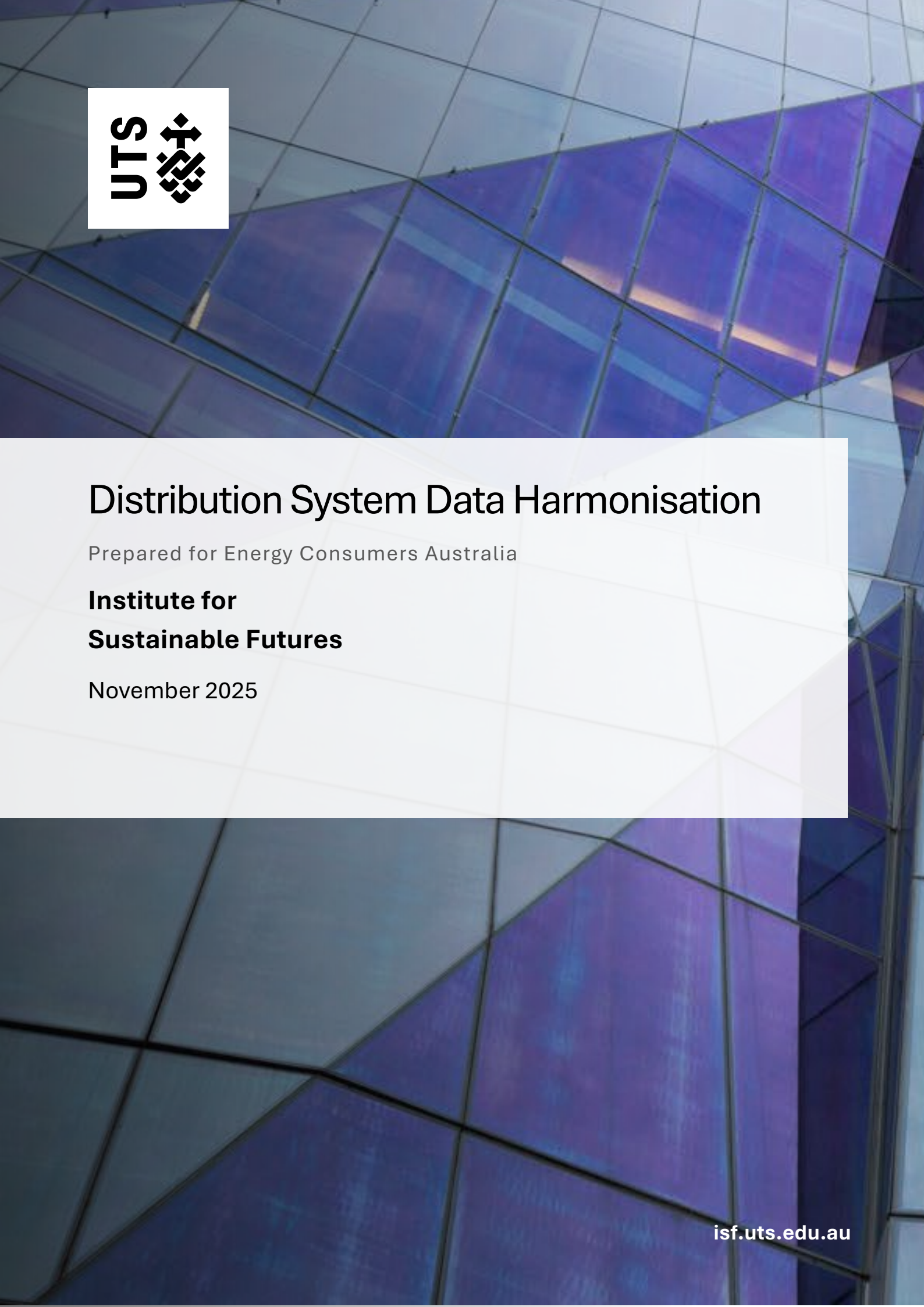
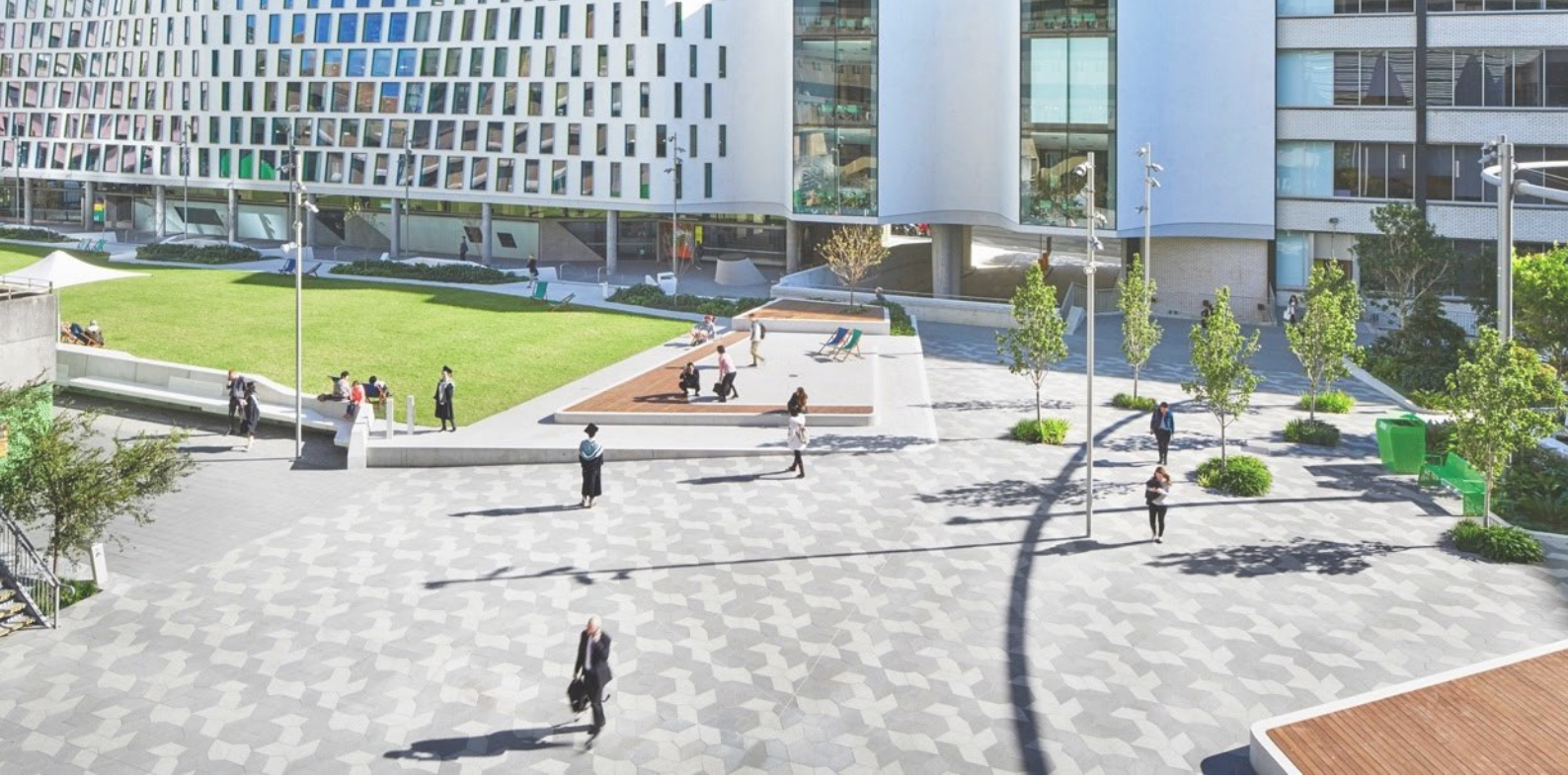


