

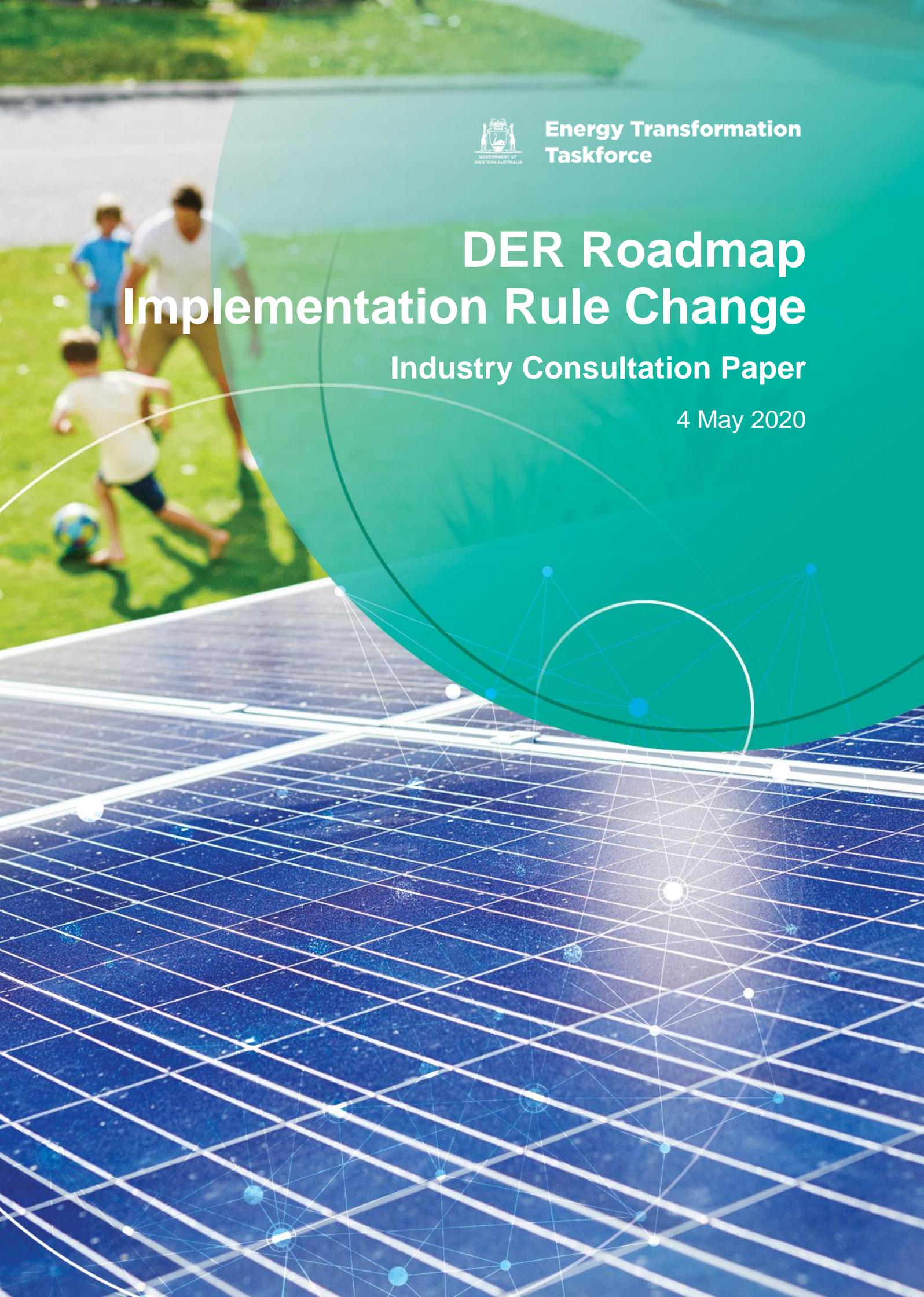


**Energy Transformation
Taskforce**

DER Roadmap Implementation Rule Change

Industry Consultation Paper

4 May 2020



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Abbreviations

The following table provides a list of abbreviations and acronyms used throughout this document. Defined terms are identified in this document by capitals.

