencies, noting there are interdependencies between all areas.

## ESB DER Integration Workplan – April 2020

Objective: optimising the benefits of distributed energy resources for the benefit of all energy system users

Technical Integration						
Priority workstream	Workstream goal	Milestones				
		2020 (Q2)	2020 (Q3)	2020 (Q4)	2021 (Q1)	2021 (Q2)
T1. Device standards	<ul style="list-style-type: none"> <li>Appropriate DER capabilities to enable grid support, interoperability, and to enable system support and customers to exchange value with the grid, should they choose to.</li> <li>Ensure appropriate compliance arrangements in place.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> Rule change request for initial DER standards lodged by ESB, informed by AEMO – 30 April</li> </ul>	<p>AS4777.2-2015 published as an interim standard (tbc 6 May for September publication) including:</p> <ul style="list-style-type: none"> <li>Improve clarity around withstand requirements, specifically defining zones of operation (eg. momentary cessation)                             <ul style="list-style-type: none"> <li>Introducing Multiple Voltage Disturbances withstand</li> <li>Introducing ROCOF withstand</li> <li>Introducing Phase angle jump withstand</li> </ul> </li> <li>Enhancing Grid support functions for voltage and reactive power, and frequency response.</li> <li>Improving the accuracy and stability of measurement systems used in these inverters to improve reliable performance characteristics for a range of grid disturbances.</li> <li>Designing suitable testing procedures that clearly show when an inverter is performing as required, or not.</li> </ul>	<p><b>AEMC:</b> DER standards rule change process completed</p>	<ul style="list-style-type: none"> <li>If approved, rule change will come into effect.</li> </ul>	
T2. Comms/interoperability standards and protocols		<ul style="list-style-type: none"> <li><b>AEMO:</b> Rule change request for initial DER standards lodged by ESB, informed by AEMO – 30 April</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> Industry consultation on DER standards/guidelines for data communications (interoperability) and security established via DEIP.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> DER standards rule change process completed.</li> <li><b>AEMO:</b> Industry requirements for DER standards/guidelines for data communications (interoperability) and security finalised via DEIP.</li> </ul>		
T3. Cybersecurity standards	<ul style="list-style-type: none"> <li>Define interoperability and cyber-security issues and pathway for implementation</li> </ul>		<ul style="list-style-type: none"> <li><b>AEMO:</b> Commence industry consultation to define interoperability and cyber-security issues and resolution pathways through DEIP.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> DEIP working group to produce final recommendations regarding interoperability and cyber-security issues and resolution.</li> <li><b>AEMO:</b> Commence work on necessary regulatory and process changes.</li> </ul>		
T4. Data – for transparency and operations	<ul style="list-style-type: none"> <li>Appropriate level of data and information access to enable appropriate decision making at various levels of the system. i.e. AEMO to run the power system and market, networks to monitor and operate their network, thirds parties to offer services to consumers, consumers to make better /informed decisions around energy use and services.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO (DER data requirements):</b> in consultation with industry, develop key data requirement enable DER integration to support planning, operational, market functions (mid-2020). Progress necessary regulatory and process changes. (note, will be developed consistent with the ESB data strategy and linked to API protocols).</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> Competitive metering arrangements review – development of Terms of Reference and pre-review consultation</li> </ul>	<p><b>AEMC:</b> Competitive metering arrangements review - commencement</p>		