Distribution System Data Harmonisation

Prepared for Energy Consumers Australia

Institute for Sustainable Futures

November 2025



Research Team

- Dr Ed Langham
- Jonathan Rispler

Citation

Langham, E and Rispler, J. (2025) *Distribution System Data Harmonisation*. Report prepared by the Institute for Sustainable Futures, UTS for Energy Consumers Australia. November 2025.

Acknowledgements

The research team would like to acknowledge the input and guidance from the following individuals and organisations:

- Brian Spak (ECA)
- Michael Dello-Iacovo (ECA)
- Discussion group members including the Australian Energy Regulator, Australian Energy Market Operator, and Federal Department of Climate Change, Energy, the Environment and Water.

Disclaimer

The authors have used all due care and skill to ensure the material is accurate as at the date of this report. ISF and the authors do not accept any responsibility for any loss that may arise by anyone relying upon its contents.

Artificial Intelligence (AI) was used in the literature review process in order to assist with the summarisation of longer reports and the extraction of relevant information. The authors have taken care to ensure that information extracted using AI was reflective of the original content.

Institute for Sustainable Futures
University of Technology Sydney
PO Box 123 Broadway, NSW, 2007
www.isf.uts.edu.au

Contents

Glossary of Terms

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AIO	AER's Annual Information Order (replaces previous 'Regulatory Information Notice')
CER (DER)	Consumer Energy Resources (also known as Distributed Energy Resources)
DAPR	Distribution Annual Planning Report
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEECA	Department of Energy, Environment and Climate Action
DNSP	Distributed Network Service Provider
DOE	Dynamic Operating Envelopes
DS	Distribution Substation
EV	Electric Vehicle
ECA	Energy Consumers Australia
ECMC	Energy and Climate Change Ministerial Council
ESB	Energy Security Board
FD	Flexible Demand
IDSP	Integrated Distribution System Planning
kVA	Kilovolt Amperes (a measure of infrastructure capacity or demand)
kW	Kilowatt (power measurement)
LV	Low Voltage
MVA	Megavolt Amperes (a measure of infrastructure capacity or demand)
MW	Megawatt (a measure of infrastructure capacity or demand)
NBI	Neighbourhood Battery Initiative
NEM	National Electricity Market
NER	National Electricity Rules
OEM	Original Equipment Manufacturer
PV	(Solar) Photovoltaic
STL	Sub-Transmission Loop
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
TETU	Total Energy Throughput Utilisation (utilisation metric)
TPFU	Two-way Power Flow Utilisation (utilisation metric)
UTS	University of Technology Sydney
ZS	Zone Substation

1 Background

1.1 IDSP Rule Change Request (Feb-June 2025)

Energy Consumers Australia (ECA) submitted the Integrated Distribution System Planning (IDSP) rule change request to the AEMC in January 2025.[1] The objective of the rule change was to ensure efficient, transparent, and proactive planning by DNSPs through the implementation of an improved policy and planning framework, such that DNSPs will be better placed to accommodate the rapid growth of CER such as rooftop solar, batteries, and EVs.

The motivations behind ECA's rule change include:

- **Inadequate Planning Framework:** The current DAPRs lack analysis of CER hosting capacity and are updated too infrequently to reflect rapid changes in electrification and CER uptake.
- **Information Asymmetry:** DNSPs hold critical data that is not shared with consumers, developers, or regulators, leading to suboptimal investment and planning outcomes.
- **Limited Use of Smart Meter Data:** Despite regulatory changes to accelerate smart meter deployment, DNSPs are not required to use this data in planning.
- **Tariff Setting Challenges:** Long-run marginal cost calculations are hindered by short planning horizons and lack of granular data.
- **Community Engagement Gaps:** DNSPs are not systematically engaging with communities, especially those vulnerable to extreme weather events.

Following the relevant processes, the AEMC released an initial consultation paper on 26 June 2025 to elicit stakeholder feedback on the rule change request.[2] In particular, the AEMC sought feedback on the following proposed solutions to the issues raised by ECA:

- **Establishing a new biennial Integrated Distribution System Plan** (IDSP) to replace the existing distribution annual planning process (DAPR). The IDSP would still require DNSPs to undertake a planning review, but over a longer planning horizon and in consultation with a greater number of stakeholders.
- **Alternating the IDSP annually with the ISP** to improve consistency in whole of system and distribution planning. This would require DNSPs to adopt the scenarios used in the ISP when planning their networks and explain any discrepancies.
- Requiring DNSPs to **increase transparency of their** distribution networks and **hosting capacity**, with new network utilisation metrics. This would **require DNSPs to collect and publish greater amounts of data,** while potentially providing greater insights into the state of distribution networks.
- **Requiring each DNSP to prepare a Network Data and Insights Roadmap**. The roadmaps would be published in July 2027 and set out what requirements the DNSPs meet, which ones they do not, and their plans for meeting the requirements over the next seven years.
- **Additional benchmarking of DNSPs done by the AER**. This would include comparisons of the modelling and methodologies used by each DSNP for its IDSP, including best practice approaches and areas for improvement. The AER would be required to assess DNSP compliance with the IDSP.

