AUSTRALIAN VANADIUM LIMITED (ASX: AVL)

Response to the Issues Paper: Making it easier to connect solar, batteries and EV chargers

Issues paper on connections and data quality for distributed energy resources

Prepared by	Australian Vanadium Limited
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1. Introduction

Australian Vanadium Limited (AVL) welcomes the opportunity to provide feedback on the WA Government issues paper, Making it easier to connect solar, batteries and EV chargers. AVL supports reforms that improve distributed energy resource (DER) data quality, reduce unnecessary connection delays and enable batteries to provide greater value to customers and the South West Interconnected System (SWIS).

AVL is developing an integrated Australian vanadium supply chain and, through its wholly owned subsidiary VSUN Energy, is active in the development and deployment of vanadium flow battery energy storage solutions. AVL therefore has a particular interest in reforms affecting battery storage, commercial and industrial DER, virtual power plants (VPPs), long-duration energy storage and the connection of emerging battery technologies.

AVL broadly supports the seven reform proposals. The comments below focus on ensuring that the resulting framework is technology-neutral, proportionate, commercially practical and capable of accommodating a broad range of battery systems rather than being designed primarily around residential lithium-ion products.

Summary of AVL position

Proposal	AVL position	Key qualification
1. CSIP-AUS up to 30 kVA	Support	Apply requirements at the appropriate site gateway or inverter level, allow equivalent compliance pathways and provide adequate transition periods.
2. DSO data functions	Support	Western Power should collect once, validate, maintain and share data under clear governance, privacy and correction arrangements.
3. EV charger data	Support	Use existing electrical certification processes and collect essential standing data without creating unnecessary entry barriers.

Proposal	AVL position	Key qualification
4. Easier business connections	Strongly support	Create a risk-based pathway up to 1 MVA that expressly covers battery-only, hybrid, modular and bidirectional systems.
5. Network capacity sharing	Strongly support	Publish both import and export hosting capacity with useful spatial, temporal and machine-readable information.
6. VPP capacity data	Support with refinement	Report power in both directions and include usable energy or duration, availability and response characteristics at an aggregated level.
7. Capacity and VPP opportunities	Strongly support	Use spatial mapping to show where and when flexibility is needed, including opportunities for commercial and industrial batteries.

Overarching recommendations

- Keep all technical and data requirements technology-neutral and outcomes-based, with alternative compliance pathways for emerging technologies.
- Collect each data item once, identify the accountable data owner, and reuse validated information across the connection, registration, retailer and market processes.
- Introduce clear service standards and published timeframes for connection applications, including pre-application advice and escalation pathways.
- Treat battery import capacity, export capacity and usable energy as distinct characteristics. A storage system cannot be adequately represented by a single nameplate power value.
- Protect customer privacy, commercially sensitive aggregator information and cybersecurity while providing enough aggregated information to support investment and system planning.
- Provide appropriate transition periods so that projects already designed, procured or contracted are not stranded by new requirements.

2. Responses to consultation questions

Question 1. Do you have feedback on the seven proposals?

AVL response

Reform proposal 1: Require inverters up to 30 kVA to be CSIP-AUS (v1.2) enabled

AVL position: Support, subject to technology-neutral implementation and transition arrangements.

AVL supports a common communications profile that improves interoperability, allows standing data to be validated and reduces the risk of customers being locked into a single retailer, aggregator or manufacturer. The issues paper appropriately distinguishes communications capability from the internal method used to control a battery.

The detailed requirements should, however, recognise that battery systems can have different architectures. Compliance should be capable of being demonstrated at the site-level inverter, power conversion system or communications gateway. It should not be necessary for each internal battery module or proprietary battery-management component to separately implement the external communications protocol.

