Department of Energy and Economic Diversification

GOVERNMENT OF WESTERN AUSTRALIA

Energy Policy WA

# Making it easier to connect solar, batteries and EV chargers

## Issues paper on connections and data quality for distributed energy resources

**20 July 2026**

# Contents

## Terms in this document

| | |
|---|---|
| **AC** | Alternating current electricity |
| **Access Code** | Electricity Networks Access Code 2004, which sets how third parties can access regulated networks like the one Western Power operates. |
| **AEMO** | Australian Energy Market Operator |
| **AES** | Alternative electricity services |
| **Aggregator** | An entity that remotely manages multiple DER assets into a single coordinated portfolio, such as for a virtual power plant. |
| **AMI** | Advanced metering infrastructure, better known as 'smart meters.' |
| **ARENA** | Australian Renewable Energy Agency |
| **CSIP-AUS** | Common Smart Inverter Profile (Australia), as set out in SA TS 5573:2025. |
| **DC** | Direct current electricity |
| **DCCEEW** | Australian Government Department of Climate Change, Energy, the Environment and Water |
| **DEED** | WA Department of Energy and Economic Diversification |
| **DER** | Distributed energy resources, which are systems that use, generate, or store electricity. For example, solar and battery systems, and EV chargers. |
| **DMO** | Distribution market operator |
| **DSO** | Distribution system operator (Western Power) |
| **Dynamic operating envelopes** | Informally referred to as 'flexible solar exports', meaning grid exports can be remotely turned up and down to respond to local grid conditions. |
| **ERA** | WA Economic Regulation Authority |
| **ESM Rules** | Electricity System and Market Rules |
| **EV** | Electric vehicle |
| **EVAP** | WA Government Electric Vehicle Action Plan |
| **EVSE** | Electric vehicle supply equipment, or EV chargers |
| **iNOM** | Western Power's integrated network opportunity map |
| **Interoperability** | The ability of different DER devices to communicate or work seamlessly with other devices or parts of the electricity system. |
| **ISP** | AEMO Integrated System Plan |
| **kVA and MVA** | kilovolt-amp and megavolt-amp |
| **kW and MW** | kilowatt and megawatt |
| **kWh and MWh** | kilowatt-hour and megawatt-hour |
| **Level 1 EV charger** | Chargers that users plug into a standard 240-volt wall outlet. |
| **Level 2 EV charger** | Chargers that supply between 7 and 22 kW (approx.) and use a car's internal inverter to charge its battery (for example, a home wallbox). |
| **Level 3 EV charger** | Chargers that supply DC electricity directly to a car's battery (for example, public fast chargers). |
| **NEM** | National Electricity Market (jurisdictions except WA and the NT) |
| **Non-contestable customers** | Electricity customers who use less than 50 MWh of electricity each year, meaning Synergy is their retailer in Western Australia's main grid. |
| **OEM** | Original equipment manufacturer, such as an inverter manufacturer. |
| **SEO** | State electricity objective |
| **Standing data** | Static technical information about DER systems, such as the generation capacity of a rooftop solar system or storage capacity of battery storage. |
| **SWIS** | South West interconnected system, Western Australia's main power system. |
| **TNI** | Transmission node identifier, a unique code to identify the physical connection between a distribution network and the transmission network. |
| **VPP** | Virtual power plant |
| **WARBS** | WA Residential Battery Scheme |
| **WEM** | Western Australia's Wholesale Electricity Market |

# Executive summary

Western Australia is a global leader in distributed energy resources (DER), with world-leading uptake of rooftop solar, surging home battery installations, and strong EV growth. These technologies deliver significant benefits to households and businesses through lower power bills and clean, reliable energy. The pace and complexity of DER uptake create a need to improve how stakeholders collect, validate, and share data.

In 2024, the Western Australian Government introduced the state electricity objective (SEO) to guide electricity reform, alongside other changes to expand the state's regulatory framework to include whole-of-grid operations. Improving DER data quality and availability meets the SEO by supporting system security, reducing upgrade costs for electricity users, and enabling more renewable energy generation.

DER uptake and data have rapidly grown in the state's main power system – the SWIS. The WA DER Register has changed since it was introduced in 2020; however, inconsistent data collection and validation upstream mean it cannot reliably support system planning. As DER becomes increasingly active through batteries, EV charging and virtual power plants (VPPs), robust data is important for system operators to accurately forecast future grid needs, and for consumers to benefit from supporting the grid with their household DER systems.

National and state-based analysis demonstrates that improved DER data sharing can unlock substantial value for consumers. Improving data quality and availability will rely on streamlined connection processes and common data definitions. Western Australia's own Project Symphony VPP pilot found more than $900 million in potential value from DER orchestration over the coming decade. The benefits come from deferring network upgrades, improving forecast accuracy and DER providing flexible services at lower cost.

Because Western Australia's electricity system is structurally simpler and has significantly fewer participants than the east coast National Electricity Market (NEM), this paper proposes a set of foundational reforms to improve DER data outcomes with less technical complexity and cost than in the NEM.

This paper outlines seven reform proposals across three key principles. Together, these aim to deliver near-term improvements to connections and data quality and position DER as a core, visible component of Western Australia's electricity system.

**Principle 1: Increasing DER standing data quality** by leveraging existing technologies like the Common Smart Inverter Profile – Australia (CSIP-AUS), improving Western Power's ability to collect and share good data, and improving EV charger visibility.

- Reform proposal 1: Require inverters up to 30 kVA to be CSIP-AUS (v1.2) enabled to support interoperability of DER devices
- Reform proposal 2: Establish distribution system operator (DSO) functions to collect, validate, and share data
- Reform proposal 3: Indirect data collection for electric vehicle chargers (levels 2/3)

Better DER data will support stronger system planning, allowing consumer systems to play a more active role in the broader electricity system.

**Principle 2: Making it easier for businesses to connect DER** by simplifying data requirements to create an easier connection pathway and increasing public visibility of network capacity.

- Reform proposal 4: Standardised data to create an easier connection pathway
- Reform proposal 5: Requirements to share network capacity

Requiring a simple, standardised set of data to be provided at the time of connection will improve alignment with information provided to AEMO in line with its Wholesale Electricity Market (WEM) Procedure for DER Register Information. This will contribute to more streamlined and faster DER connection for those with larger DER connections including business customers, and greater visibility and quality DER data will support continued and future evolution of electricity services and products for consumer benefit. Further improving visibility of available network capacity will make it easier for businesses to pinpoint the parts of the network best able to absorb increased demand. For example, targeting higher capacity areas for new EV charging infrastructure that does not require infrastructure upgrades upstream.

