

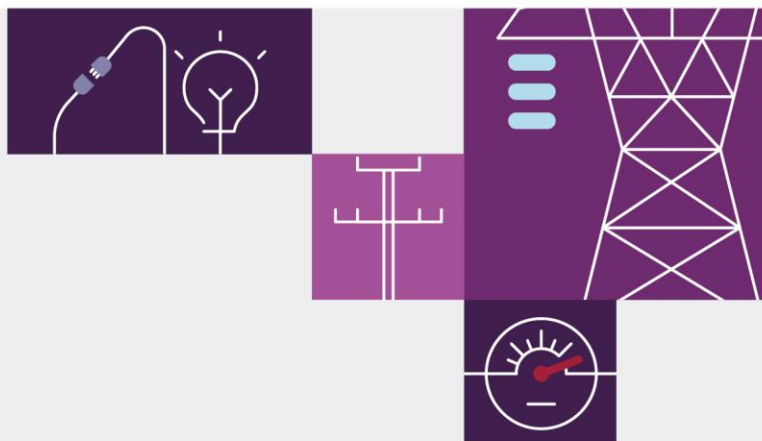
Wholesale Electricity Market

Procedure Change Report: AEPC_2022_02

April 2023

WEM Procedure: Distributed Energy
Resources (DER) Register Information





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Executive summary

Purpose

The publication of this Procedure Change Report and the accompanying WEM Procedure completes the Procedure Change Process conducted by AEMO to consider proposed amendments to the WEM Procedure: Distributed Energy Resources (DER) Register Information (**Procedure**) under the Wholesale Electricity Market Rules (**WEM Rules**).

Proposed amendments

AEMO initiated a Procedure Change Proposal to amend the WEM Procedure: DER Register Information Procedure to:

- Incorporate electric vehicle supply equipment (**EVSE**) data in accordance with action 12 of the Government of Western Australia's Electric Vehicle Action Plan: Preparing Western Australia's electricity system for EVs as developed by Energy Policy WA (EPWA)¹.
- Integrate in the Procedure amendments to the Australian Standard AS/NZS 4777.2:2015 that has been superseded by AS/NZS 4777.2:2020².
- Implement minor changes that reflect the changed operational expectations of DER in the WEM and South West Interconnected System (**SWIS**) (e.g., implementation of Emergency Solar Management³).
- Improve the completeness and quality of data exchanged between the Network Operator and AEMO (e.g., conveying additional context to improve the ability for the Network Operator to comply with the Procedure and better align the Procedure with related Technical Specifications).

AEMO also took the opportunity to propose the following minor and administrative changes:

- Reinforce alignment to the WEM Rules.
- Move the Procedure to AEMO's new WEM Procedure template.
- Make minor administrative, editorial and typographical changes.

AEMO considers the proposed changes are consistent with WEM Rules and would better achieve Wholesale Market Objectives (a), (c) and (d).

Consultation

AEMO published the Procedure Change Proposal (AEPC_2022_02) and issued a call for submissions on 12 December 2022. AEMO specifically sought feedback on whether:

- Stakeholders considered the proposed amendments to the DER Generation Information were suitable to achieve the appropriate level of visibility for EVSE to support the Government of Western Australia's

¹ Available at: <https://www.wa.gov.au/government/publications/electric-vehicle-action-plan-preparing-was-electricity-system-evs>

² Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020>

³ Available at: <https://www.wa.gov.au/organisation/energy-policy-wa/emergency-solar-management>

Electric Vehicle Action Plan as developed by EPWA and to balance risks to Power System Security and Power System Reliability, and the overall market;

- Stakeholders believed there were any other relevant issues that had not been considered;
- The proposed changes to the Procedure effectively implement AEMO's intended outcomes; and
- The proposed Procedure amendment commencement date of 2 October 2023, which in AEMO's opinion, would allow sufficient time after the publication of the Procedure Change Report for Rule Participants to implement the changes required by the amended Procedure.

On 17 January 2023, AEMO held an AEMO Procedure Change Working Group (**APCWG**) meeting to provide the opportunity for engagement on the proposed changes and presented an overview of the Procedure Change Proposal.

At the APCWG⁴ meeting, stakeholders asked when AEMO anticipated releasing the WA DER Register Technical Specification⁵. AEMO advised that this would be after the completion of the WEM Procedure Change report, in approximately May 2023. There were no further comments, or any material issues raised from attendees on the proposed amendments to the WEM Procedure.

The submission period closed on 24 January 2023 in accordance with the call for submissions published with the Procedure Change Proposal. Three submissions were received from AGL, Synergy and Western Power that are further elaborated on and responded to in Section 3.2.

In addition, submissions suggested minor amendments to the Procedure. AEMO has adopted several of these suggestions in the revised Procedure and has provided responses together with AEMO's proposed additional revisions to the Procedure in Appendix 1, Table 1, and section 4.1 of this report.

AEMO's decision

AEMO's decision is to accept the Procedure, as amended following the consultation process.

AEMO has made this decision on the basis that:

- The revised Procedure is consistent with:
 - the *Electricity Industry Act 2004*, *WEM Regulations 2004*, and *WEM Rules*;
 - the Wholesale Market Objectives and may better address objectives (a), (c) and (d);
- Submissions received during the consultation period provided general support and commitment to the delivery of the Government of Western Australia's DER Roadmap⁶ and Electric Vehicle Action Plan as developed by EPWA, which are advanced by the proposed changes;
- Amendments to incorporate EVSE have been made, in preparation for when the Network Operator receives EVSE DER Generation Information as part of the expected actions to be undertaken as part of

⁴ Available at: <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/wem-aemo-procedure-change-working-group>

⁵ Available at: <https://www.aemo.com.au/-/media/files/market-it-systems/der-guides/wem-der-register-technical-specification-and-release-schedule.pdf?la=en>

⁶ <https://www.wa.gov.au/government/publications/der-roadmap>

EPWA's Roles and Responsibilities Action Plan⁷ and Electric Vehicle Action Plan⁸, as guided by EPWA and discussed with Western Power prior to the publication of this Procedure Change Report.

- Amendments align with current Australian Standards AS/NSZ 4777.2:2020 and provide a benefit by removing significant complexity associated with the provision of individual DER Generation Information for the vast majority of DER installed after December 2021. These modifications will simplify the capture and transfer of data, allowing the same information to be exchanged using a reduced number of data fields. As a result, these changes should reduce the complexity in the management of IT systems and compliance of the data for the Network Operator and will improve the quality of DER Generation Information provided to AEMO; and
- The amendments improve the completeness and quality of data that is currently exchanged between AEMO and the Network Operator and will deliver broader benefits and lessen costs to comply with existing requirements.

Next steps

The revised WEM Procedure: Distributed Energy Resources (DER) Register Information will commence on 2 October 2023.

⁷ Available at: <https://www.wa.gov.au/system/files/2022-07/DER%20Orchestration%20Roles%20and%20Responsibilities%20information%20Paper.pdf>

⁸ Available at: <https://www.wa.gov.au/government/publications/electric-vehicle-action-plan-preparing-was-electricity-system-evs>



Contents

Executive summary	3
1 Background	7
1.1 Regulatory requirements	7
1.2 Context	7
1.3 Procedure change process and timetable	8
2 Proposed procedure change	8
2.1 Detail of the proposed procedure change	8
2.2 Proposed drafting	11
3 Consultation process	11
3.1 Market Advisory Committee and Working Group	11
3.2 Submissions received during consultation period	12
4 AEMO's assessment	15
4.1 Further changes to the Procedure	15
4.2 Consistency with Electricity Industry Act, WEM Regulations, and WEM Rules	16
4.3 Consistency with Wholesale Market Objectives	16
4.4 Implementation of the Procedure	16
4.5 AEMO's decision and commencement	17
Appendix 1. Response to drafting suggestions	19

1 Background

1.1 Regulatory requirements

AEMO has published this Procedure Change Report in accordance with the Procedure Change Process specified in section 2.10 of the WEM Rules.