AVL recommends that the implementation framework:

- allow a functionally equivalent or alternative compliance pathway where a system can securely deliver the required data and control outcomes;
- apply requirements to the grid-facing interface rather than prescribing battery chemistry, internal control architecture or a particular original equipment manufacturer platform;
- include defined fail-safe operating behaviour where communications or internet connectivity are unavailable;

- include proportionate cybersecurity, authentication and software update requirements;
- provide a practical certification and testing pathway for new and emerging battery technologies; and
- include grandfathering or transitional treatment for systems that are already installed, contracted, ordered or materially progressed before the new requirements commence.

Reform proposal 2: Establish DSO functions to collect, validate and share DER data

AVL position: Support.

AVL supports Western Power having clear responsibility, as the distribution system operator, to collect and validate essential DER standing data and make validated information available to authorised parties. A clearly accountable data custodian should reduce duplicate records, inconsistent ratings and the current uncertainty about which party is responsible for correcting information.

The framework should be designed around a collect-once and use-many-times principle. Customers and installers should not be required to separately submit substantially the same technical information to Western Power, a retailer, AEMO, an aggregator and an equipment registration process.

AVL recommends that the rules and procedures clearly address:

- the source and accountable owner for each data field;
- the validation status, date and source of each data item, including whether it is proposed, installed, commissioned or verified as-built data;
- customer and installer rights to review and correct inaccurate information;
- audit trails for material changes, upgrades, replacements and decommissioning;
- privacy classifications, permitted recipients and permitted uses of data;
- secure, standardised and machine-readable interfaces rather than manual data exchange;
- reasonable data retention, cybersecurity and breach-management requirements; and
- published data-quality and connection-processing performance measures.

Reform proposal 3: Indirect data collection for electric vehicle chargers

AVL position: Support, with a proportionate and clearly defined data set.

AVL supports using existing electrical safety certification and installation processes to improve visibility of Level 2 and Level 3 electric vehicle charging infrastructure. This is preferable to creating a separate customer-facing registration process for every charger.

The initial data set should be limited to information that is genuinely useful for planning and safety, such as connection location, phase, rated import capacity, commissioning date, whether the charger is smart or controllable, whether it is capable of bidirectional operation and the relevant communications protocol. Ongoing operational telemetry should not be required merely because a charger has been installed.

The detailed reforms should clarify the treatment of high-capacity DC fast charging sites, multiple chargers behind one connection point and staged charging-hub developments. For larger sites, the relevant planning information may be the site-level maximum demand and controllable demand rather than the sum of individual charger nameplate ratings.

Reform proposal 4: Standardised data to create an easier connection pathway for businesses

AVL position: Strongly support.

AVL strongly supports a simplified pathway for larger but routine low-voltage DER connections, including the proposed graduated approach for systems between 30 kVA and 200 kVA and a broader pathway extending up to approximately 1 MVA. Commercial and industrial customers currently face greater uncertainty, manual assessment and bespoke information requirements than residential applicants.

The pathway should expressly include battery-only systems as well as solar-plus-storage systems. Battery storage creates distinct connection issues because it can operate as both load and generation. Application forms and technical assessments should separately identify maximum import, maximum export, inverter or power conversion rating, usable energy capacity, intended operating mode and any control limit that prevents simultaneous operation at the full theoretical rating.

AVL recommends that the redesigned pathway include:

- a preliminary self-service or pre-application capacity check before detailed engineering is commissioned;
- a short-form pathway for certified and technically routine systems, supported by standard data templates and model settings;
- published service levels for completeness checks, technical assessment, information requests and final decisions;
- a clear stop-the-clock mechanism that only applies when material information is genuinely outstanding;
- standard treatment of AC-coupled, DC-coupled, battery-only, hybrid, backup-capable and islandable systems;
- a streamlined variation pathway for staged or modular expansion where the approved site import and export envelope is not exceeded;
- an alternative technical compliance pathway for systems that do not use CSIP-AUS but can meet equivalent communications and control outcomes;
- transparent fees and escalation arrangements; and
- a single digital workflow that carries application data through design, approval, commissioning and as-built confirmation.

A standardised pathway should not become a one-size-fits-all technical prescription. The most effective approach is a risk-based framework with standard data, standard assessment criteria and defined alternative pathways for unusual or innovative systems.