Term	Definition
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AR5	Australian Energy Market Operator Allowable Revenue and Forecast Capital Expenditure Period 2019-20 to 2021-22
AS4777	Australian Standard AS/NZS 4777.2:2015 – Grid Connection of Energy Systems via Inverters. This Standard specifies the electrical installation requirements (AS4777.1) and the inverter performance requirements (AS4777.2) for inverters connected to the electricity distribution network.
DER	Distributed Energy Resources
DMIRS	Department of Mines, Industry Regulation and Safety
DMO	Distribution Market Operator. The function of a distribution-level market operator, as distinct to the wholesale market operator.
DSO	Distribution System Operator. A DSO enables access to the network, securely operates and develops an active distribution system comprising networks, demand, and other flexible distributed energy resources (DER). Expanding of the network planning and asset management function of a DNSP, the DSO enables the optimal use of DER on distribution networks to deliver security, sustainability and affordability in the support of whole system optimisation.
ERA	Economic Regulation Authority
SWIS	South West Interconnected System
WEM	Wholesale Electricity Market

Executive summary

DER Roadmap functions

This paper is prepared as part of the implementation of the Distributed Energy Resources (DER) Roadmap, a key element of the State Government's Energy Transformation Strategy. The paper outlines an approach to ensure the Australian Energy Market Operator (AEMO) can undertake, and recover costs for, activities to implement the recommendations of the DER Roadmap.

The functions of the AEMO are conferred by the Wholesale Electricity Market (WEM) Regulations and WEM Rules, and relate to market operation in the WEM and system management of the South West Interconnected System (SWIS)¹ More recently, these functions were expanded under the WEM Rules to include the preparation for, and implementation of, WEM and constrained network access reform.²

The ongoing installation of DER, particularly customer rooftop solar photovoltaic (PV) systems, is contributing to power system risks, and threatens to undermine the reliability and security of the system. In particular, the rapid and uncoordinated uptake of rooftop solar PV systems will see daytime demand for traditional thermal generation fall to levels at which the stability of the SWIS will be compromised.³ On the other hand, DER that is technically and operationally integrated with the physics of the electricity network offer considerable benefits across the electricity supply chain and will reduce carbon emissions.

To manage these challenges and harness the opportunities, the Hon Bill Johnston MLA, Minister for Energy established the Government's Energy Transformation Strategy, including the development of a DER Roadmap to coordinate the efficient integration of DER. The Strategy is being implemented by the Energy Transformation Taskforce (Taskforce).

During 2019, AEMO provided valuable support and contributions to the work of the Taskforce in developing the DER Roadmap.

The Minister released the DER Roadmap in April 2020, and there is now a body of work required to undertake the DER Roadmap "required actions". The DER Roadmap recognises AEMO as the agency responsible for undertaking critical work relating to system management and market operations, while supporting other elements of the DER Roadmap led by Western Power, Synergy and Energy Policy WA.

AEMO has identified that the functions conferred on it under the WEM Regulations and WEM Rules do not adequately provide for the undertaking of these DER Roadmap activities, and are insufficient to ensure AEMO will be able recover the associated costs. In summary, this is because:

- The *Electricity Industry Act 2004*, that empowers the WEM Regulations and WEM Rules, was drafted at a time that did not contemplate DER devices as sources of generation or storage, or two-way power flows on the distribution system.
 - Consequently, the functions of system manager and the market operator were not cast with customer DER in mind, and specifically, do not envisage the need to manage customer DER within system and market operation.

¹ WEM Regulations 12(1), 13(1) and 13(3), and WEM Rules 2.1 and 2.2.

² WEM Rule 1.20 - Transitional function of preparing for Wholesale Electricity Market and Constrained Network Access Reform

³ AEMO, 2019, *Integrating Utility-scale Renewables and Distributed Energy Resources in the SWIS*.

- The *Electricity Industry Act 2004* contains a definition of the SWIS. The definition does not address the extension of the SWIS to DER devices located behind customer connection points, and consequently, whether AEMO has authority to undertake activities that specifically relate to such devices is ambiguous.
- Customer-owned DER are not registered under the WEM Rules.⁴ They do not participate in the market and AEMO has no direct regulatory relationship with them.
- Under the WEM Regulations and WEM Rules, AEMO performs its system management and market operation functions with respect to those parties who are rule participants, including those who are registered for participation in the WEM (i.e. Market Participants). For example, the WEM Rules may authorise AEMO as the system manager or the market operator to give directions to, or impose requirements on, registered participants.⁵
- AEMO's obligations to plan and operate the SWIS in a secure and reliable manner must now extend to DER. Where AEMO is required to undertake work additional to its "business-as-usual" functions (as set out in the WEM Regulations and WEM Rules) and/or in relation to parties with whom it does not have a direct regulatory relationship, it is uncertain whether this work is being done outside the scope of its existing functions.

The activities in the DER Roadmap that AEMO is required to undertake essentially relate to system security and reliability, and have ongoing relevance for the evolution and operation of the WEM. However, for the above reasons, it is not clear whether AEMO's existing functions enable AEMO to undertake DER Roadmap activities and to recover associated costs.

AEMO has advised that, on these grounds, it is unable to commit to resourcing DER Roadmap implementation activities within its operational and capital expenditure allowances.