1.1.1 AER Response

As the relevant regulator for network reporting and data disclosure, it is encouraging that the AER has endorsed the details outlined in the AEMC's consultation paper, recognising its potential to deliver meaningful benefits to consumers:[3]

---

[1] Energy Consumers Australia**.** *Integrated Distribution System Planning (Electricity) Rule Change Request.* Submitted to the Australian Energy Market Commission, 22 January 2025.
[2] Australian Energy Market Commission. *Integrated Distribution System Planning: Consultation Paper*. Sydney: AEMC, 26 June 2025.
[3] Australian Energy Regulator. Submission to the AEMC: Integrated Distribution System Planning Rule Change Proposal. Sydney: Australian Energy Regulator, 29 July 2025

The AER supports the IDSP Rule change proposal as a pathway to provide the market with low-voltage network data. We consider it will increase the amount of useful data collected and published by DNSPs and make it easier for third parties to understand the costs and benefits of CER and DER investments connected to distribution networks. This coincides with the objectives of our Low-voltage Network Visibility project.

The AER notes also the direct relevance of the 'Phase 3 Final report' of the Low-voltage Network Visibility project, highlighting synergies between the work that was published in March 2025 and ECA's rule change request. Their submission goes on to highlight that "*action 1 of the Phase 3 report is to support key elements of the IDSP Rule change proposal"*, and more specifically that through the Low-voltage Network Visibility project the AER was able to segment data in the following manner:

Priority and non-priority datasets: We support the establishment of priority datasets that maximise net benefits to electricity consumers. Specifically, this involves datasets already being collected by DNSPs that can be reported at a minimal or incremental cost and datasets not yet collected but with the potential to deliver significant benefits. The Phase 3 report proposed nine datasets related to import capability, export capability and network connection as priorities. These datasets were identified as priority because DNSPs already collect some of this data (or are in the process of doing so), and a significant number of use cases were identified by stakeholders.

The nine datasets are specified in Table 1 below, while the non-priority datasets are listed in 'Appendix A. AER Non-Priority Additional datasets'. It should be noted that the AER still values the non-priority datasets, and that some of these datasets were recommended by stakeholders such as Victoria's Department of Energy, Environment and Climate Action (DEECA) and Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW). The AEMC may consider these non-priority datasets as part of a phased implementation of the IDSP rule change.

Table 1: datasets proposed to be priority datasets

Data Item	Data Category	Details
Current & forecast remaining delivery capability	Import Capability	kW or kVA by season for HV feeder and distribution substation (DS)
Network augmentation plans	Import Capability	kW or kVA by feeder and distribution substation
Indicative annual deferral value	Import Capability	$ per kW or kVA by HV feeder and distribution substation
Current & forecast remaining export capability	Export Capability	Static export limits by season and time of day
Network augmentation plans	Export Capability	kW or kVA by feeder and distribution substation
Indicative annual deferral value	Export Capability	$ per kW or kVA by HV feeder and distribution substation
Curtailment data	Curtailment	kW reduction by duration, location, season, time of day, and reason (e.g. voltage condition)
Voltage levels	Network Connection	Historic average voltage by distribution substation and HV feeder
Reliability metrics	Network Connection	SAIFI and SAIDI by distribution substation and HV feeder

As several datasets are already being collected by DNSPs, or could be collected at an incremental cost, it enables the AER to directly advocate for the implementation of the IDSP – particularly where synergies exist between the IDSP and their Low-voltage Network Visibility project. 'Appendix B. Additional Context: AER Low-voltage Network Visibility Project' provides insight into the development of the Network Visibility project, and

explains the context behind why the project was yet to make policy recommendations or engage in an official rule change request – thus leading to synergies behind the IDSP rule change and the AER's work in this area.

While the AER is broadly supportive of the IDSP rule change, they also caution that:

- In the long-term the data requirements set out by the IDSP rule change, will need to be compatible with the CER Data Exchange platform (led by AEMO).
- That in future the data prepared for IDSP reporting should be made available to the CER Data Exchange (via the digital platform interface which forms the basis for this work).
- That the CER Data Exchange platform has the potential to be a long-term practical solution for some of the issues highlighted in the IDSP rule change, given that it should provide a consistent standardised data format.

Despite the potential of AEMO's CER Data Exchange, the AER states that:

> *it may be some time before data reported by DNSPs in their IDSPs reaches the level of consistency needed to enable meaningful comparisons across DNSPs. In our submission to the rule change, we will recommend that the AEMC consider how the IDSP is expected to function alongside the CER Data Exchange while ensuring that reporting requirements and processes are not onerous and duplicative.*

Given the above, the AER is a supporter for the IDSP rule change, independent of the other processes occurring in this space (e.g. AEMO's CER Data Exchange).

1.1.2 AEMO Response

In principle, AEMO supports the *intent* of ECA's proposal, and states in their AEMC submission that:[4]

> *AEMO supports the ECA's view that there is scope for improvement in the regulatory frameworks underpinning distribution network planning to ensure that CER and other distributed energy resources are supporting a least cost energy transition in an efficient way.*

However, AEMO suggests that this intent may best be met through reforms that are already underway, and highlights the need to ensure the regulatory framework provides a coordinated and standardised approach to data sharing arrangements for DNSPs and CER integration. This can be seen through the summary of the points raised in its submission, in Table 2 below.

[4] Australian Energy Market Operator (AEMO). *Submission Feedback on Integrated Distribution System Planning Consultation Paper (ERC-0410)*. Melbourne: AEMO, July 24, 2025. https://www.aemc.gov.au/sites/default/files/2025-07/aemo_-_submission_-_consultation_paper_-_integrated_distribution_system_planning_idsp_-_erc0410_-_24_july_2025.pdf