**Principle 3: Better understanding how VPPs mitigate grid impacts and maximise consumer opportunities** by establishing simple ways for VPP operators to provide data that can be used for grid planning, supporting system security and reliability and the future evolution of DER products and services.

- Reform proposal 6: Explore mechanisms for VPP operators to provide simple capacity data
- Reform proposal 7: Tie Western Power requirements to share network capacity information with VPP opportunities

Providing high-level visibility about the size and capability of VPPs can result in better system planning around the contribution that VPPs can make, but there are implementation challenges to overcome.

## How to provide feedback

DEED developed the options in this paper to meet the SEO and welcomes both general and specific feedback. We will use feedback to inform detailed rule change proposals, which we will consult on again before making any changes.

Please email feedback to epwa-submissions@deed.wa.gov.au by **5 pm (AWST) on Tuesday 18 August 2026**.

For transparency, we will publish submissions on our website. Stakeholders should specify if information they provide in submission is confidential and, where possible, separate confidential information from non-confidential information. Those making any claim for confidentiality should consider the *Freedom of Information Act 1992*, which imposes obligations in respect to the release of documents.

# 1. Background and purpose

In 2024, the Western Australian Government implemented the State Electricity Objective (SEO) to provide simple overarching principles for all electricity reform across the state. At the same time, the WA Government expanded the Electricity System and Market Rules (ESM Rules) to consider broader SWIS operations, such as interactions with the distribution network. This includes, for example, technical and data requirements for distributed energy resources (DER) like rooftop solar and batteries.

Western Australia is a global leader in rooftop solar ownership and is experiencing rapid uptake in home batteries. We can achieve better outcomes for households and businesses and make the most of our renewable resources by improving how we collect, validate, and share data for DER. This would lead to more useful information to feed into grid planning, minimising the need to upgrade physical infrastructure like distribution networks. DER data includes things like generation capacity, export limits, software settings, and whether a system owner has opted in to a VPP.

This paper sets out options to create a solid data foundation for the SWIS within 12 to 18 months through three principles:

**Increasing DER standing data quality**

**Making it easier for businesses to connect DER**

**Better understanding how VPPs mitigate grid impacts and maximise consumer opportunities**

This paper is part of Project Jupiter, a key part of WA's DER Roadmap, and DEED thanks AEMO, Synergy and Western Power for providing feedback as part of its development. Project Jupiter is a $108 million three-year project, partially funded by ARENA to accelerate rooftop solar and battery integration in WA's main grid through VPPs. Launched in 2025, it includes a full range of technical, regulatory and consumer value streams needed for DER to operate at scale as a core part of the electricity system. In parallel, a redesign of the SWIS DER connection process is underway.

These projects are an opportunity to improve the customer journey and the regulatory environment for DER data and connections. To further develop the necessary regulatory proposals, DEED would like your feedback on things like:

- How well data sharing and connection processes work for different stakeholders, like consumers, DER installers, electricity retailers, and potential VPP aggregators
- Whether proposals in this paper will broadly help to increase DER uptake and participation, by making it easier to install or upgrade systems, and
- Whether there are parts of the DER connection process we should pay specific attention to as part of this reform work.

# 2. Data to information – need for changes

The energy system now includes large numbers of behind-the-meter devices, and their complexity continues to grow. The uptake and range of DER provide significant benefit to households and businesses, through lower bills and access to clean energy.

While individually small, DER systems collectively have a significant effect on electricity system operation. As a result, some visibility of the number and types of systems that customers connect is increasingly important. Reliable standing data and an appropriate level of VPP visibility have become important for reducing the need to overcompensate by upgrading networks too early or building new peaking generation. Reliable standing data also aligns with SEO aims and supports the provision of existing and future electricity services.

To get the most value from data, different stakeholders need to be able to effectively share it. This includes sharing data securely and at the appropriate aggregate level, with system owners, manufacturers, installers, other DER devices on site, and grid operators. Real-time system-level data requirements can be onerous and likely diminish the cost savings that flow through to customers from better sharing, but at least some visibility makes it possible for consumers, aggregators, and the distribution system operator (DSO) to use DER to defer the need to upgrade the network.[1] Some visibility will support AEMO with good system planning and forecasting, in addition to managing day to day power system security and reliability. These financial benefits flow to consumers through VPP bill payments and lower overall system costs.[2]

## 2.1 Western Australia as a DER leader

Western Australia's rooftop solar uptake is already among the highest globally. The state's main power system – the South West Interconnected System (SWIS) – is the largest isolated grid in the world, yet rooftop solar generation records continue to be broken each year. In 2025, 41% of electricity in the SWIS was from renewables, around half of which was rooftop solar. Rooftop solar was also providing two-thirds of all power on the SWIS at its peak in November 2025.

Stacked state and federal battery rebates have driven a further step-change in DER uptake. The WA Government's $337 million residential battery scheme (WARBS) supports households to cut bills further by using more of their rooftop solar by upgrading to a battery and participating in a VPP. The WARBS rebate stacks with the Australian Government's cheaper home batteries program, and Western Australians

1 DCCEEW/CER Taskforce 2025c, Data sharing arrangements to inform planning and enable future markets, Consultation paper to progress M2 workstream of the National CER Roadmap, July, p. 9.

2 DCCEEW/CER Taskforce 2025b, Data sharing arrangements to inform planning and enable future markets, Final report to progress M2 workstream of the National CER Roadmap, August, pgs. 9 and 19.

have installed more than 30,000 batteries since both schemes started on 1 July 2025. Soon, Synergy's battery rewards VPP is expected to be among the biggest in the world.

Electric vehicle (EV) uptake is growing rapidly. There are more than twice as many EVs on Western Australia's roads today compared to two years ago and EV sales are surging in response to recent fuel price changes. This will make EV chargers[3] a significant new type of DER and represents WA's biggest opportunity to shift transport energy from imported fuels to energy that people generate locally on their own roof. Home battery, VPP, and EV growth increase the need for better data sharing to increase the role that DER plays in the broader grid.

In recognition of the impact from DER uptake at scale, the 2026 Wholesale Electricity Market (WEM) Electricity Statement of Opportunities and the State Government's next Whole of System Plan will assume higher DER investment and will consider the impact of VPPs in the SWIS.