An amendment to the WEM Rules is proposed to confer an expanded function upon AEMO so that:

- AEMO can undertake preparatory work in relation to the DER Roadmap; and
- AEMO will have certainty that it can recover costs for undertaking work in relation to the DER Roadmap.

The expanded function will be limited to AEMO's involvement in the implementation of the DER Roadmap list of required actions.

The proposed approach will amend the WEM Rules as follows:

- Chapter 11: *Wholesale Electricity Market and Constrained Network Access Reform* to include "any related activity undertaken by AEMO in connection with implementation of the DER Roadmap", thereby conferring on AEMO this function under WEM Rule 1.20.
- WEM Rule 1.20: to add Rule 1.20.6, which allows AEMO to apply to the ERA for an adjustment to its Allowable Revenue and Forecast Capital Expenditure 2019-20 to 2021-22 (AR5) for DER Roadmap implementation activities.

⁴ Under the proposed changes to registration being progressed by the ETIU, Market Participants will include "facilities" which may themselves be comprised of individual DER devices. Nonetheless, AEMO will not have a direct relationship with these devices, and it is anticipated that it will take some time for such facilities to incorporate many of the existing DER devices.

⁵ See WEM Regulation 15(2).

The activities that AEMO will be required to undertake are limited to the implementation of the DER Roadmap, relating to:

- supporting the uplift of inverter standards through the Australian Standards process to ensure all DER have known and predictable operation in response to system events;
- revising system restart arrangements to ensure the power system can be safely and effectively restored where there is a high DER presence;
- developing establishing and maintaining a register of DER data in the SWIS as a requirement for DER aggregation, the use of DER for power system support and for DER's integration into long-term system planning;
- developing requirements and processes for dynamic system modelling (to support a high- DER operating environment);
- developing and trialling DER orchestration pilots to determine the technical and operational arrangements needed to support DER integration;
- planning, designing, and trialling arrangements for a Distribution System Operator (DSO) and Distribution Market Operator (DMO) to enable coordinated dispatch of aggregated DER as a contributor to power system security and reliability through market participation; and
- supporting Energy Policy WA, Western Power and Synergy in their delivery of key elements of the DER Roadmap that impact on the secure and reliable management of the power system and the operation of the market.

DER Register

Recommendation 15 of the DER Roadmap identifies a required action that a register of static data for the SWIS be established, with the intention of providing AEMO with necessary data to assist in its function of maintaining a secure and reliable power system.

The proposed approach was developed to align closely with arrangements that established a DER Register in the National Electricity Market (NEM), which came into full effect on 1 March 2020.

The approach will add WEM Rule 3.24 – Distributed Energy Register, which requires AEMO to establish and maintain a DER Register, and develop a procedure (known as the SWIS DER Register Information Procedure) that outlines the data model, data format and transfer process to support the population of the DER Register. Under this Rule and associated procedure, Western Power will be obligated to provide AEMO with DER data, including data it receives from the Notice of Completion process (provided by electrical installers to Building and Energy, at the Department of Mines, Industry Regulation and Safety (DMIRS)), as per the data requirements specified in the procedure.

Feedback

Feedback is requested from industry stakeholders on the proposed amendments to the WEM Rules to enable the necessary participation of AEMO in DER Roadmap implementation and the establishment of a DER Register.

Submissions are requested by **5.00pm, Friday 22 May 2020**, and can be provided by email to: energytransformation@energy.wa.gov.au. Please contact Jai Thomas if you have any queries regarding the submission process via: jai.thomas@energy.wa.gov.au.

1. WEM Rule amendments to support DER Roadmap implementation

1.1 WEM Rules - current scope

1.1.1 AEMO's functions

Under the WEM Regulations and WEM Rules, AEMO is conferred functions in respect of the WEM and in respect of ensuring that the SWIS operates in a secure and reliable manner⁶.

In acknowledgement of the necessity of AEMO involvement in preparatory work for WEM reforms, amendments to the WEM Rules were made to confer functions on AEMO in relation to the Wholesale Electricity Market and Constrained Network Access Reforms. WEM Rules 1.20.1 and 1.20.2 outline the transitional functions and activities (respectively) for the reforms, and WEM Rule 1.20.3 provides specific guidance to the ERA for the determination and approval of AEMO's Allowable Revenue and Forecast Capital Expenditure.