1.2 Context

The Procedure Change Proposal was prompted by the Government of Western Australia's Electric Vehicle Action Plan: Preparing Western Australia's electricity system for EVs⁹ and the Distributed Energy Resources Roadmap¹⁰ as developed by EPWA. Action 12 of the Electric Vehicle Action Plan outlines the present limited visibility of Electric Vehicles and the need to ensure Electric Vehicle charging points are captured within the DER Register to assist with improving forecasting around the impacts of EV's on the SWIS and WEM.

To be taken as a step toward improving visibility of EV's and their charging devices in the power system AEMO has been assigned as part of the Electric Vehicle Action Plan with updating the DER Register system and information flow processes in preparation to incorporate Electric Vehicle charger information (EVSE).

DER Register Information is defined in the WEM Rules as information in relation to a Small Generating Unit and Storage Works with an export capacity of less than 5 MW. *Storage Works* and *Storage Activities* are defined in the *Electricity Industry Act 2004*¹¹ however electrical equipment used for EV charging is not currently captured as part of the DER Register information exchanged between the Network Operator and AEMO.

In February 2021, the Distributed Energy Integration Program EV Data Availability Taskforce¹² released recommendations around EV and EVSE data requirements. These recommendations were reviewed when considering the amendments to the WEM Procedure: DER Register Information Procedure and defining what additional DER Generation Information the Network Operator should be required to provide to AEMO. AEMO also undertook initial consultation with Western Power prior to specifying this data.

In addition to the anticipated growth in Electric Vehicles (EVSE) AEMO recognises that the operational nature of DER is changing in the SWIS and WEM. New systems and control capabilities have been implemented that may expose the SWIS (given its isolation) to broader power system and market impacts. The proposed amendments therefore include additional DER Generation Information categories to provide greater visibility of and insights into these operational arrangements.


Since the implementation of the WEM DER Register in 2020 there have also been changes to DER installation standards. In particular the revised AS/NZS 4777.2:2020 standard significantly standardised network connection requirements, enabling a change to the format of some DER Generation Information required by the Procedure.

⁹ Available at: <https://www.wa.gov.au/government/publications/electric-vehicle-action-plan-preparing-was-electricity-system-evs>

¹⁰ Available at: https://www.wa.gov.au/system/files/2020-04/DER_Roadmap.pdf

¹¹ Available at: https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_287_homepage.html

¹² Available at: https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/der-program/deip-ev/2021/deip-ev-data-availability-taskforce-report.pdf?la=en



As a result, the proposed amendments to the Procedure will simplify the capture and transfer of data that allow the same information to be exchanged using a reduced number of data fields to be provided from the Network Operator for inverter-based DER equipment commissioned after December 2021.

The administrative changes proposed aim to improve clarity in relation to the DER Generation Information specified in the Procedure.

AEMO initiated a Procedure Change Proposal published on 12 December 2022 to amend the WEM Procedure: DER Register Information Procedure to:

- Incorporate EVSE data in accordance with action 12 of the Electric Vehicle Action Plan: Preparing Western Australia's Electricity System for EVs as developed by EPWA¹³.
- Integrate in the WEM Procedure amendments to the Australian Standard AS/NZS 4777.2:2015 which has been superseded by AS/NZS 4777.2:2020¹⁴ in December 2021.
- Implement minor changes that reflect the changed operational expectations of DER in the WEM and the SWIS (e.g., implementation of Emergency Solar Management¹⁵).
- Improve the completeness and quality of data exchanged between the Network Operator and AEMO (e.g., conveying additional context to improve the ability for the Network Operator to comply with the Procedure and better aligning the Procedure with related Technical Specifications).
- Reinforce alignment to the WEM Rules and make other minor administrative changes.

1.3 Procedure change process and timetable

On 12 December 2022, AEMO published the Procedure Change Proposal (AEPC_2022_02) and issued a call for submissions¹⁶. The proposal was progressed using the Procedure Change Process specified in section 2.10 of the WEM Rules with submissions required by 24 January 2023.

2 Proposed procedure change

This section details the changes that AEMO proposed when the call for submissions was published as outlined in the Procedure Change Proposal¹⁷.

2.1 Detail of the proposed procedure change

2.1.1. Adapting to incorporate other DER technologies

The DER Register was initially developed to accommodate Small Generation Units and Storage Works, being uniformly defined by their ability to inject energy into the SWIS. As a result, references to equipment capacities


¹³ Available at: <https://www.wa.gov.au/government/publications/electric-vehicle-action-plan-preparing-was-electricity-system-evs>

¹⁴ Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020>

¹⁵ Available at: <https://www.wa.gov.au/organisation/energy-policy-wa/emergency-solar-management>

¹⁶ Available at: https://www.aemo.com.au/consultations/current-and-closed-consultations/aepc_2022_02

¹⁷ Available at: https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2022/aepc_2022_02/procedure-change-proposal-aepc_2022_02.pdf?la=en



generally only referred to generation (Storage Works were assumed to inject and withdraw electricity symmetrically). The introduction of EVs as a form of Storage Works, and EVSE as a ‘charge only’ technology has led to a revised approach to DER Generation Information.

The amended Procedure was updated to reflect that all DER can be characterised with three different operating modes, that could all be provided from a single Small Generating Unit or Storage Works:

- Injection of electricity (i.e., generation or export);
- Withdrawal of electricity (i.e., load, consumption or import); and
- Storage of electricity (i.e., potential energy stored as electrical energy).

In light of these developments, AEMO sought to introduce new fields to the DER Register (as outlined in Table 1 of the Procedure Change Proposal¹⁸) which AEMO undertook initial consultation with Western Power prior to specifying this data. The additional DER Generation Information added by these amendments will enable a deeper understanding of, and the extent to which, controllable load (in the form of EVSE) is installed across the SWIS.

EVs are anticipated to be a significant additional source of electricity demand over the coming 5-10 years, as EV prices fall and global business and government policies support and promote sales of EVs. The additional EVSE information provided will provide greater operational visibility and improve AEMO’s ability to understand the potential for controllable generation and load capability from DER.

2.1.2. Adapting to changing operational expectations

New technical requirements that significantly influence the operational characteristics of DER have been introduced in the SWIS since the implementation of the DER Register. These requirements are not always visible to AEMO. For example, the Network Operator routinely apply limitations on the export of solar photovoltaic from customer connection points to the Network, and the Emergency Solar Management scheme introduces new operational capabilities which are not visible to AEMO.


The amended Procedure seeks to increase AEMO’s visibility by including additional information for these operational characteristics in the DER Generation Information required to be provided under the Procedure. AEMO’s view is that when applied at large scale, as is being done in the SWIS, these characteristics can significantly influence AEMO’s ability to forecast system conditions and understand potential risks. For example, the introduction of Emergency Solar Management¹⁹ brings with it a high dependency on inverter equipment manufacturer control systems. By receiving information on the communication control mechanisms used for Emergency Solar Management, AEMO can better understand any potential risks associated with forecasting and managing an Emergency Solar Management event to maintain security and stability of the power system.