Table 2: Summary of AEMO's concerns regarding the IDSP rule change request

AEMO Concerns	Existing Actions Highlighted by AEMO	Details	Associated with a Rule Change Request?
Ongoing Reforms to Improve Distribution Network Data for the ISP	'Improving consideration of demand-side factors in the ISP' completed rule change request	Initiated: 3/06/2024 Completed: 19/12/2024	Yes
	Draft report forming part of ISP methodology - 'distribution network opportunities' chapter in 2025 Electricity Network Options Report	"For the 2026 ISP, AEMO is assessing for the first time the scale of distribution network augmentation to facilitate the higher levels of aggregate CER operation assumed in the ISP and estimating at a high level the costs associated with that"[5]	Yes – relates to the implementation of the above rule change
	Draft 'Demand Side Factors Information Guidelines'	Information guidelines are a consequence of the completed rule change request, with the objective formalise the procedures used in the 2026 ISP for the standardisation of DNSP data in future ISPs	Yes – relates to the implementation of the above rule change
Need for Coordination in the Managing & Sharing of Network Data	Data sharing arrangements (M2) workstream of the CER Roadmap	AEMO agrees there is a "lack of common standards, poor data interoperability, and bilateral sharing practices" and this has hindered effective planning."[5] AEMO states that the "CER Roadmap workstreams is the preferred approach to addressing the concerns raised by the ECA." As they wish to avoid new regulations which may be inconsistent with the existing roadmap.	No
Broader Reforms are Expected to Address Planning Needs	Redefine roles for market and power systems operations (M3/P5) workstream of the CER Roadmap	Workstream is formalising DNSP roles and establishing Distribution System Operators (DSOs). It is envisioned that future DSOs will conduct: - Locationally granular forecasting - Scenario analysis for CER/DER deployment - Collaborative planning with TNSPs and AEMO	No
Ongoing Data and Transparency Reforms are Underway	The National CER Roadmap includes a proposed 'National CER Data Strategy and Coordination Plan'	"AEMO's view is that the proposal to require DNSPs to provide more data, at more granular levels, is a small piece of a much larger puzzle" and believes questions on how DNSP data is provided, communicated, and used are best addressed through the roadmap	No

[5] Australian Energy Market Operator (AEMO), Draft 2025 Electricity Network Options Report, May 2025, https://aemo.com.au/consultations/current-and-closed-consultations/2025-electricity-network-options-report

Table 2 illustrates that AEMO's criticism of the IDSP rule change hinges on the current CER Roadmap related data reform and governance processes, and the broader reforms to network operational functions (the DSO role) together will ultimately address each of the necessary data access dimensions. While there may be merit in this position, many of these processes are at an early stage, scopes are not yet defined and there are diverse organisational positions on these issues (such as the DSO role), making it difficult to judge whether a 'wait and see' approach is wise. It is unclear whether stakeholders seeking improved transparency outside market bodies – particularly those with a consumer voice – will be sufficiently influential in these processes to ensure that the IDSP goals are met.

The details of the CER roadmap and the more recent 'Implementation Plan Update of are detailed in 'Appendix C. Additional Context: CER Roadmap', where it can be seen that there are two relevant reform priorities on the topics of CER and network data. While these reform priorities are not currently tied to rule change request processes, the work being undertaken by the CER Taskforce & AEMO has various potential pathways to implementation.

Given the intersection of the IDSP Rule Change request with other active regulatory processes and reviews for data governance, a comparison of scope and data coverage of each mechanism is the focus of Sections 2 and 3 of this report.

1.2 AEMC IDSP Directions Paper (Oct 2025)

With the release of its Directions Paper in October 2025, the AEMC commissioned Ampere Labs to provide technical advice on the network planning landscape of DNSPs and the current gaps.[6] The advice from Ampere Labs aligns with ECA's position and rule change request, with their gap analysis highlighting the following points:[7]

- The medium-to long-term network impacts of rapid electrification, CER and EV growth are not publicly visible over the 5-year distribution planning horizon.
- There is no natural "home" for publicly available strategic distribution network planning information.
- Strategic distribution planning processes may not be coordinated with other planning processes.
- The 2026 ISP will only provide coarse guidance to DNSPs on the optimal investment pathway for the integration of CER and distributed generation/storage.
- CER integration and LV demand flexibility are not yet integrated into the standard planning process.

Based on the Ampere Lab analysis and the feedback submitted through the rule change process, the AEMC agreed with the principles behind two core aspects of ECA's IDSP rule change request in their directions paper published on 16/10/2025:[7]

> *As ECA identified in its rule change request, the ongoing changes in the usage of distribution network services by distribution service end users, particularly CER investors, means that the existing planning process does not:*
>
> > *1. Adequately account for the added complexity that the uptake of CER is creating for distribution network planning, including less certain demand growth than in the past (section 2.1).*
> >
> > *2. Provide sufficient transparency or data, including for the low-voltage distribution network, to meet the increasing demands on DNSPs for local information on the current and future planned state of the low-voltage network (i.e. below the zone substation) to support the integration of CER (section 2.2).*

[6] Ampere Labs, 'Distribution Network Strategic Planning Landscape and Gap Analysis', Appendix B / Technical Note to the AEMC's Directions Paper, 16 October 2025

[7] Australian Energy Market Commission. National Electricity Amendment (Integrated distribution system planning) Rule 2026: Directions Paper. Sydney: AEMC, 16 October 2025.

And furthermore:

> *We agree that the current process can be improved. Our assessment of the current planning framework and stakeholder feedback is that the process is not:*
>
> - *Creating a standardised, transparent process for the long-term planning of distribution networks, including the integration of CER (section 2.1.1)*
> - *Supporting the procurement of non-network options to address system limitations, reducing the pool of alternative investments available to DNSPs (for example, for RIT-D or capital expenditure proposals) (section 2.1.2).*
> - *Sufficiently incorporating the outcomes of the ISP process to create a level of consistency in the planning process to mitigate the risk that distribution networks may not be aligned with the ISP outcomes (section 2.1.3).*

The AEMC then outlined three policy options as a possible solution to addressing the issues raised in ECA's IDSP rule change, summarised in Table 3.

Table 3: Overview of the three policy options to reform distribution network planning

	Policy 1	**Policy 2**	**Policy 3**
Central Policy Approach	New strategic planning report and reformed distribution annual planning report	Reform distribution annual planning process to incorporate strategic planning	New strategic planning report replaces distribution annual planning process
Proposed planning horizon	20 years	10 years	20 years
Creates a new strategic planning report?	Yes, reported every 5 years as input to capital expenditure plan	No	Yes, reported every 5 years as input to capital expenditure plan
Status of distribution annual planning report	Retained, aligned to strategic planning report	Retained with improved strategic planning	Replaced with an annual update
New data transparency obligations replacing existing DAPR data?	Yes	Yes	Yes

As all three policy options seek to improve distribution network data reporting in the National Electricity Rules, the AEMC is also seeking feedback on these matters. With the **AEMC proposing that new data reporting guidelines be developed by the AER**, with the proposed regulatory approach being sufficiently flexible to allow for updates so that the guidelines can be adapted with the outcomes of other work programs (such as the Data Sharing Arrangements – M2 project that is part of the national CER roadmap).