## 2.2 Better information benefits all electricity users

In July 2024, energy ministers agreed to publish and implement the National Consumer Energy Resources (CER) Roadmap, which features national reform priorities to unlock CER at scale across Australia by 2030. The Department of Climate Change, Energy, Environment and Water (DCCEEW) is leading implementation in conjunction with Australian states and territories.

DCCEEW completed work in 2025 to identify data sharing capability gaps that impact the effective integration of CER, now and in the future.[4]

All Australian jurisdictions agreed to implement the recommendations, including to develop a national data strategy and to enhance enabling infrastructure. The final report highlighted the benefits of effective CER/DER data sharing arrangements:

**Lower system costs for all consumers** by deferring expensive network and grid-scale investments and helping manage peak demands, lowering costs for all consumers.

**Meeting decarbonisation targets and goals** by integrating large volumes of renewable generation like DER. As the energy network is increasingly decentralised, meeting these targets depend on effective data sharing and infrastructure.

**Stable, flexible, and resilient energy system** by coordinating the efforts of more actors with renewable, intermittent generation through good visibility and predictability, with DER being able to deliver flexible energy services when needed.

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[3] Throughout this paper, "EV chargers" refers to dedicated or Level 2 AC chargers, typically with of power output of 7 to 22 kW. Level 1 AC chargers, designed to use a standard power point with safety features, are not included in the proposed reforms. See How to charge your electric vehicle | energy.gov.au.

[4] DCCEEW/CER Taskforce 2025d, Data sharing arrangements to inform planning and enable future markets - Consultation paper to progress M2 workstream of the National CER Roadmap, July.

**Foundation for innovation** by making data accessible, innovative solutions can help harness the power of renewable and distributed energy sources. Otherwise, barriers for new entrants will increase, slowing developments needed to decarbonise at the lowest cost.[5]

Achieving these benefits is consistent with the principles in Western Australia's SEO and with the reform principles in this paper. However, the implementation and infrastructure approach for the SWIS will likely be different than in the NEM. Section 5 further outlines DEED's proposed approach and rationale.

### System security and reliability

Knowing which systems are connected and how much VPP capacity is controllable makes it possible for the network operator to calculate more precise network limits and for the market operator to forecast how much supply is needed and consider the types of services which may improve the integration of DER into the power system to ensure the ongoing security, reliability and efficiency of the power system. While this happens already, there are data gaps for both new systems and for existing system upgrades.

Standardised sharing of network capacity limits means customers can keep installing bigger systems to support electrification, with systems able to respond to network conditions and turn down exports slightly during low grid demand. This underpins system planning, such as determining the most priority parts of the network to upgrade compared to potentially deferring upgrades. Similarly, it means customer systems can safely export more power when the network has capacity to accommodate it. This type of operational limit sharing complements more aggregate mapping of distribution network capacity. This can make it easier for retailers to develop VPP products for specific areas, and for businesses to install high speed EV chargers in unconstrained parts of the network.

### Visibility and predictability

Better data validation and sharing will also allow the Australian Energy Market Operator (AEMO) to develop more robust forecasts. To manage DER behaviour uncertainty, such as peaks and troughs in rooftop solar generation, AEMO operators rely on larger generators. The cost to procure this capacity flows directly through to electricity users. With properly validated data for systems, combined with existing data about weather forecasts and network constraints, it is possible to run the system with smaller contingencies and at lower cost. Equally, it is possible to turn up export limits so that individual consumer systems – like household WARBS batteries – can export even more low-cost renewable energy to the grid at times the grid can manage the extra supply. Improving DER data aligns with successful outcomes for Project Jupiter supporting requirements for improved visibility, compliance monitoring, and orchestration.

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[5] DCCEEW/CER Taskforce 2025d, Data sharing arrangements to inform planning and enable future markets, Final report to progress M2 workstream of the National CER Roadmap, August, pg. 17.

## 2.3 Significant cost savings from data consistency

Good DER data collection and sharing allow for more accurate grid planning, which saves on network upgrade costs and extra grid-scale generation, the costs of which pass to all electricity users.

From 2024 to 2025, AEMO and AusNet co-designed with industry a CER Data Exchange platform, funded by ARENA.

The final report noted that Australian governments and market bodies are seeking to unlock billions of dollars in benefits to consumers by getting the most out of CER investments. The report highlights significant potential value from more efficient DER integration based on previous findings:

- "AEMO's 2024 Integrated System Plan found that without effective coordination of consumer batteries, around $4.1 billion of extra grid-scale investment would be needed for the NEM.
- Clean Energy Council modelling found that not meeting DER forecasts under the draft 2024 ISP Step Change Scenario for the NEM meant Australian taxpayers risked losing $22 billion in savings.
- The Institute for Energy Economics and Financial Analysis found that CER has the potential to deliver a combined economic benefit for the NEM of more than $19 billion by 2040 – including $11 billion in avoided network costs and $8 billion in reduced generation and storage costs, if CER is well integrated.
- The Western Australian Government's Project Symphony VPP pilot found redistributing excess power from residential solar panels, appliances and home batteries could create more than $920 million in value in the coming decade."[6]

## 2.4 Why now?

Progress on regulatory reforms will deliver benefits for electricity users sooner. In addition to implementing the SEO, changes the WA Government made through the *Electricity Industry Amendment (Distributed Energy Resources) Act 2024* allow the regulatory framework to directly address things like distribution connections (section 124E), data capture through technical standards (section 124F), metering (section 124G), and electricity data more generally (section 124H).

Western Power has been developing its capacity as the DSO and is subject to independent regulation by the Economic Regulation Authority (ERA). Western Power's next ERA funding period commences on 1 July 2028. New DER data arrangements proposed in this paper will include obligations and opportunities for Western Power and its network users, and it is important that Western Power is able to reflect the changes as part of its regulatory reset submission to the ERA, due in February 2027.