AEMO proposed amendments to include additional data fields to Appendix A (DER Register Data Model) to adapt to changing and operation expectations as outlined in Table 2 of the Procedure Change Proposal²⁰. This information is either included in the Network Operator’s own conditions of approval or provided to or received by the Network Operator from other sources. Therefore, AEMO considers that this data should be readily available to

¹⁸ Available at: https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2022/aepc_2022_02/procedure-change-proposal-aepc_2022_02.pdf?la=en

¹⁹ Available at: <https://www.wa.gov.au/organisation/energy-policy-wa/emergency-solar-management>

²⁰ Available at: https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2022/aepc_2022_02/procedure-change-proposal-aepc_2022_02.pdf?la=en



the Network Operator and can be provided to AEMO at minimal cost which will increase visibility in support of AEMO's forecasting and operational functions.

2.1.3. Adapting to changing standards

Historically, network service providers and operators across Australia have implemented local connection requirements for DER, and in preference to requirements that may be stated in applicable Australian Standards. This approach has likely enabled greater penetration of DER across each network, whilst respecting the local network conditions. However, it has created a challenge for data collection for the DER Register, as specific data fields needed to be provided by individual Network Operators, rather than standard reference sources.

This issue has largely been overcome with the implementation of the revised Australian Standard AS/NZS 4777.2:2020²¹, which creates uniformed requirements across 'regions' of Australia for all small-scale inverter-based DER connected at low voltage and rated below 200 kVA. This updated approach enables the DER Generation Information provided to AEMO to be reduced significantly, given that the selection of the appropriate region will enable AEMO to refer to the AS/NZS 4777.2:2020 standard (see Section 2.1.4 below).

Despite this, it is feasible that the Network Operator may again implement their own requirements and override requirements set out in the updated AS4777 standard. The Procedure amendments implement a 'by exception' process to accommodate this in two ways. Firstly, the amended Procedure will require the Network Operator to inform AEMO if they implement a new requirement. Secondly, the data model includes a free text field where the Network Operator must provide the specific amended requirement as DER Generation Information.

It is also feasible that a Network Operator could become aware of DER Generation Information for DER that was commissioned prior to the new Australian Standard coming into effect. Hence the existing data fields have been retained in the Procedure to support the completeness and accuracy of DER Generation Information for DER installed prior to the updated AS4777 standard coming into effect as of December 2021.

The WEM Rules do not limit the DER Register to inverter-based technologies; the DER Generation Information requirements also apply to Small Generating Units that are rotating machines and rated below 5 MW, despite these being less common. Hence, the existing fields for the relevant standard and settings for non-inverter DER remain in the amended Procedure.


The proposed amendments remove significant complexity associated with the provision of individual DER Generation Information for the vast majority of DER installed after December 2021. These modifications will simplify the capture and transfer of data, allowing the same information to be exchanged using a reduced number of data fields. As a result, these changes should reduce the complexity in the management of IT systems and compliance of the data for the Network Operator and will improve the quality of DER Generation Information provided to AEMO.

2.1.4. Australian Standard AS/NSZ.4777.2:2020

The AS/NSZ.4777.2:2020²² Grid Connection of Energy Systems via Inverters (which came into effect from 18 December 2021) introduced regional settings for inverter-based resources, with a requirement that all new inverter-based resources connected to the SWIS apply region 'Australia B' settings.

²¹ Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020> Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020>

²² Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020> Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020>



The proposed changes to the DER Register were updated to capture the region setting as part of Appendix A (DER Register Data Model) at the AC Connection Level 2 Data. Where the Network Operator provides the 'Region Setting' as Australia B, AEMO will interpret the Australia B settings as set and published in the Australian Standard AS/NZS.4777.

The specific amendments to Appendix A (DER Register Data Model) to incorporate the Australian Standard AS/NZS.4777.2:2020 were outlined in Table 3 of the Procedure Change Proposal²³.

2.1.5. Other amendments

In undertaking the proposed amendments AEMO has also taken the opportunity to revise aspects of the Procedure where revisions were identified that would reinforce the completeness and quality of the DER Generation Information received by AEMO. For example, where AEMO identified areas of ambiguity amendments were made to further describe the information in the different information levels and the general rules to support the interpretation of the data model.

These amendments are generally minor and add clarification to the current DER Generation Information. AEMO's view is that these amendments will not materially impact Network Operators' costs and will assist to improve compliance with the Procedure.

The specific amendments were outlined in section 3.3 of the Procedure Change Proposal²⁴.

2.2 Proposed drafting

AEMO published a draft of the proposed Procedure for consultation on 12 December 2022. Clean and change-marked versions are available at <https://www.aemo.com.au/energy-systems/electricity/wholesale-electricity-market-wem/procedures-policies-and-guides/procedures/ongoing-procedure-change-proposals>.

3 Consultation process

3.1 Market Advisory Committee and Working Group

AEMO published the Procedure Change Proposal (AEPC_2022_02) and issued a call for submissions on 12 December 2022²⁵.


The Market Advisory Committee has delegated its advisory role with respect to AEMO Procedure Change Proposals to the APCWG, in accordance with clause 2.3.17(a) of the WEM Rules.

An overview of the proposed amended WEM Procedure: Distributed Energy Resources Information was presented at the APCWG meeting held on 17 January 2023. The minutes and papers from the meeting can be

²³ Available at: https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2022/aepec_2022_02/procedure-change-proposal-aepec_2022_02.pdf?la=en

²⁴ Available at: https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2022/aepec_2022_02/procedure-change-proposal-aepec_2022_02.pdf?la=en

²⁵ Available at: https://www.aemo.com.au/consultations/current-and-closed-consultations/aepec_2022_02



found at: <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/wem-aemo-procedure-change-working-group>.

In relation to the proposed changes, stakeholders asked when AEMO anticipated releasing the WA DER Register Technical Specification²⁶. AEMO advised that this would be after the completion of the WEM Procedure Change report, in approximately May 2023. There were no further comments, or any material issues raised from attendees on the proposed amendments to the WEM Procedure.

3.2 Submissions received during consultation period

AEMO published the Procedure Change Proposal (AEPC_2022_02) and issued a call for submissions on 12 December 2022. The submission period closed on 24 January 2023. AEMO received three submissions from:

- AGL
- Synergy
- Western Power

In summary:

- The submissions demonstrated general support and commitment to the delivery of the Western Australian's State Government's Energy Transformation Strategy, including EPWA's WA's DER Roadmap²⁷ and Electric Vehicle Action Plan²⁸.
- Synergy and Western Power provided feedback regarding the uncertainty on expected processes for data sharing between aggregators and the Distributed System Operator, which are also recognised as items to be resolved as part of EPWA's DER Roadmap, Roles and Responsibilities Action Plan²⁹.

In response and in accordance with the current WEM Rule obligations under Section 3.24 Distributed Energy Resource Register, AEMO has sought to ensure that the WEM Procedure: DER Register Information Procedure is limited to requirements and processes by which the DER Generation Information relating to connection points on a Network Operator's network is reported to AEMO by the Network Operator.

In relation to Synergy's concerns, AEMO does not consider that the proposed amendments to the Procedure would place obligations on parties other than Network Operators.

- Synergy identified challenges in current data exchange processes between Synergy and the Network Operator.

In response, AEMO notes Synergy's feedback in regards to current data exchange processes and challenges between Synergy and the Network Operator as being matters to be addressed between the respective organisations.


AEMO acknowledges that data exchange processes between Synergy and the Network Operator would benefit from further review as these processes can impact the overall quality of data exchanged, including the DER data provided to AEMO. AEMO is also supportive of enabling future discussions to evolve as part of

²⁶ Available at: <https://www.aemo.com.au/-/media/files/market-it-systems/der-guides/wem-der-register-technical-specification-and-release-schedule.pdf?la=en>

²⁷ Available at: <https://www.wa.gov.au/government/publications/der-roadmap>

²⁸ Available at: https://www.wa.gov.au/system/files/2021-08/EPWA-EVActionPlan_18Aug2021e.pdf

²⁹ Available at: <https://www.wa.gov.au/system/files/2022-07/DER%20Orchestration%20Roles%20and%20Responsibilities%20information%20Paper.pdf>



EPWA's Roles and Responsibilities Action Plan³⁰ to understand this further and to support the collection and compliance of DER data.