## ESB DER Integration Workplan – April 2020

Regulatory Integration						
Priority workstream	Workstream goal	Milestones				
		2020 (Q2)	2020 (Q3)	2020 (Q4)	2021 (Q1)	2021 (Q2)
R1. Planning	<ul style="list-style-type: none"> <li>Efficient investment across the system to deliver reliable, secure and affordable services to consumers.</li> </ul>	<ul style="list-style-type: none"> <li><b>AER: commence consultancy on Value of DER.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> review the need to enhance the Integrated System Plan to support distribution planning, including by standardising scenarios and inputs for network planning.</li> </ul>	<ul style="list-style-type: none"> <li><b>AER:</b> Draft consultation paper on DER Expenditure Guideline for DNSPs.</li> </ul>		<ul style="list-style-type: none"> <li><b>AER:</b> Final consultation paper on DER Expenditure Guideline for DNSPs</li> </ul>
R2. Ringfencing	<ul style="list-style-type: none"> <li>Ensure distribution ring-fencing requirements remain fit for purpose and that DNSPs comply with their obligations</li> </ul>		<ul style="list-style-type: none"> <li><b>AER</b> Publish final distribution guideline.</li> <li><b>AER</b> Publish draft transmission guideline update.</li> </ul>			
R3. Storage	<ul style="list-style-type: none"> <li>The regulatory arrangement supports various business models for the delivery of storage into energy market.</li> </ul>	<ul style="list-style-type: none"> <li><b>ESB:</b> consultation report delivered, webinar held on report</li> </ul>	<ul style="list-style-type: none"> <li><b>ESB:</b> following consultation with industry, outline recommended approach.</li> </ul>	<ul style="list-style-type: none"> <li><b>ESB:</b> as required, progress any regulatory changes.</li> </ul>		
R4. Non-networks alternatives (eventually transitioning to network services models)	<ul style="list-style-type: none"> <li>To ensure distribution businesses are making effective use of DER to provide network services.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> As part of the 2020 Economic regulatory framework review, analyse DNSPs' uptake of non-network alternatives and consider if further reforms are required</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> Economic regulatory framework review completed</li> </ul>			
R5. Sandboxing	<ul style="list-style-type: none"> <li>The regulatory arrangements provide a framework for trialling of new concepts and ideas (Minimum Viable Product, MVP) prior to full scale roll out.</li> </ul>		<ul style="list-style-type: none"> <li><b>COAG EC:</b> progress NEL changes to enable trial waiver and trial rule change mechanisms for sandboxing.</li> <li><b>AER:</b> Commence innovation enquiry service (subject to resourcing).</li> </ul>			
R6. SAPS and Microgrids	<ul style="list-style-type: none"> <li>The regulatory arrangement supports and create appropriate incentives around the establishment of standalone systems where it is more cost efficient to do so.</li> </ul>		<ul style="list-style-type: none"> <li><b>AEMC:</b> DNSP-led SAPS - publish final report and submit package of rules to COAG Energy Council</li> </ul>	<ul style="list-style-type: none"> <li><b>COAG EC:</b> response to AEMC recommendations and progress rule/law changes as required.</li> <li><b>AER:</b> Guideline updates following DNSP-led SAPS law and rule changes.</li> </ul>		
R7. Voltage investigation	<ul style="list-style-type: none"> <li>Understand the current state of voltage in LV networks across the NEM and consequences for PV exports</li> </ul>	<ul style="list-style-type: none"> <li>Issue UNSW report with cover note and host webinar</li> </ul>	<ul style="list-style-type: none"> <li>Liaison with jurisdictional regulators to investigate and act as appropriate</li> </ul>			