6 AEMO 2025, CER Data Exchange Industry Co-Design, Co-Design Summary, April. pg. 14.

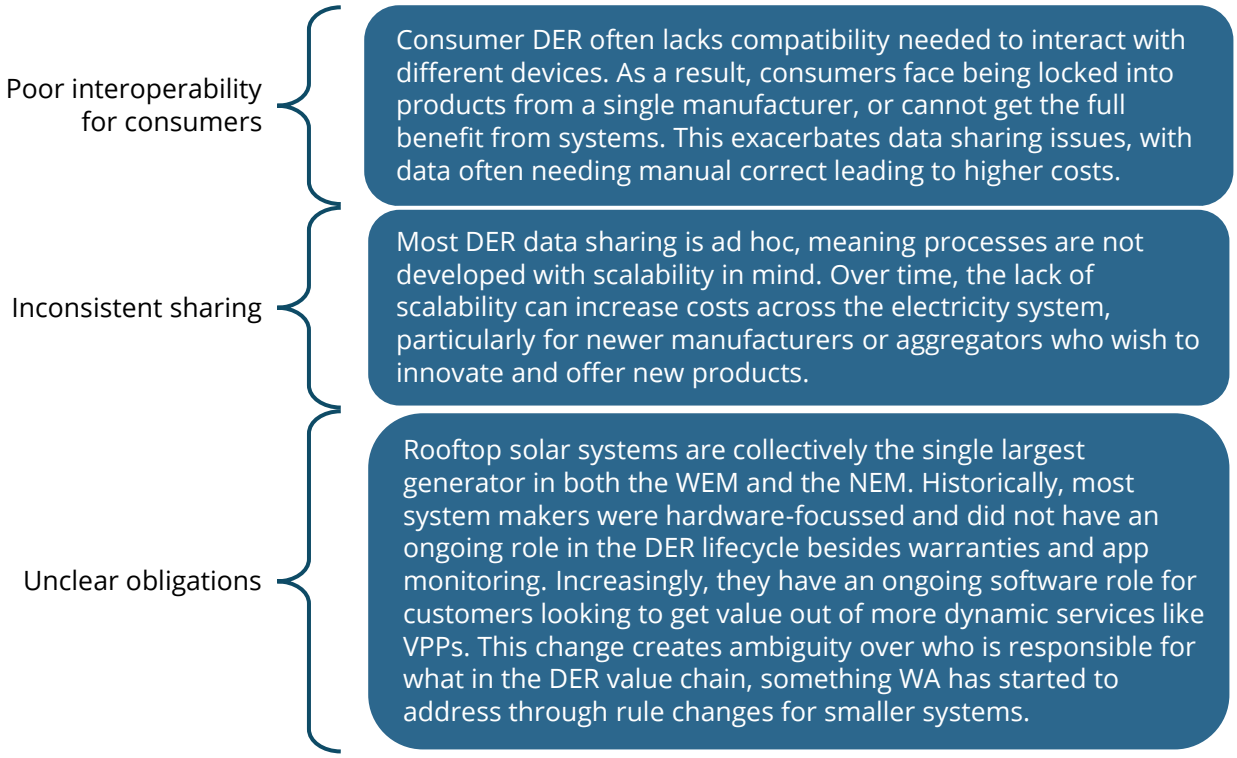
# 3. Data collection and sharing right now

The WA Government's DER Roadmap, released in 2020, provided a plan to integrate DER across Western Australia. To support broad integration, one of the roadmap's first actions was to establish a register of consumer DER devices. Under the ESM Rules, AEMO has been responsible for maintaining the DER Register since its launch in 2021. However, its upgrades to include level 2 and level 3 EV chargers, battery storage devices, and equipment decommissioning have been hampered by the lack of consistent data from the upstream DER connections process.[7]

DEED has published several DER Roadmap progress updates, with each featuring new actions to reflect a broader understanding of DER customer opportunities.[8] Section 4 provides more detail on these policy positions, including current Project Jupiter actions.

## 3.1 National challenges with DER data quality

Across Australia, DER installation and data collection has evolved organically. States and territories including Western Australia have supported consumers to install rooftop solar and batteries to lower bills and reduce emissions. As a result of strong consumer uptake, different states and territories have also assessed DER visibility and data through several projects. These include the Energy Security Board's 2021 data strategy, the Australian Energy Regulator's 2023 review of network visibility, and AEMO's 2024 consultation on electric vehicle data in the NEM. Each project highlights three data-related challenges from such strong DER growth:




7 AEMO is ready to receive EVSE data in the WA DER Register from October 2023, under the EV Action Plan: https://www.wa.gov.au/system/files/2021-08/EPWA-EVActionPlan_18Aug2021e.pdf.

8 See the original DER Roadmap and subsequent progress reports at https://www.wa.gov.au/government/distributed-energy-resources-roadmap.

## 3.2 Ongoing challenges with DER Register data quality

Since the WA DER Register was implemented in 2021, upstream data collection processes and requirements associated with DER connection processes have evolved. This has seen inconsistent data validation and limited visibility where additional and new types of DER devices are added to existing systems. Addressing these gaps will support improvements to the data received in the DER Register and its usability.'

All energy systems rely on good data. Particularly in an isolated grid like the SWIS, system and market operators need to balance electricity supply and demand perfectly. Being able to see and predict energy flows across the network is crucial to running it at the lowest cost. When DER resources like rooftop solar, battery storage and smart EV chargers are completely invisible, AEMO must plan larger contingencies to maintain a balanced grid. All electricity users share these costs. More visible DER does not mean that AEMO needs visibility of customer systems, but a reliable aggregate view of some basic 'standing data' (for example, the combined number of kilowatt hours capacity of home battery systems by postcode).

While WA's electricity legislative framework requires AEMO to maintain the WA DER Register, it does not directly compel Western Power to collect, validate, and provide primary data to AEMO. For the DER Register to benefit electricity users, it needs good quality and available primary data.

**Data quality**
There are many types of DER that households and businesses install. Without a consistent approach to ownership and management of this data, significant quality issues have surfaced over time, such as incorrect capacity ratings, duplicate systems being registered against the same meter, and system upgrades being counted as replacements.

**Data availability**
Most data associated with DER connected to distribution networks: their type, capacities, consumption or generation profiles and other behaviour (such as whether they form a part of a larger portfolio) is not readily or easily available outside of distribution network energy management systems.

# 4. Work to improve WA DER data so far

Work completed and underway to improve DER data in Western Australia identified the collection and visibility of DER data as critically important, particularly to the role of the DSO, and explored the concepts of either a centralised DER data hub or a federated DER data exchange. Work underway to re-design the DER connections process in the SWIS presents an opportunity to address improvements in the customer journey and provide regulatory certainty to ensure better DER data collection. Four separate projects have involved DER data quality and availability:

- DER Orchestration Roles and Responsibilities
- Project Symphony
- Project Jupiter
- Western Power connections process redesign

## DER Orchestration Roles and Responsibilities

As part of the DER Roadmap, DEED completed work on DER orchestration roles and responsibilities (R&R) that sought to enact policy positions flagged in a 2020 Energy Transformation Taskforce issues paper.