Subsequent to the introduction of WEM Rule 1.20, the Minister for Energy announced the Energy Transformation Strategy. The Economic Regulation Authority (ERA) noted in its *Allowable Revenue and Forecast Capital Expenditure 2019/20 to 2021/2022 (AR 5) Final Determination*:

*Incorporating WEM and constrained network access reform into a wider energy transformation strategy introduces the possibility that AEMO's role and responsibilities may change during AR5. As the strategy develops and more clarity emerges during the first year of AR5 AEMO may have to reassess its allowable revenue and forecast capital expenditure requirements, which may require an in-period submission.*⁷

1.1.2 AEMO's cost recovery

AEMO must seek approval by the ERA of its Allowable Revenue and Forecast Capital Expenditure, for services related to market operation, system planning, market administration and system management, as well as those transitional functions relating to WEM and Constrained Network Access Reforms.⁸

WEM Rule 2.22A provides for AEMO's budget and fee framework under which AEMO must publish an annual budget and Market Fees to be recovered from registered market participants for AEMO to deliver the services required to support its functions.

1.2 DER Roadmap activities

1.2.1 DER Roadmap development

The DER Roadmap is a key workstream in the Energy Transformation Strategy, announced by the Minister for Energy in March 2019. The DER Roadmap was published on 4 April 2020⁹.

⁶ WEM Regulations 12(1), 13(1) and 13(3), and WEM Rules 2.1 and 2.2.

⁷ AR Final Determination https://www.erawa.com.au/cproot/20521/2/AR5-Final-determination-v3_clean.PDF

⁸ WEM Rules 2.22A.2 and 1.20.3

⁹ <https://www.wa.gov.au/government/distributed-energy-resources-roadmap>

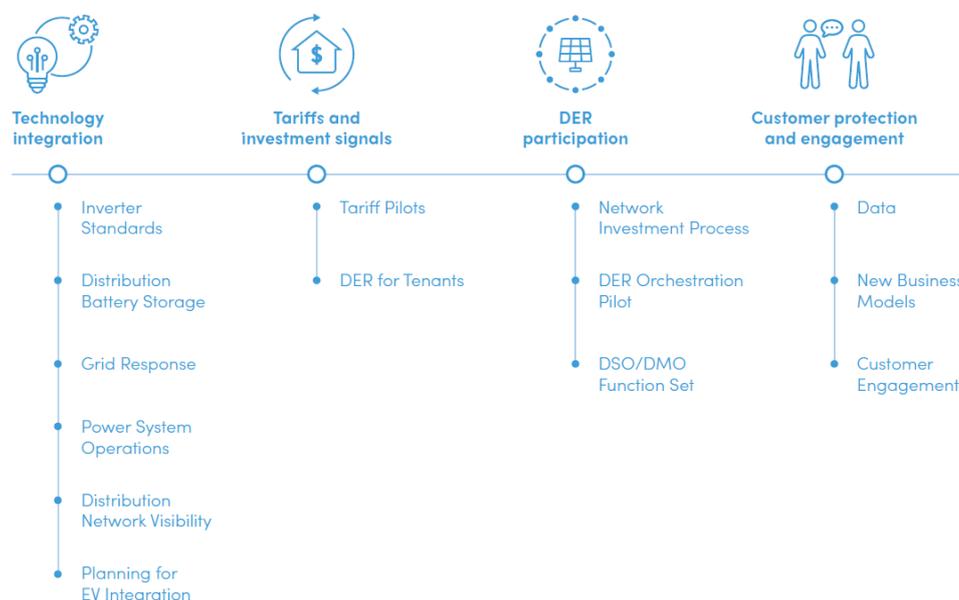
AEMO contributed to the development of the DER Roadmap through participation in working groups, analysis and advice on power system and market challenges, and providing input into DER Roadmap research.

1.2.2 DER Roadmap Implementation

The DER Roadmap outlines a body of work required to implement and better manage DER across the SWIS and WEM. AEMO is identified in the DER Roadmap as the agency responsible for undertaking critical work relating to power system management and market operations and is expected to collaborate on delivery of actions led by others (including Western Power, Synergy and EPWA) where these actions may impact system management and market operations.

The DER Roadmap identifies 14 elements (see Figure 1 below) under four themes to facilitate the safe integration of DER into the WEM and SWIS.