## ESB DER Integration Workplan – April 2020

Market Integration						
Priority workstream	Workstream goal	Milestones				
		2020 (Q2)	2020 (Q3)	2020 (Q4)	2021 (Q1)	2021 (Q2)
M1. Demand response mechanism	<ul style="list-style-type: none"> <li>Encourage the effective participation of the demand side in the wholesale market by enabling third parties to access and aggregate DR resources and exchange value with the grid at times of peak.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> complete review of customer protections framework for small customers. This will inform extension of DR and DER framework (refer to last item)</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> complete detailed design of wholesale demand services</li> </ul>			
M2. Distribution network access and pricing	<ul style="list-style-type: none"> <li>An efficient amount of both DER and network capacity is made available for exporting.</li> <li>Consumer choice is maintained, and consumer-led investments that support lower total energy costs are rewarded.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> As part of the Distributed Energy Integration Program (DEIP), consult on possible regulatory reforms to distribution network access and pricing arrangements.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMC:</b> Assessment of rule change on network access, connection and charging arrangements (or AEMC commences work if no rule change submitted by mid-year)</li> </ul>			
M3. Network tariff reform	<ul style="list-style-type: none"> <li>To promote efficient demand response from end users, including investment and use of DER, to reduce network costs for the benefit of all end users.</li> <li>To send cost reflective network prices to retailers, to promote more innovation and choice in retail market offers.</li> </ul>		<ul style="list-style-type: none"> <li><b>AER:</b> Final decisions on revised Tariff Structure Statement proposals from SA and QLD distributors.</li> <li><b>AER:</b> Draft decisions on initial Tariff Structure Statement proposals from VIC distributors.</li> <li><b>AER:</b> Tariff Roundtable.</li> </ul>			
M4. Open Energy Networks (DMO and DSO models)	<ul style="list-style-type: none"> <li>Cross collaboration between AEMO and ENA to outline approaches and models to integrate DER into the network, whole of system, and market.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> release final OpEN report (including cost benefit analysis).</li> </ul>	<ul style="list-style-type: none"> <li>Next steps TBC</li> </ul>			
M5. Post-2025 market design	<ul style="list-style-type: none"> <li>Market design, including valuing DER services to ensure efficient investment and operation of the energy market to deliver a secure, reliable, and affordable energy services that supports consumer choice. i.e granular pricing signals, firming markets, ahead markets, etc.</li> </ul>	<ul style="list-style-type: none"> <li><b>ESB:</b> commission advice on incorporation of DER into post-2025 market design initiatives</li> </ul>	<ul style="list-style-type: none"> <li><b>ESB:</b> August consultation paper on post-2025 market design</li> </ul>	<ul style="list-style-type: none"> <li>ESB: December post-2025 market design paper</li> </ul>		<ul style="list-style-type: none"> <li>ESB: final recommendations mid-2021</li> </ul>

## ESB DER Integration Workplan – April 2020

Relevant work linked to DER						
	Workstream goal	Milestones				
		2020 (Q2)	2020 (Q3)	2020 (Q4)	2021 (Q1)	2021 (Q2)
Innovation funding	<ul style="list-style-type: none"> <li>Appropriate funds are allocated to enable investment in R&amp;D to support delivery of value add frameworks to the regulatory regime, business operations, and consumer service delivery.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing monitoring and action as required</li> </ul>				
Pilots, Demonstrations and Trials	<ul style="list-style-type: none"> <li>Undertake demonstrations to evaluate DER integration activities to ensure operational, market and consumer value leveraged.</li> <li>Evidence based approach to regulatory change.</li> </ul>		<ul style="list-style-type: none"> <li><b>AEMO:</b> Victorian DER Market Place trial to commence</li> </ul>		<ul style="list-style-type: none"> <li><b>AEMO (VPP trial):</b> share trial learnings. Progress regulatory changes to formalise arrangements</li> </ul>	
EV roadmap	<ul style="list-style-type: none"> <li>Integration of EV to support consumer choice and adequacy of grid requirements.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO/ARENA with DEIP:</b> development of plan for EV standards, tariffs, etc</li> </ul>		<ul style="list-style-type: none"> <li><b>AEMO/ARENA:</b> in consultation with industry and market institutions, progress priority actions.</li> </ul>		
System reliability and security	<ul style="list-style-type: none"> <li>The power system continues to be managed in a stable and reliable manner, given changes in risk profiles, including the effects of increased DER.</li> </ul>	<ul style="list-style-type: none"> <li><b>AEMO:</b> Renewable Integration Study released</li> </ul>				
Consumer protection	<ul style="list-style-type: none"> <li>Appropriate consumer protections are in place regarding DER technologies</li> </ul>		<ul style="list-style-type: none"> <li><b>AEMC:</b> Proposed framework published on consumer protections and DER (via the Retail Competition Review)</li> </ul>			