- Synergy provided feedback that data provision should not be overly onerous so that the costs should not exceed benefits and should ensure alignment with the WEM Objectives. Furthermore, Western Power sought clarity on the use of the data by AEMO.

In response, AEMO advises amendments to the WEM Procedure: Distributed Energy Resources (DER) Register Information Procedure to incorporate EVSE as a new type of technology in support of the WEM Rule Objective of avoiding discrimination in the market against energy options and technologies.

As per EPWA's EV Action Plan (action 10)³¹, Western Power and AEMO are to have regards to the data findings of the Distributed Energy Integration Program (DEIP) Data Availability Taskforce to enable EVSE to be recognised as a new type of technology to be incorporated into the DER Register. The DEIP recommendations report³² was used as the basis when considering and defining the DER Generation Information requirements for EVSE to be incorporated into the DER Register. Discussions between AEMO and Western Power to identify EVSE DER Generation Information requirements also occurred prior to the release of the Procedure Change Proposal.

Amendments to incorporate new requirements have been kept to a minimum by introduction of nine new data fields with associated benefits as follows:

- Four new fields to incorporate the new technology type of EVSE as a form of load (as outlined in Table 1 of the Procedure Change Proposal).

Modifications to incorporate EVSE were deemed necessary as the DER Register is not designed to capture load characteristics. The additional DER Generation Information introduced by these amendments will enable a deeper understanding of, and the extent to which, controllable load (in the form of EVSE) is installed across the SWIS. Such visibility will support AEMO by enabling better forecasting and management of the system and market by considering the impacts of load from this type of DER equipment.

This information will support achieving visibility of EVSE in preparation for when the Network Operator receives EVSE DER Generation information as part of the expected actions to be undertaken in accordance with the Government of Western Australia's DER Roadmap and EV Action Plan³³ as developed by EPWA. This will enhance AEMO's ability to balance risks to Power System Security and Power System Reliability and provide benefits to the overall market.

- Three new fields to incorporate and adapt to changing and operational expectations such as the Emergency Solar Management scheme³⁴ introduced on 14 February 2022 to receive information on the mechanisms used for DER Equipment control capabilities and actors (as outlined in table 2 of the Procedure Change Proposal).

Typically, this information is either included in the Network Operator's own conditions of approval or provided to or received by the Network Operator from other sources. AEMO considers that this data


³⁰ Available at: <https://www.wa.gov.au/system/files/2022-07/DER%20Orchestration%20Roles%20and%20Responsibilities%20information%20Paper.pdf>

³¹ Available at: https://www.wa.gov.au/system/files/2021-08/EPWA-EVActionPlan_18Aug2021e.pdf

³² Available at https://www.aemo.com.au/-/media/files/stakeholder_consultation/working_groups/der-program/deip-ev/2021/deip-ev-data-availability-taskforce-report.pdf?la=en

³³ Available at: <https://www.wa.gov.au/government/publications/electric-vehicle-action-plan-preparing-was-electricity-system-evs>

³⁴ Available at: <https://www.wa.gov.au/organisation/energy-policy-wa/emergency-solar-management>



should be readily available to Network Operators and able to be provided to AEMO at minimal cost, which will deliver benefits by increasing visibility in support of AEMO's forecasting and operational functions.

- Two new fields to adapt to the change in Australian Standard AS/NSZ.4777.2:2020³⁵ Grid Connection of Energy Systems via Inverters which came into effect from 18 December 2021. The amended Australian Standard introduced regional settings for inverter-based resources, with a requirement that all new inverter-based resources connected to the SWIS apply region 'Australia B' settings (as outlined in table 3 of the Procedure Change Proposal).

AEMO deems these amendments as necessary to align the DER Register with the current Australian Standard AS/NSZ.4777.2:2020 and provide a benefit by removing significant complexity associated with the provision of individual DER Generation Information for the vast majority of DER commissioned after December 2021. Amendments incorporated will significantly reduce DER Generation Information to be provided to AEMO by the Network Operator. These modifications will simplify the capture and transfer of data that allow the same information to be exchanged using a reduced number of data fields. As a result, these changes are expected to reduce the complexity in the management of IT systems and compliance of the data for the Network Operator and will improve the quality of DER Generation Information provided to AEMO.

- Western Power raised concerns that the WEM Rules and *Electricity Industry Act 2004* as currently drafted may limit the inclusion of EVSE, and that amendments to the WEM Rules were required to enable the inclusion of EVSEs.

Subsequent to stakeholder consultation, AEMO has discussed these interpretations with EPWA and Western Power to confirm that EVSE is to be considered as 'Storage Works' as defined in *Western Australia's Electricity Industry Act 2004*.

AEMO's amendments to the Procedure are in accordance with the Wholesale Electricity Rule (WEM) obligations under Section 3.24 Distributed Energy Resource Register, and consistent with applicable definitions under the WEM Rules³⁶ and the *Electricity Industry Act 2004*³⁷.

AEMO acknowledges if future legislative changes arise from the Roles and Responsibilities Action Plan³⁸ as developed by EPWA and/or other programs as part of the Government of Western Australia's Energy and Governance Legislative Reforms such as Project Eagle³⁹ which require further modifications to the WEM Procedure: DER Register Information Procedure, AEMO would take the appropriate action to further amend the Procedure before any such amendments commence.

- Western Power raised the issue that the current regulatory framework does not enable the Network Operator to collect data on behind the meter loads such as EVSE.

In response, AEMO notes that there is an ongoing workstream in relation to data collection, roles and responsibilities and compliance to be undertaken as part of EPWA's Roles and Responsibilities Action Plan and acknowledges there remains significant scope for enhancement of data collection processes through that


³⁵ Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020>

³⁶ Available at: <https://www.wa.gov.au/government/document-collections/wholesale-electricity-market-rules#:~:text=The%20Wholesale%20Electricity%20Market%20%28WEM%29%20is%20governed%20by,of%20energy%2C%20the%20Reserve%20Capacity%20Mechanism%20and%20Settlement>

³⁷ Available at: https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_287_homepage.html

³⁸ Available at: <https://www.wa.gov.au/system/files/2022-07/DER%20Orchestration%20Roles%20and%20Responsibilities%20Information%20Paper.pdf>

³⁹ Available at: <https://www.wa.gov.au/system/files/2023-01/Project%20Eagle%20Information%20Paper.pdf>



workstream. The modifications to the WEM Procedure: Distributed Energy Resources (DER) Register Information will provide guidance to Western Power as to the data that will need to be collected as these enhancements are implemented.

As guided by EPWA and discussed with Western Power prior to the publication of this Procedure Change Report, AEMO is proceeding with the proposed changes which have been made in accordance with the current WEM Rules and in preparation for when Western Power receives EVSE DER Generation Information as part of the expected actions to be undertaken in accordance with EPWA's DER Roadmap and EV Action Plan⁴⁰.

In addition, submissions proposed minor amendments to the Procedure (Items 1 to 31, Appendix 1). AEMO has adopted several of these suggestions in the revised Procedure and has provided responses together with AEMO's proposed additional revisions in the revised Procedure in Appendix 1, Table 1 and section 4.1 of this report.

The submissions are available at: https://www.aemo.com.au/consultations/current-and-closed-consultations/aepc_2022_02.