In 2022, EPWA concluded a significant work program and published the DER Orchestration Roles and Responsibilities Information Paper (R&R information paper) to provide policy and timing guidance for establishing new functions in the SWIS. The new functions included a distribution system operator (DSO), distribution market operator (DMO), and DER aggregator functions. The R&R information paper also addressed the status of policy positions relevant to improved DER visibility and expansion of network limits (Table 1).

**Table 1: DER orchestration roles and responsibilities– Information paper status**

| Policy area | Position status in issues paper |
|---|---|
| Network visibility | Settled |
| Dynamic operating envelopes | Settled |
| Visibility requirements for small aggregators | Deferred through R&R, and now being addressed through Project Jupiter |

This work identified the need for a more comprehensive data solution as ad hoc processes associated with DER connections and commissioning can span multiple systems. This means that data flows between stakeholders do not necessarily reflect how installers commission systems in homes and small businesses. This can increase costs, reduce efficiency, and make accurate data collection harder.

The work suggested that a streamlined process for collecting and disseminating accurate and detailed information to multiple parties will become increasingly

important, with the ability to update the information as changes occur. In contrast, the existing WA DER Register is a static database populated with potentially incomplete or inaccurate information.

Western Power is the DSO for the SWIS, meaning it is centrally responsible for managing the distribution network as a dynamic two-way electricity system. Effectively operating a modern electricity system where power flows in both directions requires an updated regulatory environment that provides adequate levels of DER visibility and data sharing, while supporting the ongoing evolution as DER continues to grow.

## Project Symphony

Project Symphony was a $35.5 million DER orchestration pilot, partially funded by the Australian Renewable Energy Agency (ARENA). It involved the WA Government, Synergy, Western Power, and AEMO assessing the feasibility of DER as a VPP within the SWIS.

The 2024 Project Symphony final report recommended a 'DER data hub' as a 'single source of truth' to facilitate efficient DER data exchange. Depending on the data type and ownership, the hub was to allow the DMO, DSO and aggregators to use a common data exchange for sharing information.

The final report found that high quality DER data would enable certain use cases depending on the type of stakeholder (Table 2).

**Table 2: Project Symphony final report - Benefits of a data hub (shown by function)**

| Role | Uses and benefits |
|---|---|
| Distribution system operator | Allow more efficient customer targeting, enabling optimal incentives for to be developed for new DER uptake and services/products based on location. |
| AEMO | Allow for efficient calculation, estimation and forecasting of more accurate network demand and generation forecasts based on an understanding of the type, capacity, location and likely performance of DER and their collective impact on demand, particularly at peak time as well as informing the opportunity for Network Support Services. |
| Aggregators | Share data about aggregated systems with electricity retailers through a single standardised backend platform. |

## Project Jupiter

As outlined in Section 1, Project Jupiter launched in 2025 to demonstrate DER orchestration and coordination at full operational scale, following Project Symphony.

DEED engaged Project Jupiter partners over 2025 and 2026 to further investigate policy options for data sharing, including looking at whether there was a need to evolve the WA DER Data Register into a more dynamic sharing platform.

As part of this, DEED looked at three ways it might be possible to leverage preexisting national work on a CER Data Exchange, but with modifications to suit local needs:

- A federated data exchange model, where each organisation retains data ownership while sharing it securely through a common integration platform.
- Three initial policy-driven use cases or DER data categories: DER standing data, DOE sharing, and VPP data.
- A governance structure comprising a coordinating function (under DEED's Coordinator of Energy), a cross-sector advisory body, an operator to implement and manage the platform, and data custodians responsible for their own data.

However, DEED considers that because of the relative simplicity of the SWIS, mandating a specific data exchange mechanism and its associated governance structure is not currently necessary. Targeted 'low hanging fruit' interventions are likely to improve connections and data quality sooner. More information about this is in section 4.1. Key findings about priority DER data categories are in section 4.2.

Separately, Western Power procured a technical design authority (TDA) to complete a high-level technical design for exchanging DER data. The design was based on logical data flows between stakeholders and was agnostic about specific platforms that might be needed. In parallel, DEED looked at policy settings needed for an exchange within Western Australia's context and looked at three technology options:

1. Hub and spoke – a single centralised system for collecting and sharing data.
2. Federated – a single backend integration platform that only handles identity and access management, but which relies on different organisations to internally develop and manage storage systems related to their business.
3. Peer-to-peer – a fully decentralised but coordinated storage, ownership, and access management platform.

Project partners considered that if, through Project Jupiter, there would be a new platform to handle DER data collection and access, a federated exchange would deliver a quick improvement without needing to overhaul separate platforms beforehand. A fully centralised hub and spoke system presents issues with data ownership if multiple users need to store data on a platform they do not operate. Further, this would create a single cyberattack point instead of having data stored on different systems. While a fully peer-to-peer system would be the most technically advanced, each user would also need to invest significantly to uplift existing platforms for this to work.

To implement an effective peer-to-peer solution, each user would also need to heavily invest to lift the maturity of internal tech systems. This is likely to make any rollout a multi-year project that delays nearer term and necessary improvements, making it unviable within the scope of Project Jupiter.

### Subsequent analysis

Subsequent engagement with Project Jupiter partners and DED analysis suggests a main problem is that the DER connections process does not allow for good data capture and validation before the DSO needs to share data. In particular, the DSO does not have clear obligations in legislation to maintain essential DER standing data.

In addition, there is insufficient regulatory clarity on the energy sector parties that need to provide DER data, what type, at what level of detail and frequency, to whom, and when. The DER Connections Process Re-Design, outlined below, presents an opportunity to address improvements in the customer journey and provide regulatory certainty to ensure better DER data collection.

### DER connections redesign

Work is underway by Western Power and Synergy to re-design the DER connections process for non-contestable customers in the SWIS. This project commenced in line with actions in the 2024 DER Roadmap third progress report, calling out the need to consider data capture for network planning, and it supports Project Jupiter implementation.

The re-design project has multiple objectives, including to address customer pain points and modernise the process to support greater DER uptake and emerging types of DER, and to enhance data capture to support exchange of DER data. Formalisation and automation of the various stages and approvals during the process will also support compliance with technical standards, implementation of DOEs, and ensuring compliance with ESM Rules and WEM Procedure obligations. Further industry consultation on the re-designed process is planned later in 2026.

The process to redesign the DER connections will benefit from having clear regulatory obligations within the ESM Rules. This will involve identifying necessary data fields, collection frequency, validation levels, and sharing requirements. Further, regulatory obligations on Western Power will enable the improved connections process to extend to more customers sooner, making it easier for larger customers to connect DER to cut the cost of doing business in WA.