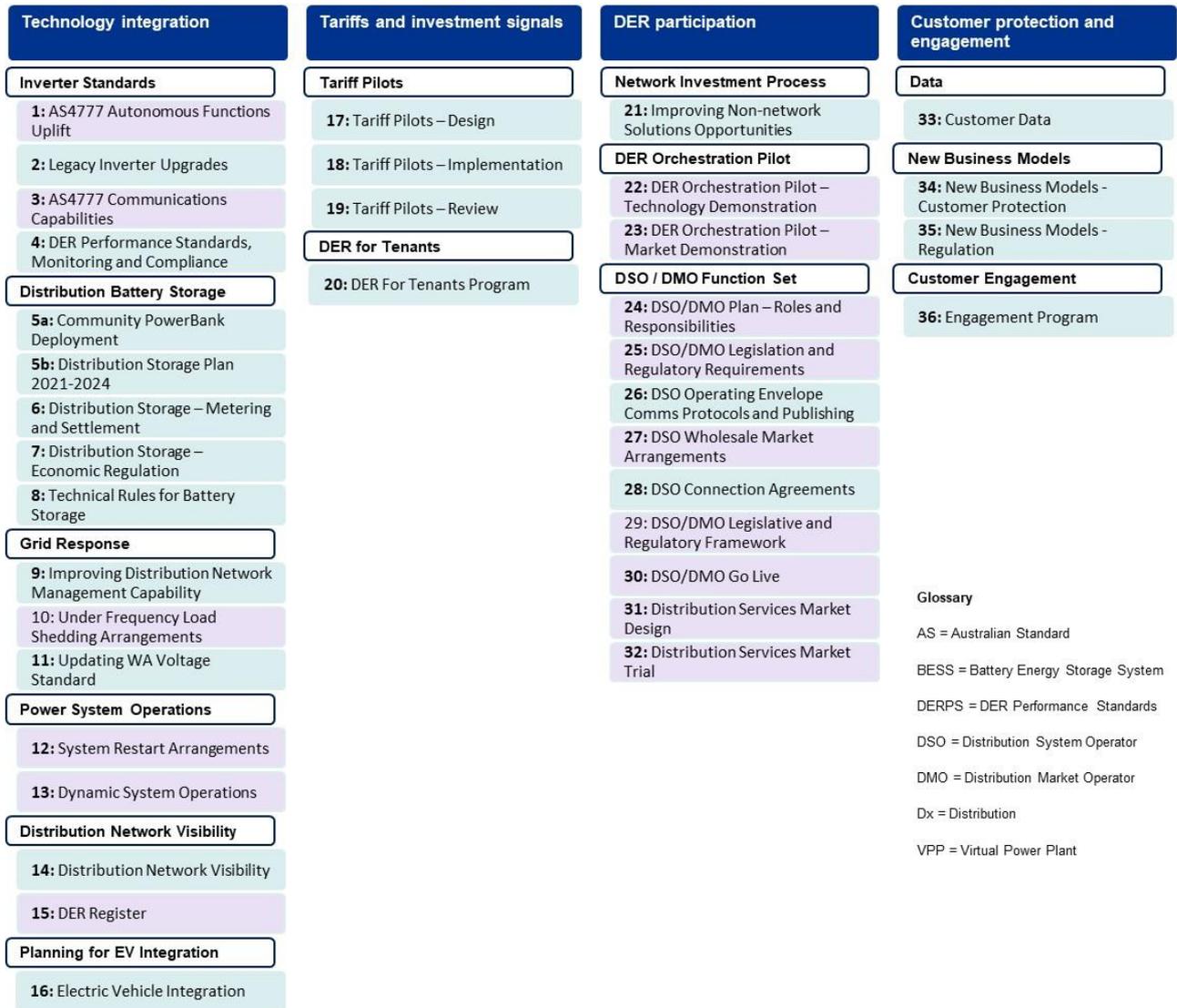
Figure 1: DER Roadmap Elements



Within these elements, the DER Roadmap identifies 36 discrete action items (as shown in Figure 2 below). The 13 action items highlighted in purple are action items that require specific input from AEMO. These action items primarily require regulatory and legislative effort, however in some instances these actions will have capital investment requirements for AEMO (examples include implementing DMO capability and trialling DER orchestration pilots and distribution services markets).

Further detail on the rationale and requirements of each action item is available at www.wa.gov.au/distributed-energy-resources-roadmap.

Figure 2: DER Roadmap Required Actions Requiring AEMO Contribution.



1.2.3 Rationale for WEM Rule change

The DER Roadmap activities that AEMO will be required to undertake are related to the management of power system security and reliability, and will have implications for the operation of the WEM.

AEMO has identified that there is insufficient scope under its existing functions conferred under the WEM Regulations and WEM Rules to enable AEMO to undertake DER Roadmap activities and to recover costs associated with those activities.

This is because:

- The *Electricity Industry Act 2004* that empowers the WEM Regulations and WEM Rules was drafted at a time that did not contemplate DER devices as sources of generation or storage, or two-way power flows on the distribution system.
 - Consequently, the functions of system manager and the market operator were not cast with customer DER in mind, and specifically, do not envisage the need to manage customer DER within system and market operation.