4 AEMO's assessment

4.1 Further changes to the Procedure

In response to submissions, and to further improve clarity, AEMO has made the following minor changes in the revised Procedure:

- Updated the title of the WEM Procedure from 'DER Register Information Procedure' which used the abbreviation for DER to 'WEM Procedure: Distributed Energy Resource (DER) Register Information' and modified paragraph 1.1.1 to align with the amended title (Item 3 of Appendix 1).
- Removed the definition of Electric Vehicle and modified the DER Equipment Types to clarify the categories are to capture Electric Vehicle Supply Equipment (EVSE) and not Electric Vehicles (Item 4 of Appendix 1).
- Modified the definition of NMI to reinstate the inclusion of 'A National Metering Identifier' (Item 5 of Appendix 1).
- Modified the definition of 'Standards' to be inclusive of 'a relevant standards body' (Item 6 of Appendix 1).
- Amended paragraph 4.2 to clarify that the only permitted variation is when the WA Electrical Requirements are inconsistent with the prescribed Australian Standard AS/NZS.4777.2020 and that in this situation all other relevant DER Generation Information is still required to be provided (Item 10 of Appendix 1).
- Amended paragraph 4.4.3 to simplify and separate into sub-clauses (Item 11 of Appendix 1).

⁴⁰ Available at: https://www.wa.gov.au/system/files/2021-08/EPWA-EVActionPlan_18Aug2021e.pdf

- Reinstated paragraph 7.1.5 and merged the requirements outlined in paragraph 7.1.6 to align with the requirements of WEM Rule clause 3.24.13 (Item 15 of Appendix 1).
- Updated data tables in Appendix A and Appendix B to be inclusive of table references (Item 22 of Appendix 1).

4.2 Consistency with Electricity Industry Act, WEM Regulations, and WEM Rules

The revised Procedure has been reviewed by AEMO to ensure compliance with the relevant provisions in the *Electricity Industry Act 2004*, *WEM Regulations 2004*, and *WEM Rules*.

4.3 Consistency with Wholesale Market Objectives

AEMO considers that the revised Procedure is consistent with the Wholesale Market Objectives, would better achieve Wholesale Market Objectives (a), (c) and (d) and is consistent with all other objectives.

4.4 Implementation of the Procedure

As part of the Procedure Change Proposal AEMO sought feedback on the proposed Procedure amendment commencement date of 2 October 2023, which in AEMO's opinion, would allow sufficient time after the publication of the Procedure Change Report for impacted Rule Participants to implement the changes required by the amended Procedure.

AEMO received one submission from Synergy who considered the proposed commencement date of 2 October 2023 as not being achievable, due to the uncertainty as to future processes for data sharing between aggregators and the Distributed System Operator, the lack of clarity regarding its role and the associated technical and requirements and expectations.


AEMO does not consider that the proposed amendments to the Procedure would place obligations on parties other than the Network Operator.

Subsequent consultation, AEMO discussed proceeding with the proposed changes with EPWA and Western Power in preparation for when Western Power will receive EVSE DER Generation Information in the future. All parties agreed for that information to be provided to AEMO as part of the expected actions to be undertaken as part of the Government of Western Australia's DER Roadmap and EV Action Plan⁴¹. AEMO is preparing to amend its systems to receive this Information from 2 October 2023 in preparation to support visibility of EVSE as these technologies become more prevalent.

AEMO considers modifications to integrate changes following amendments to the Australian Standard AS/NZS4777.2:2015 which has been superseded by AS/NZS4777.2:2020⁴² on 18 December 2021 will provide a benefit by significantly reducing the DER Generation Information to be provided to AEMO by the Network Operator. These modifications will simplify the capture and transfer of data, allowing the same information to be

⁴¹ Available at: https://www.wa.gov.au/system/files/2021-08/EPWA-EVActionPlan_18Aug2021e.pdf

⁴² Available at: <https://www.standards.org.au/standards-catalogue/sa-snz/other/el-042/as-slash-nzs--4777-dot-2-colon-2020>



exchanged using a reduced number of data fields for the vast majority of DER commissioned after December 2021. As a result, these changes should reduce the complexity in the management of IT systems and compliance of the data for the Network Operator and will improve the quality of DER Generation Information received and reported by AEMO.

When these changes are considered together AEMO considers the proposed date of 2 October 2023 is achievable and is expected to introduce lower compliance costs for the Network Operator in the nearer term, whilst enabling the Network Operator to provide EVSE information to AEMO when it becomes available.

Furthermore, AEMO considers that commencement on 2 October 2023 will allow the impacted Network Operator sufficient time after the publication of the Procedure Change Report to implement the changes required by the amended Procedure.

4.5 AEMO's decision and commencement

AEMO's decision is to accept the Procedure, as amended following the consultation process.

AEMO has made this decision on the basis that:

- The revised Procedure is consistent with:
 - the *Electricity Industry Act 2004*, *WEM Regulations 2004*, and *WEM Rules*;
 - the Wholesale Market Objectives and may better address objectives (a), (c) and (d);
- Submissions received during the consultation period provided general support and commitment to the delivery of the Government of Western Australia's DER Roadmap⁴³ and Electric Vehicle Action Plan as developed by EPWA, which are advanced by the proposed changes;
- Amendments to incorporate EVSE have been made, in preparation for when the Network Operator receives EVSE DER Generation Information as part of the expected actions to be undertaken as part of EPWA's Roles and Responsibilities Action Plan⁴⁴ and Electric Vehicle Action Plan⁴⁵, as guided by EPWA and discussed with Western Power prior to the publication of this Procedure Change Report.
- Amendments align with current Australian Standards AS/NSZ 4777.2:2020 and provide a benefit by removing significant complexity associated with the provision of individual DER Generation Information for the vast majority of DER installed after December 2021. These modifications will simplify the capture and transfer of data, allowing the same information to be exchanged using a reduced number of data fields. As a result, these changes should reduce the complexity in the management of IT systems and compliance of the data for the Network Operator and will improve the quality of DER Generation Information provided to AEMO.
- The amendments improve the completeness and quality of data that is currently exchanged between AEMO and the Network Operator and will deliver broader benefits and lessen costs to comply with existing requirements.

The revised WEM Procedure: DER Register Information will commence on 2 October 2023.

⁴³ <https://www.wa.gov.au/government/publications/der-roadmap>

⁴⁴ Available at: <https://www.wa.gov.au/system/files/2022-07/DER%20Orchestration%20Roles%20and%20Responsibilities%20information%20Paper.pdf>

⁴⁵ Available at: <https://www.wa.gov.au/government/publications/electric-vehicle-action-plan-preparing-was-electricity-system-evs>



Appendix 1. Response to drafting suggestions

This appendix sets out responses to drafting suggestions raised as part of stakeholder’s submissions. If an issue raised in a submission has been discussed in the main body of this document, Section 3.2 and Section 4.4, it has not been included in this appendix.