Reform proposal 5: Requirements for Western Power to share network capacity

AVL position: Strongly support.

Improved visibility of network capacity would materially assist customers, developers and investors to identify suitable locations before incurring substantial development and connection costs. AVL supports publication of both forecast and historical distribution network capacity.

For battery storage and EV charging, the information should distinguish between the ability of the network to accommodate additional import and additional export. A location may have limited solar export capacity but strong value for flexible charging or controlled withdrawal, or the reverse. A single undifferentiated hosting-capacity value would therefore have limited usefulness.

AVL recommends that published information include, where practical:

- separate import and export capacity or constraint indicators;
- feeder-level or similarly useful spatial granularity while preserving customer privacy;
- the time periods or seasons in which constraints generally occur;
- historical utilisation and curtailment information alongside forward forecasts;
- planned network augmentations and indicative timing;
- the date of the underlying data and the expected update frequency;
- confidence ranges or clear caveats where capacity is indicative rather than a connection offer; and
- machine-readable data or application programming interfaces in addition to an interactive map.

Published capacity information should be treated as an early investment-screening tool rather than a guarantee of connection. Its value will depend on timely updates, clear definitions and an explanation of the assumptions used.

Reform proposal 6: Explore mechanisms for VPP operators to provide simple capacity data

AVL position: Support, with refinement of the minimum data set.

AVL supports a light-touch and technology-neutral definition of a VPP based on coordinated, remotely controlled behaviour that provides a service to the market, network or another electricity-sector participant. Customer self-optimisation and passive equipment monitoring should not be captured merely because a device can communicate with an external platform.

The proposed concept of controllable capacity is useful, but a single power value will not adequately describe battery capability. For planning purposes, a battery portfolio capable of injecting 10 MW for 15 minutes is materially different from one capable of sustaining 10 MW for eight hours. Similarly, a portfolio may have different controllable import and export capability.

AVL recommends a tiered approach. The basic planning data set should remain simple but include, at an appropriate aggregated level:

- controllable injection capacity in MW;
- controllable withdrawal or charging capacity in MW;
- usable energy capacity in MWh, or an equivalent sustainable duration at the reported power;
- typical response time and minimum activation duration;
- relevant availability windows or material operating constraints;
- the geographic aggregation level, such as feeder, zone or transmission node; and
- the date, basis and confidence of the reported capacity.

More detailed telemetry or performance information should only be required where an aggregator is contracted to provide a specific service. Public or general planning disclosures should be aggregated and should not reveal individual customer participation, commercially sensitive portfolio composition or proprietary control strategies.

The framework should also prevent double counting where one customer or device is associated with more than one product or intermediary. The party responsible for reporting capacity should be clearly identified, and capacity should reflect what is actually controllable and available rather than the sum of installed nameplate ratings.

Reform proposal 7: Tie network-capacity information to VPP opportunities

AVL position: Strongly support.

AVL supports broader use of spatial opportunity mapping to identify where flexible demand, battery discharge, managed EV charging or other VPP services are likely to provide value. This would help aggregators and project developers focus customer acquisition and project development in areas where the network has a genuine need.

Opportunity information should, where possible, describe more than location. It should identify the direction of the required service, relevant time window, expected duration, indicative scale, likely lead time and whether the need is recurring, seasonal or associated with a particular network contingency.

The framework should not be limited to residential VPPs. Commercial and industrial battery systems, community batteries, embedded networks, managed EV charging fleets and other aggregated resources may provide significant and durable network support. Opportunity mapping and subsequent procurement processes should remain open to all technologies and business models capable of meeting the required service.

Western Power should continue to use aggregation and appropriate spatial granularity to protect individual NMI and customer privacy. The map should also be linked to transparent information on how opportunities may progress into a network support procurement process, including eligibility, timing and performance requirements.

Question 2. Are there any other things that we should consider to improve DER data quality, collection and/or data flows?