2 Summary of Relevant Regulatory Processes & Reviews for Data Governance

The scope of data inclusion in relevant network data regulatory reforms is conceptually illustrated in Figure 1 (with a simplified image provided in Appendix D). It suggests that the IDSP has a unique position but must be implemented with careful consideration of the myriad intersections with other processes, including bigger strategic conversations regarding organisational roles in the energy transition. A more detailed outline of the details of each process is then presented in Table 4.

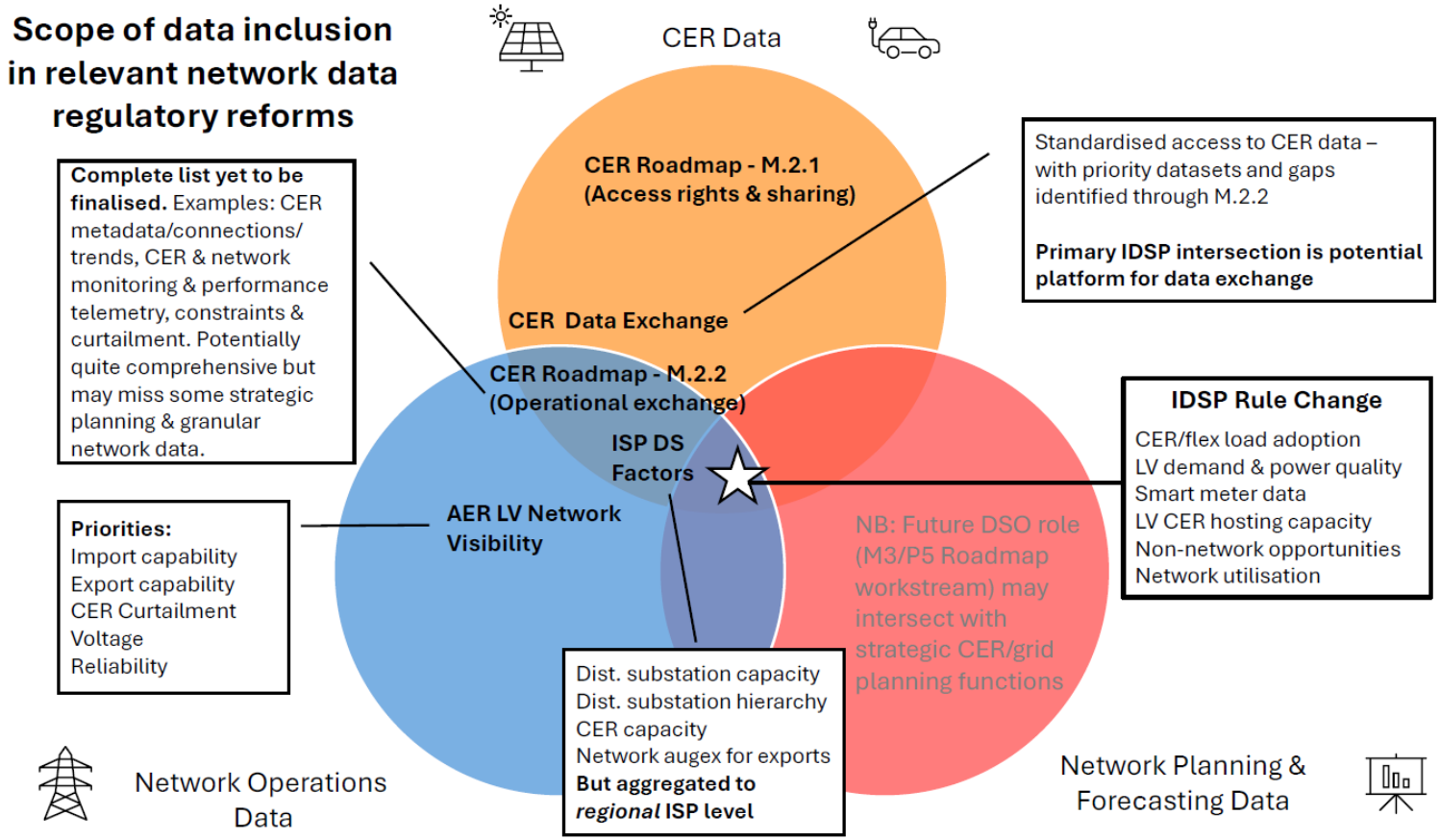


Figure 1: Venn diagram of relevant regulatory landscape for network data regulation

Table 4: Summary of Current Relevant Regulatory Processes & Reviews for Data Governance

Regulatory Process	Proponent	Timeline	Scope	Process Status
CER Roadmap - M.2.1	CER Taskforce & AEMO	2024 – End of 2025 (Stage 1)	Data access rights (e.g. collection, sharing) relevant to CER standards and utilisation. **(Focus is CER operational data)**	**Active** (scope for consultation)
CER Roadmap - M.2.2	CER Taskforce & AEMO	2025 – End of 2027	Prepare necessary arrangements for operation of a CER data exchange based on CER operational data including: limitations on CER (e.g. DOEs), network management and reliability, market exchange **(Does not have an explicit focus on network data)**	**Early stage** (details pending)
CER Data Exchange[8]	AEMO & Ausnet Funding: ARENA	1/05/2024 – 10/05/2025 (initial project)	Development of a national 'CER Data Exchange' platform to enable and facilitate the exchange of CER data between organisations such as OEMs, Aggregators, DNSPs, and Retailers. Three priority uses: (1) Standardised access to CER data via the platform (2) Network CER constraints e.g. DOEs (3) Assess role of CER to provide network services	**Active** (scope partially agreed)
ISP DS Factors Consideration [9]	Rule Change: ECMC Implementation: AEMO	3/06/2024 – 19/12/2024	The AEMC's final determination sets out the following obligations of stakeholders regarding **aggregated network data** as it relates to the ISP process: (1) AEMO to publish a demand-side factors statement of the expected development of the demand-side of the market and the distribution network (2) DNSPs to provide relevant information to AEMO as set out in the below guidelines (3) *AEMO to publish the information provided by DNSPs in the ISP database* ***(excel format, aggregated to regional ISP level)***	**Completed** rule change
DS Factors Information Guidelines[10]	AEMO	14/08/2025 – 19/12/2025 (draft to publication)	Provides formal guidance on how the above data aggregation process is to occur and what datasets DNSPs will be required to submit as part of the ISP process. Data includes:	**Draft** (scope largely agreed)