Table 1 – Stakeholder submissions and AEMO’s response

No	Section	Consulted person	Proposed drafting changes	AEMO response
1	General	AGL	Enumeration of Data. Given the recent experience of replacing substantial quantities of uncontrolled data (e.g., text) within MSATS to enumerated values, AGL strongly suggests that as far as possible this database be enumerated and that enumerations relating to equipment (e.g., make, model etc) be managed outside the procedure with a simple update process, similar to the manner in which meter make / model is being managed for MSATS.	AEMO notes the respondent’s feedback and reference to the NEM’s experiences with MSATS and enumerations of data. AEMO advises that a review of the current WA DER Register Technical Specification ⁴⁶ will be undertaken as part of the implementation phase. The review will include an evaluation of current data enumerations and validations (e.g., equipment make, model etc) and current processes in which AEMO updates information with the published and approved manufacturer listing.
2	General	AGL	While this document refers to a Technical Specification, it seems to contain many technical statements (e.g., representational state transfer API architecture). AGL considers that this procedure should focus on the business obligations relating to the information to be captured and shared with AEMO, not the mechanisms for uploading and storing said information, which AGL feels more appropriately sits in the Technical Specification.	AEMO notes the respondent’s comment and in response advises, to meet the WEM Rule requirements of clause 3.24.8 AEMO is required to outline in the WEM Procedure how the DER Generation Information should be provided to AEMO, including how it is stored and how access will be provided. AEMO has not proposed as part of the Procedure Change Proposal to change the inclusion of this information and has retained an appropriate level of technical information in the Procedure to meet its obligations.
3	Item – Use of only ‘DER’	AGL	AGL notes that the procedure only ever refers to DER, and never to ‘Distributed Energy Resources.’ It seems reasonable that the full title of the register should appear early, such as in the Purpose & Scope.	AEMO notes the respondent’s feedback and has updated the title of the DER Register Information Procedure to ‘WEM Procedure: Distributed Energy Resource (DER) Register Information’ and has modified paragraph 1.1.1 to align with the amended title.
4	Definition of Electric Vehicle	AGL	Noting the purpose of the register, the definition of Electric Vehicles would most likely also include Hybrid vehicles. AGL considers that these vehicle types are not intended to be	AEMO notes the respondent’s feedback and confirms the purpose of the amendments to the WEM Procedure is not intended to include Electric Vehicles but to incorporate Electric Vehicle Supply

⁴⁶ Available at: <https://www.aemo.com.au/-/media/files/market-it-systems/der-guides/wem-der-register-technical-specification-and-release-schedule.pdf?la=en>

No	Section	Consulted person	Proposed drafting changes	AEMO response
			included unless they are also capable of being charged externally via an EVSE.	Equipment (EVSE), AEMO has therefore removed the definition of Electric Vehicles which is not necessary to be included. AEMO has also modified the DER Equipment Types for Electric Vehicles (Appendix A DER Register Data Model, Table 4 Level 2 AC Connection Data Requirements) to clarify the Equipment Type categories are to capture Electric Vehicle Supply Equipment (EVSE) and not Electric Vehicles.
5	Definition – NMI	AGL	General practice is to define the acronym as well as use – e.g. A National Metering Identifier, which is a unique identifier, assigned to a connection point. Note – this definition is also inconsistent with the definition in the WEM DER Technical Specification.	AEMO notes the respondent's feedback and has updated the definition to reinstate the inclusion of 'A National Metering Identifier which is a unique identifier assigned to a Connection Point.'
6	Definitions - Standards	AGL	As the data table allows standards beyond Australian Standards to be captured (p24) (e.g., IEC standards) suggest this definition be expanded to something like: A standard published by a relevant Standards body.	AEMO notes the respondent's feedback and has updated the definition to 'The relevant technical standard or specification as published by Standards Australia or a relevant standards body.'
7	Table 2 – Related Documents Para 2.1.2., 2.1.3., 2.1.4.	AGL	This table refers to the 'WEM DER Register Technical Specification' AGL notes that this title is inconsistent with the title of the Technical Specification currently published – the 'WEM DER Technical Specification – Feb 2021'.	AEMO notes the respondent's feedback and advises that a review of the current WA DER Register Technical Specification ⁴⁷ will be undertaken as part of the implementation phase. AEMO has retained the title with its original drafting as AEMO is intending to modify the title of the 'WEM DER Technical Specification' to become the 'WEM Distributed Energy Resource (DER) Register Technical Specification.'
8	2 DER Register	AGL	This section is titled the DER register but seems more concerned with the submission of information via the APIs, which is stated to be covered in the WEM DER Technical Specification. Suggest delete these paras.	AEMO notes the respondent's feedback however has retained paragraph 2 to meet the requirement of WEM Rule clause 3.24.8 in which AEMO must develop and implement a WEM Procedure that specifies how DER Generation Information should be provided' and WEM Rule clause 3.24.14 in which 'AEMO must provide or give access to each Network Operator in accordance with the WEM Procedure referred to in clause 3.24.8.
9	4.1.2 - 4.1.5	AGL	This information again seems to be about the specifics of submitting information via the APIs, which is stated to be covered in the WEM DER Technical Specification. Suggest delete these paras.	AEMO notes the respondent's comment however has retained paragraph's 4.1.2 to 4.1.5 to meet the WEM Rule requirements of clause 3.24.8 in which AEMO is to outline in the WEM Procedure how DER Generation Information should be provided to AEMO. Paragraphs 4.1.3 to 4.1.4 have also been retained to outline obligations for management of exception notifications received post the submittance of DER Generation Information.

⁴⁷ Available at: <https://www.aemo.com.au/-/media/files/market-it-systems/der-guides/wem-der-register-technical-specification-and-release-schedule.pdf?la=en>

No	Section	Consulted person	Proposed drafting changes	AEMO response
10	4.2.1	AGL	This paragraph seems to imply that local networks can modify the DER obligations contained within the WEM Rules. For consistency and long-term value and use of this information, AGL would expect that the only modification would be to extend the information gathered, not reduce the information gathered, although it is unclear what scope a network may have.	<p>AEMO notes the respondent's feedback and has updated paragraph 4.2.1 and 4.2.2 to clarify the variation is specific to the prescribed Australian Standard AS/NZS.4777.2020 only and that all other relevant DER Generation Information is still required to be provided.</p> <p>As discussed with the Network Operator, this scenario is by exception. This is to support the circumstances, for example, where in accordance with the WA Electricity Licensing Regulations 1991⁴⁸ (under 2B (2)), if the WA Electrical Requirements result in a variation to the Standard that the WA Electrical Requirements prevail to the extent of the inconsistency.</p> <p>AEMO has amended paragraph 4.2 as follows:</p> <p>4.2.1 If the Electrical Requirements prevail over any requirement in Australian Standard AS/NZS 4777.2:2020 applicable to DER Generation Information, then the Network Operator must provide details of the prevailing Electrical Requirement to AEMO in accordance with paragraph 4.2.2.</p> <p>4.2.2 Network Operators must inform AEMO and provide details of any prevailing Electrical Requirement within 20 Business Days of the Electrical Requirements being applied and otherwise in accordance with this Procedure.</p> <p>4.2.3 Other DER Generation Information as set out in Appendix A must be submitted in accordance with paragraph 4.1.</p> <p>Additionally, for clarification the definition for Electrical Requirements has been incorporated within Table 1 Definitions as 'The WA Electrical Requirements described in regulation 49(1)(b) of the <i>Electricity (Licensing) Regulations 1991</i>'.</p>
11	4.4.3	AGL	<p>The clause is a bit lengthy and can be broken into sub-clauses for better clarity and separation of obligation:</p> <p>4.4.3. If at any time a Network Operator becomes aware that:</p> <p>(a) DER Generation information required from it under paragraph 4.1 has failed to be submitted, is incomplete, inaccurate, or no longer accurate; or</p> <p>(b) within 20 Business Days (or such longer period as agreed with AEMO) of receiving a notification under paragraph 4.4.2 the Network Operator must either:</p> <p>(ac) re-confirm the accuracy of the DER Generation Information previously provided; or</p> <p>(bd) submit new or updated DER Generation</p>	<p>AEMO notes the respondent's feedback and has updated paragraph 4.4.3 and 4.4.4 as follows:</p> <p>4.4.3. Within 20 Business Days of receiving a notification under paragraph 4.4.2, or within an alternative timeframe agreed with AEMO, the Network Operator must either:</p> <p>(a) re-confirm the accuracy of the DER Generation Information previously provided; or</p> <p>(b) submit new or updated DER Generation Information. to AEMO in accordance with this Procedure.</p> <p>4.4.4. If at any time a Network Operator becomes aware that DER Generation information required from it under paragraph 4.1 or paragraph 4.2 has failed to be submitted, is incomplete, inaccurate, or no longer accurate and it has not received a notification under paragraph 4.4.3, the Network Operator must either:</p> <p>(a) re-confirm the accuracy of the DER Generation Information previously provided; or</p> <p>(b) submit new or updated DER Generation Information to AEMO in accordance with this Procedure.</p>