- The *Electricity Industry Act 2004* contains a definition of the SWIS. The definition does not address the extension of the SWIS to DER devices located behind customer connection points, and consequently, whether AEMO has authority to undertake activities that specifically relate to such devices is ambiguous.
- Customer-owned DER are not registered under the WEM Rules.¹⁰ They do not participate in the market and AEMO has no direct regulatory relationship with them.
- Under the WEM Regulations and WEM Rules, AEMO performs its system management and market operation functions with respect to those parties who are rule participants, including those who are registered for participation in the WEM (i.e. Market Participants).
 - For example, the WEM Rules may authorise AEMO as the system manager or the market operator to give directions to, or impose requirements on, registered participants.¹¹
- AEMO’s obligations to plan and operate the SWIS in a secure and reliable manner must now extend to DER. Where AEMO is required to undertake work additional to its “business-as-usual” functions (as set out in the WEM Regulations and WEM Rules) and/or in relation to parties with whom it does not have a direct regulatory relationship, it is uncertain whether this work is being done outside the scope of its existing functions.

AEMO has advised that, for these reasons, it is unable to commit to resourcing DER Roadmap implementation activities within current operational and capital expenditure allowances and related frameworks.

It is therefore proposed that the WEM Rules be amended to provide clarity and certainty so that AEMO can undertake and cost-recover for activities required to deliver the DER Roadmap.

Table 1 outlines the actions recommended by the DER Roadmap, and the rationale for inclusion in the proposed WEM Rule change.

Table 1: Rationale for inclusion in proposed WEM Rules.

Action	Rationale for inclusion in proposed WEM Rules
AS 4777 Autonomous functions uplift	Cost-recovery certainty
AS 4777 Communications Capabilities	Cost-recovery certainty
System Restart Arrangements	Cost-recovery certainty
Dynamic System Operations	Preparatory work, and implementation of, dynamic system modelling incorporating DER Cost-recovery certainty
DER Register	Preparatory work.

¹⁰ Under the proposed changes to registration being progressed by the ETIU, Market Participants will include “facilities” which may themselves be comprised of individual DER devices. Nonetheless, AEMO will not have a direct relationship with these devices, and it is anticipated that it will take some time for such facilities to incorporate many of the existing DER devices.

¹¹ See WEM Regulation 15(2).

	DER Register obligations to be formalised through specific DER Register WEM Rule amendments (detailed in part 2 of this paper)
DER Orchestration Pilots	Development of trial market platform for aggregated DER participation in the WEM
DSO/DMO Planning, Design, Trial and Implementation	Preparatory work for, and establishment of expanded market operator function and supporting market platform design
Distribution Services Market Design and Trial	Design and trial of future market arrangements to accommodate DER

1.3 Proposed approach

1.3.1 Conferral of functions

The following approach is proposed in order to provide clarification and certainty that AEMO can recover costs for DER Roadmap implementation activities.

Under WEM Rule 1.20, the AEMO is conferred functions to “prepare for” and “facilitate the implementation of Wholesale Electricity Market and Constrained Network Access Reform”. It is proposed that the term “Wholesale Electricity Market and Constrained Network Access Reform” in Chapter 11 – Glossary of the WEM Rules be amended, to include the following underlined text:

Wholesale Electricity Market and Constrained Network Access Reform: *means any proposed change to the operation of the Wholesale Electricity Market or related network access arrangements, or the regulatory regime applying to the Wholesale Electricity Market (including the Electricity Industry Act, the Regulations and these Market Rules), and any related activity undertaken by AEMO in connection with implementation of the DER Roadmap, that has been endorsed by the Minister (whether or not legislation has been made to implement it).*

Under this amendment, the Minister for Energy can specify, by letter of endorsement, which DER Roadmap implementation activities AEMO must undertake. The proposed approach also serves to bring AEMO’s functions under the Energy Transformation Strategy into the same location (WEM Rule 1.20) in the WEM Rules.

Importantly, the amendment ensures the ERA determines AEMO’s Allowable Revenue and Forecast Capital Expenditure for the endorsed DER Roadmap activities (under WEM Rule 2.22A – Determination of AEMO’s budget), and AEMO can recover costs through Market Fees. The WEM Rules require Market Participants to contribute toward AEMO’s function costs.

The approach also provides AEMO with immunity from civil monetary liability for activities taken in performance of these new functions under s126 of the *Electricity Industry Act 2004*.

The proposed approach emphasises the relationship between the DER Roadmap activities being undertaken by AEMO, and the operation and evolution of the WEM. Much of the work recommended in the DER Roadmap for AEMO relates to power system management (such as system restart arrangements and dynamic system operation processes) or market evolution (through DER orchestration pilots; and the planning, design, trial and implementation of a Distribution System Operator (DSO) and Distribution Market Operator (DMO)).

1.3.2 Review of costs

The costs associated with the DER activities permitted under the proposed changes in section 1.3.1 will require review and approval by the ERA.