## 4.1 Why the SWIS has different DER data needs

DEED identified that there are two distinct areas of complexity, which together influence the most appropriate option to improve DER connections, data collection, and data sharing in the SWIS compared to the NEM.

While WA is part of national work for data sharing, its main electricity system is not as complex as the NEM because it has fewer system and market participants, no meter contestability, and limited contestability in the retail sector, with the threshold being set at 50 MWh per annum. This may mean a simpler data sharing arrangement may be more appropriate. In the SWIS, Western Power is the network operator, and Synergy is the retailer, for residential and small business customers consuming less than 50 MWh

each year. In addition, under recent changes to the ESM Rules, Synergy is responsible for setting out the Third-Party Aggregator Framework involving non-contestable customers.[9] More broadly in the WEM, there are around 100 registered participants. Contrast this with the NEM, where there are more than 600 participants, including multiple distribution networks often within a single state. As a result, while national harmonisation work is addressing issues like inconsistent data formats between DNSPs, this is less of an issue in Western Australia.

Further, Western Power does not have direct contractual relationships with most customers, who interact with the electricity system exclusively through their retailers. Retailers are responsible for DER system compliance and manage things like network contracts on their customers' behalf. This 'linear contracting relationship' is unlike the NEM, where customers have a direct relationship with both DNSPs and retailers.

National work to improve DER data focusses on this more complex environment, and so technical solutions for the NEM are not always optimal for Western Australia. Reform options in this paper (section 5) aim to achieve similar outcomes to the CER Data Exchange, but without the unnecessary cost or complexity for our simpler market.

Turning to DER devices; like the NEM, WA DER uptake is high by international standards, but individual system behaviour remains mostly passive. Until around July 2025 when WARBS started, most household DER supplied energy to system owners and simply spilled any excess to the grid. Even with low data quality about systems, this made it straightforward to predict how systems would perform across the network for secure operations, and for forecasting and planning. However, most new and upgraded solar PV systems in the SWIS now include a battery due to the impact of the WARBS. This consumer shift has introduced additional complexity that, combined with incomplete data, means data is not flowing through to meet the DER Register's intent.

The added complexity is largely because of variations in how different battery systems charge, discharge, and export energy to the grid. EV charging will also contribute to this, and EV batteries store a large part of the energy that a single rooftop solar system can produce. This affects assumptions that system and market operators can make about DER as EV uptake grows.

There is also greater urgency to address VPP data gaps in the SWIS as the WARBS required VPP participation to receive the rebate, unlike the national Cheaper Home Batteries scheme. This has led to significantly higher VPP participation in WA than in the NEM.

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[9] Electricity System and Market Amendment (Tranche 9) Rules 2025, https://www.wa.gov.au/system/files/2025-12/electricity_system_and_market_amendment_tranche_9_rules_2025.pdf, pg. 15. Synergy 2026, 'Third Party Aggregator Framework', 1 April, https://www.synergy.net.au/Our-energy/Household-energy-assets/DER-Industry-Resources/Public-consultation

## 4.2 SWIS priorities for DER data

Differences in complexity between the SWIS and the NEM, and WA's public ownership of different parts of the utility chain, mean that the best approach to improve connections and data also varies between the SWIS and the NEM. Foundational work in Project Jupiter (see Section 4) identified three priority categories of DER data for the SWIS:

- DER system standing data
- Dynamic operating envelopes and network limit sharing
- Virtual power plant data

### DER standing data

High-quality DER standing data is a priority improvement area because it is a precursor for data improvements in the other two areas. Standing data refers to things like:

**System type** like whether a solar inverter is AC or DC coupled, and whether an electric vehicle charger is unidirectional or bidirectional (vehicle-to-everything, V2X).

**Asset information** like the manufacturer and model number of solar inverters, battery systems, and electric vehicle chargers.[10]

**Capacity** data like an inverter's generation capacity, and storage capacity of batteries.

**Grid connection** data like the national metering identifier (NMI), install date, and whether a property uses a single or three-phase supply.

**Spatial** data like the postcode in which systems are connected. Installers provide much of this information already through connection applications, but issues persist with being able to validate the data before providing it to parties like AEMO.

### Dynamic operating envelopes and network limit sharing

Flexible rooftop solar exports enable customers to install much larger systems to support electrification. Flexible exports and DOEs also allow customers to export much more energy to the grid.

There is currently no specific and relatively granular mechanism for Western Power to share network information with all aggregators. Enabling better access to network capacity information in a standard way, participants can plan more effectively. For example, knowing earlier which parts of the network can quickly accept new public EV chargers or might be suitable for a managed EV charging VPP.

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[10] Throughout this paper, "EV chargers" refers to dedicated or Level 2 AC chargers, typically with of power output of 7 to 22 kW. Level 1 AC chargers, designed to use a standard power point with safety features, are not included in the proposed reforms. See How to charge your electric vehicle | energy.gov.au.

**Table 3: Primary reasons for exchanging DOE information (by entity)**

| Entity | Reason |
|---|---|
| DSO/Western Power | Provide NMI-level DOE information to retailers so that retailers can pass DOEs through to customer systems.<br>Manage hosting capacity and provide transparency of aggregate capacity to support good system planning and inform private investment decisions. |
| AEMO | Gain visibility of capacity at the distribution-transmission interface and across network areas to support good system planning, such as examining the impact on forecasts for system security and reliability, future forecasting, and refining grid planning models. |
| Electricity retailers | Access NMI-level DOE information to pass through to customer systems.<br>Assess aggregate capacity when considering VPP customer offers. |

## VPP data

Outside of bespoke arrangements between aggregators and Western Power, there is limited visibility of the types and sizes of VPPs across the SWIS. For example, a home battery VPP that injects power into the grid will achieve a different outcome to a VPP that focusses on managed EV charging. Securely exchanging consistent VPP data will help quantify these differences and demonstrate how VPPs defer network upgrades.

There is currently no agreement about what a complete set of VPP data may look like, and DEED considers this something likely to evolve over time.

**Table 4: Primary reasons for exchanging VPP information (by entity)**

| Entity | Reason |
|---|---|
| DSO/Western Power | Understand DER enrolled into VPPs to manage network constraints and inform recruitment for NSS, and to validate that VPP enrolments for a single NMI are not accidentally double counted. |
| AEMO | Identify DERs enrolled into VPPs for broader system planning, including to forecast behaviour and its network impacts. |
| Electricity retailers | Access network-verified data on customer DER and VPP participation, improving data accuracy, and coordinate with other customer products. |

Below, DEED outlines the proposed principles and reform proposals to address the SWIS' DER connections and data priorities.