⁴⁸ Available at: https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_1355_homepage.html

No	Section	Consulted person	Proposed drafting changes	AEMO response
			Information to AEMO in accordance with this Procedure.	
12	5 Storage	AGL	AGL considers that specifying how the data is stored is more appropriate for the WEM DER Technical Specification. Suggest relocating the following text 'the representational state transfer API architecture (rest) API architecture' to the Technical Procedure.	AEMO notes the respondent's feedback however has retained paragraph 5. DER Register with its original drafting to meet the requirement of WEM Rule clause 3.24.8 (d) in which AEMO must develop and implement a WEM Procedure that specifies how the information in the DER Register is stored by AEMO to ensure an appropriate level of technical information is included in the Procedure to meet its obligation.
13	6 Access to DER Register	AGL	AGL again notes that this section seems to technology specific, and too specific in the cross reference. AGL suggests: 6.1.1. Network Operators must register with AEMO to use the API in accordance with the access the WEM DER Register Technical Specification. 6.1.2. AEMO will provide access to DER Register Information in accordance with step 6.1.1 via the API in accordance with described in paragraph 2.1.2. and in the manner set out in the WEM DER Register Technical Specification.	AEMO notes the respondent's feedback however has retained paragraph 6 with its original drafting to meet the requirement of the WEM Rule clause 3.24.8(f) in which AEMO must specify in the WEM Procedure details of how AEMO will provide Network Operators with access to DER Register Information under clause 3.24.14. AEMO has retained reference to the API to ensure an appropriate level of technical information is included in the Procedure to meet its obligation and cross reference to paragraph 2.1.2.
14	7.1.2	AGL	Is the updating quarterly / 3 monthly cycle based on the commencement date of the DER register, or is that now calendar / FY quarterly?	AEMO confirms in response to the respondent's question as per paragraph 7.1.2, it was initially three months after the commencement date and subsequently it is updated no less than quarterly being the calendar year. AEMO has not proposed as part of the Procedure Change Proposal to change the current obligations within the WEM Procedure.
15	7.1.5	AGL	The use of the term 'sufficient numbers' seems unnecessary, and the para seems to make the privacy principle an outcome rather than the objective. AGL proposes: 7.1.5 AEMO must maintain confidentiality and privacy and will therefore only publish such information as it reasonably determines will not breach this obligation.	AEMO notes the respondent's feedback and has reinstated the original paragraph 7.1.5 and merged the requirements outlined in the original paragraph 7.1.6 to align with the requirements of WEM Rule clause 3.24.13. Paragraph 7.1.5 has been amended to now include 'Where appropriate, AEMO will aggregate DER Register Information'. AEMO has amended clause 7.1.5 as follows: 7.1.5. Where appropriate, AEMO will aggregate DER Register Information such that the DER Register Report does not: (a) directly or indirectly disclose confidential information; or (b) result in a breach of applicable privacy legislation [clause 3.24.13].
16	7.2.1	AGL	This is a useful obligation, but it is unclear how, when or where such information will be published – i.e., in the DER report, forecasting	AEMO notes the respondent's feedback. AEMO has retained paragraph 7.2.1 to acknowledge in accordance with clauses 3.24.8 (e) and 3.24.7 of the WEM Rules that AEMO will document and

No	Section	Consulted person	Proposed drafting changes	AEMO response
			reports, or scheduling information. Note similar issue to para 7.2.2.	publish on the WEM Website, details of the extent to which DER information has informed AEMO's development or use of load forecasts, or performance of AEMO's functions. The occurrence of when this may occur could vary hence this has not been stipulated in the Procedure and in all cases would require AEMO to meet the obligation of advising where the DER Register Information has been used to inform AEMO's development or use of load forecasts, or performance of AEMO's functions.
17	7.2.2	AGL	It is unclear if the 'relevant information' published in the Statement of Opportunities meets the criteria of para 7.1, particularly in respect of privacy / confidentiality.	AEMO notes the respondent's feedback and in response confirms that AEMO's functions conferred under the WEM Rules includes ensuring privacy and confidentiality obligations are met. This is inclusive of the Statement of Opportunities Report. The purpose of paragraph 7.2.2 is to provide additional context that AEMO may include relevant information in AEMO's Statement of Opportunities or other forecast publications. This is to meet the WEM Rule requirements of clauses 3.24.8 (e) and 3.24.7 that AEMO will document and publish on the WEM Website details of the extent to which DER information has informed AEMO's development or use of load forecasts, or performance of AEMO's functions.
18	Appendix A	AGL	Figure 1 provides a representative data model, but this procedure may benefit from a single line diagram showing the connection point through to the various pieces of DER equipment and how that relates to the data model.	AEMO notes the respondent's feedback. AEMO considers a single line diagram could not cater for all scenarios in which DER equipment may be installed and may inadvertently misrepresent the diversity of the equipment types. To assist stakeholders, AEMO will provide examples in the WEM Distributed Energy Resource (DER) Register Technical Specification, however, these examples will not be exhaustive.
19	Appendix A Information Level 1		AGL notes that this clause indicates that records are stored against NMIs, however para 4.3 discusses the provision of DER information by connection point. Recognising that at present, this may not be relevant, but in the context of IESS and Multiple Trading Relationships (being discussed within the NEM where a connection point may have multiple NMIs) clarity of NMI versus connection point can become quite relevant.	AEMO notes the respondent's feedback and in response confirms that the WA DER Register data model uses both the NMI and the Connection Point by definition. Both have been defined as such in the definitions table 1 in the Procedure, (a Connection Point is identified via an NMI and an NMI is assigned to a Connection Point). The definition of both is for interpretation and clarity purposes only, as the DER Register data model considers the NMI as the primary key for a DER Register record. AEMO also notes the respondent's feedback reference to the discussions that are ongoing in the NEM. While these arrangements are not specific to the WEM DER Register Information Procedure, the DER Register provides a database of static data for DER Equipment and related connection / operational requirements. DER Equipment is uniquely identified, and the proposed changes also introduce an actor or 'Authorised Agent' with approval to control the equipment. Assuming complete information is provided by Network Operators this arrangement should support the transition to more complex arrangements in the future.
20	Appendix A Information Model 1	AGL	The data model table is designed on the basis that the information fields are known. If the network is aware of a NMI with DER equipment but does not have the necessary detailed information to fully complete the	AEMO notes the respondent's feedback and in response advises the current WA DER Register Information Procedure and the WEM DER Register Technical Specification ⁴⁹ captures the 'commissioning date' as being the date in which the DER equipment is commissioned. This is in alignment with paragraph 4.1.1 of the Procedure which outlines that the Network Operator is to within 20 Business Days after it becomes aware of (a) the commissioning of a Small Generating Unit or

⁴⁹ Available at: <https://www.aemo.com.au/-/media/files/market-it-systems/der-guides/wem-der-register-technical-specification-and-release-schedule.pdf?la=en>