AVL response

Yes. AVL recommends that the reform program address the full lifecycle of a DER asset and not focus only on the initial connection application. Data quality will continue to deteriorate unless there are simple processes for commissioning, correcting, upgrading, replacing, transferring and decommissioning assets.

Lifecycle data and a single source of truth

- Use a persistent site and asset identifier so that an upgrade is not incorrectly recorded as a duplicate or complete replacement.
- Record the status of information as proposed, approved, installed, commissioned, verified or decommissioned.
- Require as-built confirmation after commissioning, but allow unchanged design information to be confirmed rather than re-entered.
- Provide straightforward correction and change processes for customers, installers and authorised service providers.
- Define materiality thresholds so that minor firmware or component changes do not trigger unnecessary new connection applications.

Battery-specific standing data

For batteries, the minimum standing data should distinguish the grid-facing power conversion system from the battery energy-storage component. Useful fields may include maximum import and export ratings, usable energy capacity, number of phases, AC or DC coupling, backup or islanding capability, controllability, site gateway or inverter model and commissioning date. Battery chemistry should only be collected where it has a clear safety, technical or planning purpose.

Data standards and interoperability

- Align definitions and data formats with national standards and the AEMO DER Register wherever this is practical for the SWIS.
- Use open, documented and machine-readable interfaces to avoid new bespoke integrations.
- Separate mandatory core fields from optional or service-specific information so that the data set remains proportionate.
- Maintain published version control and transition periods when procedures or technical fields change.

Privacy, customer rights and cybersecurity

- State clearly who may access each class of information and for what purpose.
- Give customers access to their own registered information and a practical way to correct errors.
- Use aggregated data for public planning and opportunity maps wherever individual information is unnecessary.
- Apply security-by-design, least-privilege access, authentication, logging and incident-response requirements.
- Avoid requiring commercially sensitive VPP or OEM information unless it is necessary for a defined regulatory or contracted purpose.

Performance and accountability

The reforms should include measurable outcomes, such as application-processing time, first-time completeness, error rates, time to correct data, percentage of commissioned systems with validated as-built data and the availability of network-capacity information. Publishing these measures would help determine whether the reforms are actually reducing customer effort and connection delays.

Question 3. How well do data sharing and connection processes work for different stakeholders, like consumers, DER installers, electricity retailers, and potential VPP aggregators?

AVL response

The issues paper identifies genuine weaknesses in the current arrangements. In AVL's view, residential connection pathways have become more standardised, but data flows remain fragmented and commercial or industrial battery connections can still be highly manual, sequential and uncertain. Different parties may request similar information in different formats, and the responsible party for correcting data is not always clear.

Stakeholder	Current issue	Priority improvement
Consumers and businesses	Limited visibility of network capacity, technical requirements, process status and expected timing. Data may need to be supplied more than once.	A single guided process, clear status tracking, published timeframes and access to the customer's registered data.
Installers and consultants	Different portals, changing fields, manual re-entry and uncertainty about which party is accountable for updates or corrections.	Standard data dictionary, reusable project records, API integration and clear commissioning and variation rules.
Electricity retailers	Reliance on data collected elsewhere and potential inconsistencies between approved, installed and registered systems.	Access to validated standing data and clear rules for sharing dynamic operating envelopes with customer systems.

Stakeholder	Current issue	Priority improvement
VPP aggregators	Bespoke data-sharing arrangements and limited visibility of network needs, capacity and customer locations suitable for services.	Standard aggregated data interfaces, opportunity maps and proportionate capacity reporting.
OEMs and technology providers	Certification and protocol changes can have long development lead times and may unintentionally favour established products.	Stable published standards, equivalent-compliance pathways and realistic transition periods.
Western Power and AEMO	Incomplete or inaccurate upstream data limits forecasting, planning and confidence in DER capability.	Validated lifecycle data, defined custodianship and automated sharing of agreed core fields.

The reform program should be designed around the actual sequence in which a project is developed and installed. Information should move with the project from preliminary enquiry through connection approval, procurement, commissioning, registration and ongoing operation, rather than being repeatedly recreated by each participant.