# 5. Foundational options for better data

Energy sector participants are often highly technical and able to develop bespoke solutions to overcome issues accessing and analysing data. However, bespoke solutions take time to develop and can increase costs and fragmentation across the sector.

Improving DER data and reducing the need for bespoke platforms will not mean a single new technology solution. Instead, DEED expects a sequence of improvements to build digital capability over time.

To avoid creating unnecessary 'tech debt' – costs to re-work platforms later – DEED proposes a set of foundational improvements for DER data, which will help to address known data issues in the near term and would not prescribe a single new exchange platform within the ESM Rules.

## Principle 1: Increasing DER standing data quality

In June 2025, the WA Government published a policy statement on DER device interoperability. Through the policy statement and subsequent regulatory changes, all new and upgraded solar and battery systems now have guaranteed minimum functionality needed to opt in to things like flexible solar exports. Installers now commission Synergy customers' systems up to 30 kVA using CSIP-AUS. CSIP-AUS is designed for operational data and validates communications and control compliance. It enables retailers to see information like system nameplate capacity. Its already-widespread use makes it a low-cost opportunity to validate some basic system information that installers provide to Western Power as part of a new connection. The DSO could continue to use other sources for data validation, and the proposals would only look to create new obligations alongside a new connections process already being designed.

Much of the same data already flows to AEMO's DER Register through more manual mechanisms, but inconsistent validation means it is not used for system planning as originally intended.

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### Reform proposal 1 – Require inverters up to 30 kVA to be CSIP-AUS (v1.2) enabled to support interoperability of DER devices

Requiring CSIP-AUS version 1.2 (SA TS 5573:2025) for all customer sites up to 30 kVA will harmonise small user sites in the SWIS to use the same nationally agreed communications protocol regardless of retailer.[11] [12] This may enable more consistent access to basic standing data for non-contestable and contestable customer solar inverters. Consistent processes for onboarding DER and validating standing data for all

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[11] See https://cleanenergycouncil.org.au/industry-programs/products-program/inverters/csip-aus-inverters.

[12] DEED does not propose any changes to the 1.5 kW fixed export limit option for customers who cannot or do not wish to have an ongoing internet connection.

systems smaller than 30 kVA would make it easier to transfer data to a new retailer and for retailers to share system information with Western Power. Measures can then be taken to automate data collection from CSIP-AUS and to validate the data using other avenues such as observation of AMI data.

The proposal relates only to the communication method between an aggregator and the device, or between an aggregator and an overarching cloud platform. It does not propose to require a specific battery storage control method.

### Reform proposal 2 – DSO functions to collect, validate and share data

This would create new obligations for Western Power to collect standing data at the point of installation as part of a redesigned connections process. This will enable better quality data in conjunction with information that retailers collect and share when customers wish to connect. DEED expects that data collection and sharing obligations will evolve over time and new data sharing obligations may emerge for other rule participants.

The ESM Rules would set minimum obligations about level of data detail, sharing frequency, and data recipients, with specific data fields set by Western Power in a WEM Procedure that it consults on. The WEM Procedure would be subject to more detailed consultation later, but DEED expects initial data fields would be like those in AEMO's existing WEM Procedure for the DER Register.[13] The regulatory instruments that set specific data requirements are likely to continue to evolve over time.

### Reform proposal 3 – Indirect data collection for electric vehicle chargers

DEED proposes to improve EV supply equipment (EVSE) data collection for level 2 chargers, so that data Western Power provides to AEMO under existing DER Register requirements is more robust. This is likely to include lifting some definitions from those instruments into the ESM Rules, such as EVs and EVSE, so that the definitions can be used more broadly.

DEED does not propose to include new technical requirements for level 1 or level 2 EVSE at this time but expects things like grid to customer communication protocols will be one of the things the DSO would collect (for example, whether a new charger is compatible with the Open Charge Point Protocol).

For one-way chargers that only use power, improving visibility would rely on indirect DSO data collection from existing processes like the one used for electrical safety certificates. Since electricians already provide some information when installing new electrical circuits for level 2 EV chargers, tapping into this existing process is a simple low-cost way to improve data about the number of EV chargers being installed. DEED

[13] See WEM Procedure: Distributed Energy Resource: (DER) Register Information.

welcomes feedback on specific changes to improve the quality of this data but notes the need to balance data quality with keeping entry barriers low at this stage of Western Australia's EV uptake. Indirect data collection from electrical certificates would not provide complete visibility of all EV chargers, but it would help to better understand the proliferation of EV chargers across the network to inform good system planning.

This initiative implements further visibility requirements to capture EVSE in the WA DER Register identified in the WA Government's Electric Vehicles Action Plan (EVAP). The EVAP was designed to improve the security and utilisation of the grid and to accommodate a higher level of renewable energy in the power system.

## Principle 2: Making it easier for businesses to connect DER

Australia is a global leader in residential rooftop solar uptake, but commercial solar across Australia lags. Providing better visibility of larger DER connections, including commercial and industrial rooftop solar, to the DSO is an important enabler to removing soft barriers that slow uptake.

Soft barriers include, for example, requiring multiple application steps so that a DSO can get enough information about systems to know they will not impact grid reliability for other customers. With better data and good system visibility, it may be possible to begin removing some of the manual DER connection steps that currently slow the rate of larger but relatively straightforward DER systems. This would create better pathways for business customers to install DER, which is critical to maximising our available roof space and energy storage and cutting the cost of doing business in Western Australia.

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### Proposal 4 – Standardised data to create an easier connection pathway

This would look at ESM Rules changes to create a lower cost pathway for larger but relatively routine DER installations connected to the low voltage network (under 1000V).

The change relates to proposed new DSO data collection and validation functions by improving the connections process for a broader range of systems. DEED expects this will likely include DER up to 1 MVA, but with a simple approach for systems between 30 and 200 kVA that resembles the current approach for residential systems.

This could include extending CSIP-AUS as a communication option for commercial solar to better standardise technical characteristics, data, and commissioning as a precursor to removing connection steps. Extending CSIP-AUS to more systems (for example, inverters up to 200 kVA) aligns with DNSP changes in Australia's east coast and would increase commercial solar uptake by simplifying connections. Because of lead times for design and install of larger systems, DEED expects any new requirements in this area would have a longer transitional period so that they do not affect commercial systems already in the pipeline, and to provide inverter manufacturers with time to test any integrations.