[8] Australian Energy Market Operator. CER Data Exchange Industry Co-Design: Co-Design Summary. Melbourne: AEMO, April 2025.
[9] Australian Energy Market Commission. *Improving Consideration of Demand-Side Factors in the ISP*. Last modified December 19, 2024. https://www.aemc.gov.au/rule-changes/improving-consideration-demand-side-factors-isp
[10] Australian Energy Market Operator (AEMO), *Demand Side Factors Information Guidelines: Consultation Paper – Standard Consultation for the National Electricity Market*, published 14 August 2025, https://aemo.com.au/consultations

			(1) **Distribution substation capacity** (2) **Distribution substation hierarchy** (connection to upstream infrastructure in MV/HV system to allow mapping to transmission level **for ISP aggregate / regional modelling**) (3) **Connected CER capacity i.e. rooftop PV** (4) **Distribution network augmentation costs**	
Low-Voltage Network Visibility[11]	AER (previously ESB)	2021 – 2023	**Disaggregated distribution network data,** with the **priority datasets listed in Table 2**. The AER also acknowledges the potential benefit of non-priority datasets such as: real-time outage information, number of customers by type, solar generation (capacity in kW and export volume in kWh), statistics on customers experience voltage issues (amongst others).	**Superseded** by the IDSP rule change request
IDSP Rule Change Request[12]	ECA	22/01/2025 – 19/03/2026*	The IDSP rule change request seeks to mandate that DNSPs make appropriate use of and publish the insights from their data, and proposes this to be achieved by replacing existing DAPR reporting requirements with a new IDSP process. The IDSP seeks to leverage the following kinds of datasets: (1) Adoption of CER and flexible loads (2) LV demand & power quality data (3) Smart meter data (4) LV CER hosting capacity (5) Network opportunity maps (6) Network utilisation data	**Active** (scope for consultation)**

* Draft determination required by this date

** Directions paper released 16/10/20205. Policy options outlined, with the AEMC seeking feedback on the directions paper until 13/11/2025.

[11] Australian Energy Regulator. Submission to the AEMC: Integrated Distribution System Planning Rule Change Proposal. Sydney: Australian Energy Regulator, 29 July 2025

[12] Australian Energy Market Commission. *Integrated Distribution System Planning: Consultation Paper*. Sydney: AEMC, 26 June 2025.

3 Summary of Relevant Dataset Specifications and Frameworks

Table 5 provides a summary of specific types of datasets highlighted through existing and emerging reform processes, colour coded according to the domains shown in the earlier Venn diagram (*Figure 1*; colour key provided below the table). These are tailored towards potential relevance to the IDSP rule change. The list is not exhaustive given that hundreds of data objects are being considered in the CER Roadmap and it focuses on identified data gaps rather than the full data list. An example list of datasets which are included in the roadmap but primarily relevant to CER assets and commercial use, is provided in Appendix F.

Some of the datasets in *Table 5* are currently available, either publicly or to market bodies with varying extents of coverage. Availability of these datasets are generally patchy – particularly in regard to their granularity (either spatially or temporally). In addition to this, many of the datasets are still in process of being finalised through ongoing regulatory processes and thus it is uncertain to what extent these datasets will be published and who will be able to access them (particularly the >300 data objects discussed in the 'M2 Data Categorisation Worksheet'[13]). Additional recommended work throughout the IDSP and CER Roadmap data specification process is to cross reference priority strategic planning and data transparency use cases relevant to the IDSP against those covered in the complementary processes.

Table 5: Summary of Relevant Dataset Specifications and Frameworks

Category	Example Dataset	Granularity	Covered by / Identified in	Primary Purposes of Data
Network-CER Interactions	**Solar generation data** (Capacity [kW], export [kWh])	ZS or below^	LV Visibility (NP) Network Utilisation CER Roadmap*	Grid Operations Regulatory Compliance
		Aggregated	ISP DSF	System Planning
	Curtailment [kWh] (actual or estimate)	Disaggregated	LV Visibility (P)	Grid Operations Network connections
		Aggregated	ISP DSF	System Planning
	CER connection times [days taken] (e.g. EVSE and large CER)	Undefined	LV Visibility (NP)	System Planning Network connections
	Other CER adoption data (batteries, EVs, EV charging stations, FD appliances)	ZS or below^	IDSP CER Roadmap* *(Regulatory Gap)*	System Planning Network connections
	CER Network opportunity map	ZS or below^	IDSP *(Regulatory Gap)*	System Planning Network connections
	Smart Meter Penetration	Aggregated	AER AIO IDSP	System Planning Grid Operations

[13] Department of Climate Change, Energy, the Environment and Water. *Data Sharing (M2) Data Categorisation Worksheet [XLSX 368KB].* Accessed November 13, 2025. https://consult.dcceew.gov.au/national-cer-roadmap-data-sharing-arrangements-m2

	Forecasted uptake of embedded generation (CER Network Demand)	STL/ZS	DAPR (aggregated)	System Planning Commercial Use
	Current delivery capability [kVA] (export) i.e. CER hosting capacity	DS & HV feeder	LV Visibility (P) CER Roadmap* IDSP	Grid Operations Commercial Use
	Number of CER applications in given year (CER Network Demand)	Aggregated	DAPR (aggregated)	Grid Operations Commercial Use
	Customer numbers (by type: solar/non-solar/bus)	ZS^	Network performance reporting (aggregated); LV Visibility (NP)	Regulatory Compliance Commercial Use
	Historic average voltage [V]	DS & HV feeder	LV Visibility (P)	Grid Operations Commercial Use
	Voltage curve data (e.g. given period or hourly avg.)	DS	LV Visibility (NP)	Grid Operations Commercial Use
Network Topography	**LV Network Map** (inc. info on assets)	LV line	LV Visibility - NBI Trial *(Regulatory Gap)*	Commercial Use
	Ratings of conductors / cables	Undefined	LV Visibility (NP)	System Planning Regulatory Compliance
	Geometry of the LV network (e.g. distance between customers and transformers)	LV line	RACE Report[14] *(Regulatory Gap)*	Modelling System Planning Commercial Use
	Impedance of lines [Ω]	Undefined		
	Substation hierarchy (inc. transmission node id.)	DS	ISP DSF CER Roadmap*	System Planning
Network Load and Capacity	**Historic demand [MW or MVA]**	Disaggregated: lat. & long. [°]	ISP DSF IDSP DAPR	Grid Operations System Planning
	Substation capacity [MVA] (inc. unique id.)	DS ZS	ISP DSF DAPR	System Planning
	Current delivery capability [kVA] (import)	DS & HV feeder	LV Visibility (P)	Grid Operations Commercial Use
Reliability & Security	**Voltage limits & compliance** (e.g. % of customers under- or over-voltage)	DS	LV Visibility (NP) *(Regulatory Gap)*	Grid Operations Commercial Use Regulatory Compliance