Cost estimates

AEMO has provided estimated costs for the activities required to implement the DER Roadmap action items. Table 2 provides detail on these costs within the current AR5 period (until 1 July 2022). Whilst the DER Roadmap implementation timeline extends into the AR6 period, estimates for these costs are dependent on activities to be completed during the AR5 period - costs incurred in the AR6 period will be provided within AEMO's AR6 submission for approval by the ERA.

These estimates are indicative only and subject to change as further progress is made on the DER Roadmap actions.

Table 2: Estimated cost of DER Roadmap activities - provided by AEMO and subject to refinement.

Workstream	Type	FY 20	FY 21	FY 22	AR5
		\$m	\$m	\$m	\$m
Technology Integration	Opex	0.4	1.4	0.9	2.7
	Capex	0.2	0.3	0.0	0.5
DER Participation	Opex	0.2	0.9	1.0	2.1
	Capex	0.1	1.5	1.8	3.3
Project Symphony	Opex	0.1	0.0	0.0	0.1
	Capex	0.0	2.1	1.4	3.5
Totals	Opex	0.7	2.3	1.9	4.8
	Capex	0.2	3.9	3.2	7.4

Notes:

- CAPEX estimates to be refined in the coming months and submitted to ERA for in-period review (as per draft rules)
- OPEX incurred within AEMO AR5 overspend allowance
- Does not include costs funded by ARENA
- Does not include DER Register implementation costs (discussed below)
- FY 20 includes expenditure incurred since 1 January 2020.

It is anticipated that the capital expenditure requirements within the AR5 period will result in AEMO exceeding its approved Forecast Capital Expenditure allowance. Consequently, in line with WEM Rule 2.22A.9, AEMO will be required to make an application to the ERA to adjust this allowance.

Changes to review process

To resolve uncertainty regarding timeframes for this "in-period" review, and to streamline the review process, further guidance will be provided in the WEM Rules to focus the ERA's review to DER Roadmap implementation activities only.

It is proposed that the WEM Rules be amended to add Rule 1.20.6 – “AEMO budget adjustment for DER Roadmap Implementation”.

Under this new Rule, AEMO may apply to the ERA for an adjustment to the approved operational and capital expenditure within AR5, to include DER Roadmap implementation costs. The AEMO must provide any additional information requested by the ERA to assess the application.

The proposed approach also provides clarity on the timeframes for assessment of the application, providing the ERA with at least 30 business days for making a determination.

In making the determination, the ERA must consider the existing guidance in the WEM Rules for determining AEMO’s budget (under clauses 2.22A.11(a) to (d)). However, the review is restricted to apply only to information related to this application (provided by AEMO in its submission or in response to the ERA’s request). The ERA is also unable to reconsider already approved expenditure.

It is anticipated that AEMO will be required to undertake substantial work in preparation for the establishment of a Distribution System Operator and Distribution Market Operator. In recognition of the need for this work before 1 July 2022, guidance is provided to the ERA in 1.20.6(iv).

To enable the above amendments, a number of Chapter 11 – Glossary terms are proposed, including “DER Roadmap”, “DER Roadmap Implementation Costs”, and “DER Roadmap Actions”.

2. DER Register

2.1 Introduction

In aggregate, DER can have material impacts on the power system – because it lies ‘behind the meter’, the system operator does not have visibility of these impacts for appropriate planning, and secure and reliable power system operation.

To improve the visibility of ‘behind the meter’ DER, and upon request by the COAG Energy Council, the Australian Energy Market Commission (AEMC) made a Final Rule determination to create a register of DER data for the National Electricity Market (NEM). The Final Rule determination amends the National Energy Rules to obligate AEMO to establish, maintain and update a register of static data for DER generation devices (and share data with the public and network businesses where relevant). Distribution Network Service Providers in the NEM are obligated to collect specified DER generation information from their customers and provide this information to AEMO.

The NEM DER Register commenced on 1 December 2019, with a full roll-out occurring in March 2020. However, as the NEM DER Register is implemented under the National Electricity Rules which do not apply in Western Australia, the NEM DER Register does not extend to the WEM in the SWIS.

The DER Roadmap identified that a DER Register for Western Australia (hereafter, “SWIS DER Register”) is required, with the intention of providing AEMO with the data necessary to support its function of ensuring that the SWIS operates in a secure and reliable manner.

The benefits of implementing a SWIS DER Register include increased visibility of DER to AEMO and Western Power to:

- enable effective and efficient management of the market through more accurate data on DER performance expectations during contingency events;
- refine forecasting and planning decisions based on the latest DER penetration data; and
- increase visibility of the DER fleet to inform the direction of standards for DER performance requirements over the medium-longer term.