No	Section	Consulted person	Proposed drafting changes	AEMO response
			<p>register, it seems that the way the data is structured, it is likely the NMI would not be registered.</p> <p>Is there a need or value in identifying NMIs where such connection exists, but where detailed data is unavailable at present, and thus identifying a need to engage with the customer.</p>	<p>Storage Works relating to a Connection Point must submit the DER Generation Information specified in Appendix A to AEMO [clause 3.24.5].</p> <p>AEMO has not proposed as part of the Procedure Change Proposal to change the current approach and has retained existing obligations within the WEM Procedure which enables the Network Operator to follow its connection processes. The DER Register is designed to be flexible and enable the progressive provision of information as the connection moves from approval to confirmation of what is installed. There is no limit to the Network Operator providing a minimum amount of data to establish the DER Record, then provide further information as the installation goes ahead. This is in recognition that information has the potential to change in-between initial lodgement of an application the Network Operator receives and prior to the commissioning being complete.</p> <p>The WEM Procedure also clarifies under paragraph 4.1.4 that Network Operators must review and resolve the relevant exception notifications in accordance with the WEM Distributed Energy Resource Technical Specification.</p> <p>The Network Operator's connection processes are best placed to consider if there is a need to engage with the customer as these processes sit outside of the remit of the WEM DER Register Information Procedure.</p>
21	Appendix A Information Data Model 1	AGL	<p>As this is a procedure update to enhance the information provision, it is suggested that the Data Table field information could be enhanced by showing the number of characters per field: E.g., NMI – Alpha-numeric to NMI – Alpha-numeric (10)</p> <p>With the (10) indicating the field length. This would apply across all fields shown in the register</p>	<p>AEMO notes the respondent's feedback and advises that the field length is currently outlined as technical detail in the WA DER Register Technical Specification⁵⁰. AEMO has not proposed as part of the Procedure Change Proposal to change this approach and has retained the data field category and the field type (format) in the Procedure (e.g., alpha-numeric), leaving the technical details of the field length to continue to be detailed in the WA DER Register Technical Specification.</p> <p>AEMO advises that a review of the current WA DER Register Technical Specification will be undertaken as part of the implementation phase, this will include a review of the field lengths.</p>
22	Appendix A Information Data Model 1	AGL	<p>The data model table has no table reference.</p>	<p>AEMO notes the respondent's feedback and has updated data tables in Appendix A and Appendix B to be inclusive of table references.</p>
23	Appendix A Information Data Model 1 Phases Available	AGL	<p>The number of phases available has been debated heavily in the NEM and the underlying question is whether this implies available wires or wires connected to the connection point. For example, a 2-phase premise may have a 3-phase service installed and wired to the metering point, but only two are connected. This field seems to be requiring the number of connected phases rather than available phases.</p>	<p>AEMO notes the respondent's feedback and reference to the ongoing discussions in the NEM. AEMO acknowledges that the number of phases available as approved at the time of the Connection Agreement could result in a difference to the number of phases actually installed.</p> <p>AEMO has not proposed as part of the Procedure Change Proposal to change the current approach which is to retain existing data fields within the WA DER Register to capture both the:</p> <ul style="list-style-type: none"> 'Number of Phases available' (description – the number of phases available for the installation of Small Generating Unit and/or Storage Works as approved in the Connection Agreement); and 'Number of Phases with DER Installed' (description – the number of phases that the Small Generating Unit and/or Storage Works is installed on, consistent with the Network Operator's technical requirements).

⁵⁰ Available at: <https://www.aemo.com.au/-/media/files/market-it-systems/der-guides/wem-der-register-technical-specification-and-release-schedule.pdf?la=en>

No	Section	Consulted person	Proposed drafting changes	AEMO response
24	Appendix A Data Model 2	AGL	General comment. Some data elements have specific responses (enumerations) called out. Some of these are defined in the Description column, while others are described in the "Other" column. Suggest a general review of all elements to ensure that enumerations are clearly defined and clearly in the same column in all data tables.	AEMO notes the respondent's feedback in relation to the few data elements which includes a data value in the description column rather than in the comment's column (under Table 4 - Level 2 AC Connection Data Requirements). AEMO has not proposed as part of the Procedure Change Proposal to change the current approach already included in the current Procedure and has retained the existing descriptions for these few data elements as these data elements align with the descriptions in the relevant published Standards (e.g., data value is the description).
25	Appendix A Data Model 2 DER Equipment Manufacturer	AGL	AGL strongly supports the use of enumerations where possible, including Equipment Manufacturer as free text will invariably have variations.	AEMO notes the respondent's comment. Please refer to the response provided in Table 1, item 1 above.
26	Appendix A Data Model 2 DER Equipment Type	AGL	The additional information column seems to indicate an enumerated list, but the enumerations are not clear from the list. AGL strongly supports the use of enumerations where possible, including Equipment Type.	AEMO notes the respondent's comment. Please refer to the response provided in Table 1, item 1 above.
27	Appendix A Data Model 2 Equipment Injection Capacity / Equipment Withdrawal Capacity	AGL	AGL suggests that these fields should be either changed from Mandatory to R (Required – as in must be provided if available) as this field cannot be completed for controlled load, only injection equipment and vice versa for withdrawal equipment or that a value of '0' be allowed for these instances, rather than applying a logic test. The equipment type should be sufficient for any validation tests.	AEMO notes the respondent's comment and in response advises as outlined in Appendix A of the Procedure (under general rules to support the interpretation of the data model) that 'All data fields are mandatory to the category they are outlined to apply to.' In reference to the example of injection and withdrawal capacity AEMO notes that only the 'Withdrawal Capacity' applies to the category of 'Controllable Load.' Hence this field is Mandatory (M). Equivalent logic is applied to Level 3 information, As part of the implementation phase AEMO will undertake a review and amend the WA DER Register Technical Specification to include any new and or amended permitted values and ranges. This will also consider the appropriate logic to apply where a data field is not applicable to a category.
28	Appendix A Data Model 2 Equipment Injection Capacity / Voltage / Frequency etc	AGL	As above, AGL suggests that these fields should be either changed from Mandatory to R (Required – as in must be provided if available) or that a value of '0' be allowed for these instances where the information is not applicable, rather than applying a logic test on the basis that the equipment type should be sufficient for any validation tests.	AEMO notes the respondent's comment. Please refer to the response provided in Table 1, item 27 above.

No	Section	Consulted person	Proposed drafting changes	AEMO response
29	Appendix A Data Model 3	AGL	As noted previously, AGL strongly supports the concept of information being enumerated (e.g., device type) to provide the best and consistent value from the database.	AEMO notes the respondent's comment. Please refer to the response provided in Table 1, item 1 above.
30	Appendix A Data Model 3 Number of devices	AGL	AGL notes that this is provided as a multiplier but cautions that this would only apply if the devices were identical, including capability and settings. Identical devices may have settings which allows different capacities which should be catered for.	<p>AEMO notes the respondent's feedback and in response confirms the intention of the existing data field 'Number of Devices' is to capture both scenarios' where multiple devices have the exact same attributes (e.g., enter multiple number of devices and the attributes associated only need to be provided once), and where devices do not have the identical attributes provided as Level 3 DER Device information.</p> <p>AEMO has not proposed as part of the Procedure Change Proposal to change this approach. Where multiple unique devices are associated with each AC Connection in Level 2 information and the devices do not have identical attributes, the number of devices would be entered as e.g., 1 and separate device records would be required as Level 3 DER Device information to be entered for the devices which do not have the identical attributes</p> <p>As part of the implementation phase AEMO will undertake a review of the WA DER Register Technical Specification to consider if additional context is required to outline how the data model applies this logic.</p>
31	Appendix A Data Model 3 Manufacturer / model, type etc	AGL	AGL strongly supports enumeration of this information.	AEMO notes the respondent's comment. Please refer to the response provided in Table 1, item 1 above.