Question 4. Will proposals in this paper broadly help to increase DER uptake and participation, by making it easier to install or upgrade systems?

AVL response

Yes. Taken together, the proposals should improve DER uptake by reducing uncertainty, making suitable network locations easier to identify, standardising routine connections and creating clearer pathways for batteries and VPPs to provide services. Proposals 4 and 5 are particularly important for commercial and industrial customers because they can reduce development costs before a project reaches the formal connection stage.

The benefits will depend on implementation. New data and communications obligations could have the opposite effect if they are overly prescriptive, duplicate existing processes or create certification barriers for emerging technologies. AVL therefore recommends that DEED assess each detailed proposal against the following tests:

- Does the change remove at least as much customer or installer effort as it adds?
- Can the required information be collected from an existing process or system rather than through a new form?
- Is the requirement technology-neutral and open to equivalent ways of meeting the outcome?
- Is the information necessary for a defined planning, safety, market or network purpose?
- Are processing timeframes and accountabilities clear?
- Is there a realistic transition period for products and projects already in the market?
- Will performance be measured after implementation?

AVL also recommends that the reforms recognise the value of long-duration storage. Connection and VPP frameworks should not inadvertently favour systems optimised only for short, high-power events. Capturing usable energy, sustainable duration and availability will allow the SWIS to recognise a wider range of battery services.

Question 5. Are there parts of the DER connection process we should pay specific attention to as part of this reform work?

AVL response

Yes. AVL recommends specific attention to the following parts of the connection process.

Pre-application capacity advice

Provide a low-cost and rapid way to understand indicative import and export capacity, likely constraints, relevant technical standards and whether a project is suitable for a streamlined pathway before detailed design expenditure is committed.

Clear pathway and threshold selection

Make it easy to identify which process applies based on voltage, import rating, export rating, control capability and project complexity. Avoid requiring a full bespoke study for routine systems merely because their theoretical combined nameplate rating is high.

Battery bidirectional operation

Assess maximum import and maximum export separately and recognise enforceable site controls, non-simultaneous operating modes and dynamic limits. Forms should not treat batteries solely as generation or solely as load.

Application completeness and information requests

Publish a complete data checklist, perform an early completeness review and consolidate information requests. Multiple sequential requests materially extend development schedules.

Assessment timeframes and escalation

Adopt service standards for each stage, define when the assessment clock starts or stops, provide status visibility and establish a practical escalation or review pathway.

Commissioning and as-built information

Link final commissioning data to the original application so that only changes are updated. Clearly allocate responsibility among the customer, installer, retailer, aggregator, OEM and Western Power.

Variations, upgrades and modular expansion

Use materiality thresholds and a streamlined variation process where equipment is replaced or modules are added without exceeding the approved connection envelope.

Backup, islanding and communications failure

Specify safe and predictable fallback behaviour without preventing customers from using legitimate backup or microgrid functionality.

Technology-neutral certification

Permit equivalent compliance evidence and site-level testing where a product does not fit a list or certification pathway developed around a different battery architecture.

Embedded networks and multi-asset sites

Address sites with multiple inverters, batteries, generators, EV chargers, tenant loads or embedded networks through a site-level operating envelope and controller where appropriate.

Transition arrangements

Protect projects already designed, contracted or under procurement and provide manufacturers enough time to implement and certify new communications requirements.

3. Closing comments

AVL supports the WA Government's objective of improving DER data quality and making connections easier. The proposed reforms provide a sound foundation, particularly if they are implemented through a single, risk-based and technology-neutral connection process supported by better network-capacity information.

Battery storage is becoming more diverse in scale, duration, chemistry and control architecture. The final framework should be capable of supporting residential products, commercial and industrial systems, managed EV charging, community batteries, long-duration storage and emerging technologies without requiring separate bespoke arrangements for each category.

AVL would welcome the opportunity to participate in the further consultation on detailed Electricity System and Market Rule and procedure changes later in 2026.

Australian Vanadium Limited

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