2.2 Proposed approach to a SWIS DER Register

It is proposed that the WEM Rules be amended to enable AEMO to establish a SWIS DER Register for DER generation devices, on the basis that it serves a purpose in connection with AEMO’s existing function of ensuring the SWIS operates in a secure and reliable manner.

Under the amendments, AEMO will also be required to develop and publish a SWIS DER Register Information Procedure that will:

- specify the data model for the register and define the processes for data collection and transfer; and
- identify the data collection requirements regarding the timing and manner of provision of DER Register data from Western Power to AEMO, and subsequent access to this data.

Under the amendments, Western Power will be required to provide:

- information it has in its possession, collected through the Notices of Completion¹² and other available sources, that is of the kind described in the SWIS DER Register Information Procedure to AEMO.

A number of Chapter 11 – Glossary definitions are proposed to enable the above amendments.

2.2.1 Data requirements

A SWIS DER Register will be comprised of static DER data that is relevant to facilitate efficient decision-making by AEMO and Western Power to support power system security and reliability, and to enable DER participation in competitive markets.

The static data required by the SWIS DER Register is essential for providing visibility of DER, its capabilities and anticipated response to power system conditions such as disturbances, and is also the initial requirement for obtaining the operational data needed for forecasting and planning.

Broadly, the data required by the SWIS DER Register will pertain to device type, capability and a range of performance settings and functionalities relating to power quality response and device protection modes (i.e. trip settings).

AEMO and Western Power consider that the scope and level of granularity of information specified in the NEM DER Register Information Guidelines¹³ are appropriate and relevant in a Western Australian context. It is therefore recommended that the SWIS DER Register mirrors the DER Register data model in the NEM DER Register Information Guidelines, with consideration to be given to the inclusion of data relating to electric vehicles and other relevant inverter-connected devices.

It is intended that the SWIS DER Register Information Procedure is adapted from the NEM DER Register Information Guidelines. Leveraging the same data collection processes and enabling systems solution as part of the SWIS DER Register Information Procedure would provide:

- a least-cost solution (by allowing AEMO to leverage existing systems and frameworks); and
- a low risk and expedient pathway to meet the DER Roadmap recommended timeframe for implementation and operation.

Under the proposed approach, Western Power would be required to include data it receives through its DER connection approval process and its receipt of Notices of Completion of Works. Notice of Completion data is received from Building and Energy at the Department of Mines, Industry Regulation and Safety (DMIRS) and is transferred to Western Power daily.

2.2.2 Transfer of Register data to AEMO

DER data records held in the DER Register will be provided by Western Power from two sources: as-approved data, and as-installed data.

As-approved data includes the parameters around the connection point and the type of generating system that has been approved by the network – as-approved data can include specific protection requirements that govern how the DER interacts with the power system that may not be captured through as-installed data..

¹² Electrical contractors are required to submit Notices of Completion in accordance with energy safety obligations under regulation 52 of the *Electricity (Licensing) Regulations 1991* and regulation 242 of the *Electricity Regulations 1947*.

¹³ DER Register Information Guidelines available at: <https://www.aemo.com.au/energy-systems/electricity/der-register>

As-installed data includes the specifics of the equipment installed. This includes specific inverter types and serial numbers, and control or protection settings that can only be identified by the electrical contractor accountable for the installation. Electrical contractors are required to submit Notices of Completion for electrical work including installation of small generating units like rooftop solar PV, through the Building and Energy eNotice online platform.

There is an opportunity to ensure a SWIS DER Register includes an adequate level of data through amendment of the information collected through Notices of Completion. It is proposed that the data collected through the Notices of Completion is expanded to align with the intended scope to be included in the SWIS DER Register Guidelines – the ETIU will work with DMIRS and Western Power to ensure appropriate data is collected through this process.

The SWIS DER Register will also capture all available data on historically installed (prior to the go-live date) DER, which will be provided by Western Power to AEMO through an agreed-upon process.

2.2.3 Estimated costs

AEMO has provided estimated costs for the implementation of the SWIS DER Register in Table 3 below. These estimates are indicative only and subject to change as further progress is made on the DER Roadmap actions.

Table 3: Estimated cost of DER Register establishment – provided by AEMO and subject to refinement.

Cost component	FY 19-20	FY 20-21
Opex	\$20,000	\$20,000
Capex	\$20,000	\$900,000 ^{a)}

a) FY 21 capital expenditure to be confirmed following planning

Feedback requested

Feedback is requested from industry stakeholders on the proposed amendments to the WEM Rules to enable the necessary participation of AEMO in DER Roadmap implementation and the establishment of a DER Register.

Submissions are requested by **5.00pm, Friday 22 May 2020**, and can be provided by email to: energytransformation@energy.wa.gov.au.

Please contact Jai Thomas if you have any queries regarding the submission process via: jai.thomas@energy.wa.gov.au.