### Proposal 5 – Requirements to share network capacity

Separate to the existing network opportunity map under the Access Code, this proposal would formalise requirements for Western Power to share more information about its network's capacity in several ways depending on the data recipient:

1. Publish forecasts for distribution network capacity on its website at an aggregate level, such as forecasts for distribution network feeder capacity (such as the interactive network opportunity map, but across the network more broadly).
2. Begin to publish historical distribution network capacity on its website, again at an aggregate level, so that forecast and actual feeder capacities can be compared.

Because of the overlap between network capacity information and VPP opportunities, more information about this proposal under reform principle 3 is provided below.

## Principle 3: Better understanding how VPPs mitigate grid impacts and maximise opportunities they can deliver

Australia has the fastest rate of residential battery uptake in the world, and around 9 in 10 new solar systems now include a battery. This rapid uptake means now, more than ever, DER systems are collectively the biggest player in the electricity system. In addition to passive benefits to consumers and the grid, the WA battery rebate also guarantees minimum system interoperability for consumers. This prevents consumers being locked in to specific battery brands to be able to use a VPP. Using CSIP-AUS, most home batteries in WA have guaranteed and tested functionality for consumers to be able to easily opt in and out of VPPs and flexible exports without further upgrades or site visits.

Home batteries deliver lasting cost of living relief for households and cut costs across the electricity system. Working VPPs are a core part of this, delivering secure and efficient operation in Western Australia's isolated grid, which is built to handle peak electricity demand on just a few hot nights each year. Through VPPs, system owners benefit from a battery's full capacity on these peak nights, reduce costly upgrades to local networks, and cut greenhouse gas emissions. While often achieving a similar outcome, this type of grid support is distinct from customer devices like home energy management systems that control DER based solely on what a customer chooses.

Electricity system analysts can predict how VPPs might lead to fewer network upgrades. However, providing operators with basic data about aggregated DER would solidify its position as a core part of system planning, creating opportunities for consumers to benefit directly. Aggregators mostly provide VPP information to AEMO or Western Power through bespoke sharing arrangements, such as contracted network support services. To better quantify VPP contribution to reducing peak demand, DEED is considering light-touch options to define VPP and for some VPP data sharing.

### Proposal 6 – Explore mechanisms for VPP operators to provide simple capacity data

This proposal would explore ways to define VPP as DER that is aggregated and remotely controlled specifically to provide some kind of service to the market, the network or a market participant, like a network support service or a daytime 'solar soaker' retail product. This simple definition would not include customer-level optimisation systems, a device's originally equipment manufacturer (OEM) cloud-based monitoring platform, or an automatic device-level response to something like a grid disturbance. Conceptually, the proposed definition would capture VPP activations that intentionally cause DER to behave differently than it otherwise would. For example, an aggregator's remote instruction for a battery to charge from the grid to take advantage of cheap daytime solar would be a VPP behaviour, but an internal optimisation that causes a battery to charge from the grid to ensure it is fully charged later would not be captured.

Subject to consultation feedback, DEED will consider mechanisms to capture simple data about VPP contributions to the grid. One option would be to define 'controllable VPP capacity' in a way that generally aligns VPP categories with existing dispatch behaviours in the ESM Rules, such as injection, storage, and withdrawal VPPs, or a combination of the three. Rather than providing nameplate capacity, for example, which may not necessarily reflect the actual injection capacity for aggregated DER as part of a VPP, the controllable capacity concept allows VPP operators to 'bake in' system behaviour differences in any data that they provide. For example, a VPP's available injection capacity for a given number of systems will vary based on the proportion of AC and DC coupled rooftop solar inverters. Instead of attempting to categorise different VPP subtypes to reflect these individual differences, 'controllable capacity' would allow VPP operators to provide a single capacity value that accommodates a full spectrum of different individual systems within a VPP.

There are implementation challenges to capturing this data that will require further investigation. For instance, VPP operators are not necessarily market participants, meaning there is not an existing, clearly defined group of 'VPP operators' or an existing compliance and enforcement mechanism to support new obligations applying to VPP operators. One option, therefore, to capture this data would be to place an obligation on market participants to provide controllable VPP capacity data to AEMO or Western Power in relation to their own VPP capabilities and/or any VPP operators they partner with to provide services.

In future, registration under the Alternative Electricity Services framework may be a possible option for VPP operators to provide simple controllable capacity information.

DEED welcomes stakeholder feedback on the benefits, issues and challenges associated with capturing this type of data to inform system planning and help stakeholders develop new VPP products.

### Proposal 7 – Tie Western Power requirements to share network capacity information with VPP opportunities

Stakeholders have variously provided feedback to DEED that an issue they face developing and promoting VPPs to customers is the lack of visibility about connections that sit underneath each transmission node identifier (TNI). Existing rules have historically prevented Western Power sharing information about specific NMIs because of implications for customer privacy.

Western Power recently launched its interactive network opportunity map (iNOM) platform to provide a more spatial view of network support service opportunities. This platform is an example of overcoming NMI privacy issues by showing VPP opportunities at a street or distribution feeder level and separate to the existing network opportunities map made under the Access Code.

DEED is interested to hear whether broader use of this type of spatial opportunity mapping would be a useful way to promote development of VPPs and larger EV charging sites. DEED expects any specific proposals would be outcomes-based and focus on Western Power making data available that prospective or current operators could use to self-serve.

# 6. Request for feedback

DEED is seeking responses to the following questions:

- Do you have feedback on the seven proposals?
- Are there any other things that we should consider to improve DER data quality, collection and/or data flows?
- How well do data sharing and connection processes work for different stakeholders, like consumers, DER installers, electricity retailers, and potential VPP aggregators?
- Will proposals in this paper broadly help to increase DER uptake and participation, by making it easier to install or upgrade systems?
- Are there parts of the DER connection process we should pay specific attention to as part of this reform work?

# 7. Where to from here

After the submission period for this consultation closes, DEED will publish a summary paper that outlines the feedback that stakeholders provided. The summary paper will include information about the approach that DEED will take to uplift DER data quality and how the approach reflects feedback.

Following that, DEED will prepare an exposure draft of changes to the Electricity System and Market Rules (ESM Rules). Stakeholders will have an opportunity to provide feedback on those specific amendment proposals later in 2026.

This period will allow for amendments towards the end of 2026 with a staggered implementation of any changes to give stakeholders time to prepare. Because of the lead time to design and install commercial DER systems, for example, DEED does not expect any ESM Rules changes for business DER will take effect before 1 January 2028.