[14] RACE for 2030. *N2 OA Project Final Report*. Sydney: RACE for 2030 Cooperative Research Centre, 2021. https://www.racefor2030.com.au/content/uploads/N2-OA-Project-FINAL-Report-2021.pdf

	Other power quality values (e.g. frequency, harmonic distortion)	ZS or below^	ISF – Utilisation Report[15]	Grid Operations Commercial Use
	Real-time outage info (e.g. number of customers affected, time for restoration)	Undefined	LV Visibility (NP) *(Regulatory Gap)*	Grid Operations
	Reliability (SAIDI, SAIFI)	DS & HV feeder	Network performance reporting (aggregated) LV Visibility (P) IDSP	Regulatory Compliance
Network Constraints & Augmentation	**Network constraint identification** (NP: demand curve data)	DAPR: STL/ZS (LV Vis: undefined)	DAPR LV Visibility (NP)	System Planning Regulatory Compliance
	Forecast delivery capability [kVA] (import & export)	DS & HV feeder	LV Visibility (P) IDSP CER Roadmap* *(Regulatory Gap)*	System Planning
	Network constraint identification (NP: demand curve data)	DAPR: STL/ZS (LV Vis: undefined)	DAPR LV Visibility (NP)	System Planning Regulatory Compliance
	Network augmentation plans [kVA] (import & export)	DS & HV feeder	LV Visibility (P)	System Planning Regulatory Compliance
	Distribution network augmentation costs for CER export [$/MW]	DS & LV/HV feeder	ISP DSF (aligns with RIN / AIO)	System Planning Regulatory Compliance
	Preferred network investment costs [$]	STL/ZS	DAPR	Regulatory Compliance
	Indicative annual deferral value [$/kVA] (import & export)	DS & HV feeder	LV Visibility (P)	System Planning Regulatory Compliance
	Network utilisation data (e.g. TETU or TPFU)	ZS or below#	IDSP *(Regulatory Gap)*	System Planning Regulatory Compliance

[15] ISF. *Reimagining Network Utilisation in the Era of Consumer Energy Resources*. Final Report v1.2. Sydney: Institute for Sustainable Futures, University of Technology Sydney, December 2024.

Key:

	Operations data
	Planning data
	CER data
(P) / (NP)	Priority / Non-Priority dataset
●	Available
○	Limited or difficult-to-access data
×	Not available
*	Availability waiting on implementation or regulatory process
#	Insufficient granularity for desired uses
^	Not stated – interpreted by authors

4 Conclusions

This report provides analysis of the potential for harmonisation and integration of network data, relating to the differing regulatory processes and frameworks which are being progressed. There is strong potential for alignment with the CER Roadmap's M.2.2 workstream, particularly in relation to the network data layer, although the full scope of the Roadmap as it relates to network data is not yet agreed. While the CER Data Exchange offers a possible mechanism for data sharing – especially regarding network limitations such as DOEs – its current design is more operationally focused and there are questions over whether it is readily adaptable to the broader strategic planning needs of the IDSP process.

AEMO's Demand Side Factors initiative intersects with the IDSP in terms of data types but differs in spatial granularity, with granular / disaggregated data only being shared between DNSPs and AEMO. With the data being made public through the ISP DSF process, only being done so on an aggregated basis according to the high-level regions used in the NEM wide modelling process (thus not of direct benefit to actors such as market service providers). Nonetheless, the data collection processes established under this initiative could serve as a valuable foundation for developing more spatially granular network datasets.

Sections 2 and 3 of this report provide the most pertinent insights to guide ECA's discussion of data types of relevance for the IDSP process, particularly in the context of ongoing governance and data-sharing reforms. It is recommended that the IDSP process focus on both operational data from the AER's Low-Voltage Visibility work and forward-looking data to support long-term planning, strategic forecasting, and regulatory transparency. Particular emphasis should be placed on ensuring disaggregated data accessibility beyond regulatory and market bodies, enabling CER and load flexibility market service providers to address network needs and assess connection capacity. The extent of the granularity of the data which can be shared to market service providers (or publicly), depends on the granularity of the data reported by the DNSPs – with data categories reported on different levels: distribution substation, zone substation, sub-transmission substation/loop or HV feeder.

These areas should be central to ECA's discussions with the AEMC and the CER Roadmap M 2.2 team to ensure that relevant data elements are not overlooked in the IDSP process.

5 Appendices

Appendix A. AER Non-Priority Additional datasets

Data Item	Data Category	Details
Real-time outage information	Network Operations	Cause, location and assets affected, number of customers affected, estimated time for restoration, planned/unplanned outage
Number of customers	Phase 2 Datasets	Disaggregated by customer type (e.g. solar/non-solar/business)
Conductors and cables	Phase 2 Datasets	Capacity ratings
Solar generation	Phase 2 Datasets	Capacity (kW) and export volume (kWh)
Network constraint identification	Phase 2 Datasets	Maximum, average and minimum demand curves
Voltage data	Phase 2 Datasets	Voltage curve at the distribution substation terminals and/or customer voltage summary
Customers experiencing under- or over-voltage	DEECA Proposed Data	% of customers and duration
Average time to connect and energise EVSE and large CER	DCCEEW Proposed Data	Days taken for each step in the connection process

Appendix B. Additional Context: AER Low-voltage Network Visibility Project

The AER's 'Low-voltage Network Visibility' project developed out of the Energy Security Board (ESB) Data Strategy Recommendations (2021). Due to the ESB being phased out in favour for other energy governance arrangements in 2023, the AER became the lead of the Network Visibility Project.[16]

The ESB officially released the consultation paper on 7/07/2023, with this consultation paper summarising the work undertaken in the 2021- 2023 period, such as stakeholder workshops and the identification of relevant datasets. The work completed by the ESB, led to 23 main 'use cases' being identified, with a use case relating to the relevant party interested in the data and the type of data of interest to them.[17] The following table provides an overview of the outcomes of the workshop consultation the ESB did to establish the use cases:

Table 6: Topics of interest which emerged from the stakeholder workshops

Topics on which data is needed	Current and potential CER system owners and CER providers	CER providers, advisers and installers	AEMC, policy and planning bodies (including state level governments and regulators)
Current and remaining headroom for consumption	•		•
Network plans for augmenting capacity	•		•
Value of deferring/avoiding network capacity	•	•	•
Current and remaining headroom for export	•	•	•
Plans to increase CER hosting capacity	•	•	•
Value of deferring network expenditure to increase hosting capacity	•	•	•
Level of historical and current CER curtailment	•	•	•
Historical and current-voltage levels	•		•
The historical and current level of network reliability	•		•
Outage events	•		•

In addition to conducting the workshop consultation, the ESB also highlighted a number of relevant data sets and data specifications which could be provided by DNSPs and OEMs to achieve the desired network visibility and data sharing set-out in the use cases. They are shown in the figure below:[17]

[16] Australian Energy Regulator. Network Visibility. Last modified 31 March 2025. https://www.aer.gov.au/industry/registers/resources/reviews/network-visibility.
[17] Energy Security Board. Benefits of Increased Visibility of Networks – Consultation Paper. 7 July 2023

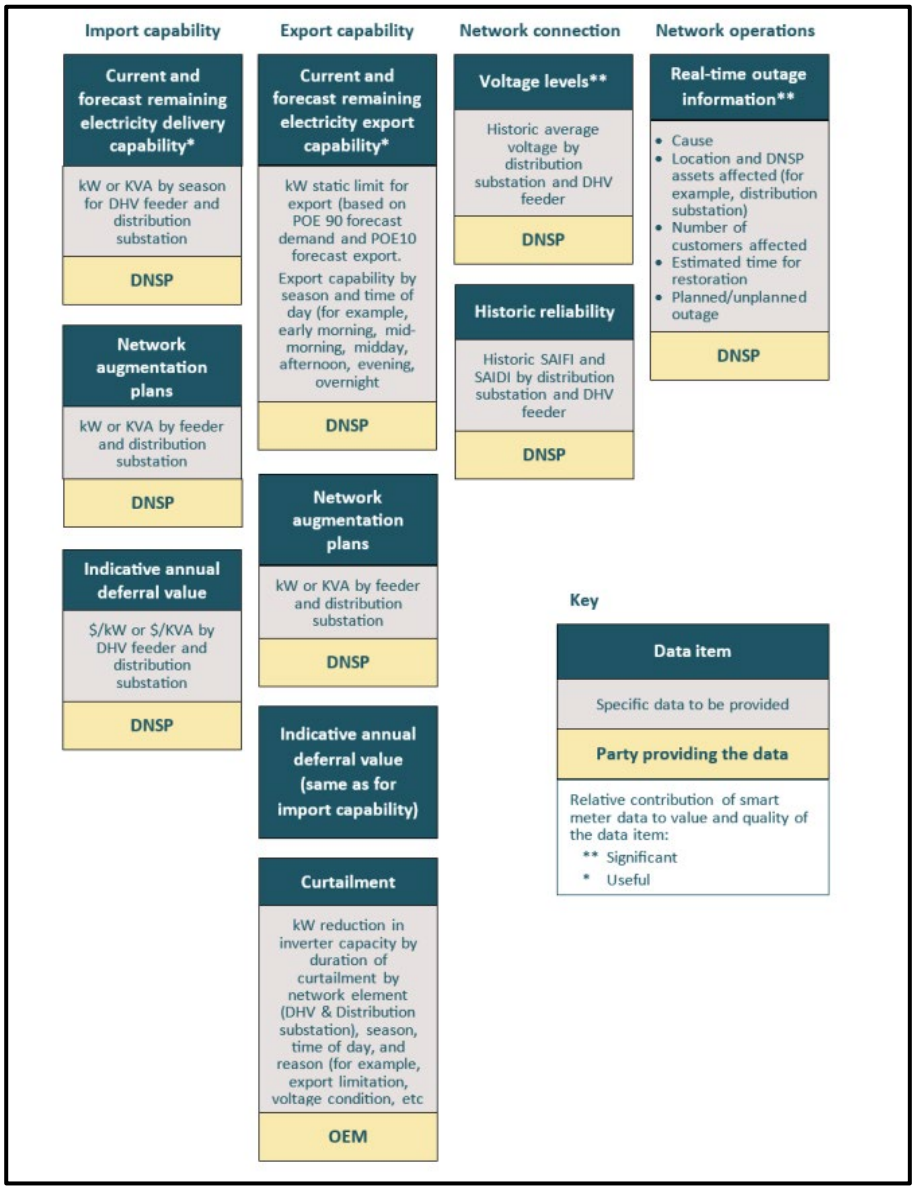


Figure 2: Datasets identified by the ESB to achieve the objectives set out by stakeholders in the use cases for data and network visibility

What is immediately apparent from Figure 1, is that almost all suggested datasets appear in the AER's list of priority datasets for implementation in the IDSP rule change (Table 2). This demonstrates that the work of the ESB, AER and the engaged stakeholders held true – regarding relevance and importance of the identified datasets in Figure 1. These data sets passed the assessment undertaken in phase 2 and 3 of the Low-voltage Network Visibility project, where the challenges and value in delivering the datasets identified in phase 1 were assessed. What remained at the end of the phase 3 of the project was the implementation of a policy framework / rule change in order for DNSPs to have the necessary reporting obligations to share the relevant datasets in an appropriate manner and format.

It so happens that ECA's rule change request made on the 22/01/2025 provided the opportunity for the AER to engage with a rule change process, ahead of the completion of phase 3 of the 'Low-voltage Network Visibility' project (published 31/03/2025). Hence, the synergy between these two pieces of work.

Appendix C. Additional Context: CER Roadmap

The National CER Roadmap, endorsed in July 2024 by the ECMC, outlines a national strategy to unlock the benefits of CER such as rooftop solar, batteries, electric vehicles (EVs), and smart meters. Of particular relevance for this report is work package 3 on Markets, with the national reform priorities for this work package listed in the table below.[18, 19]

Table 7: CER Roadmap Reform Priorities

Reform Priority	Project Code	Project Description	Lead	Timeline
M.1 – Market Offers	M.1.1	Develop options for new tariffs and offers	CER Taskforce & AEMC	Commencing 2026
	M.1.2	Respond to AEMC Pricing Review	CER Taskforce	By 2027
	M.1.3	Framework for VPPs and dynamic operating envelopes	CER Taskforce	By 2027
M.2 – Data Sharing	M.2.1	Data access rights and sharing processes	CER Taskforce & AEMO	Stage 1 by end of 2025
	M.2.2	Operational data exchange and use cases	CER Taskforce & AEMO	By 2027
	M.2.3	Consumer data sharing for protections and switching	CER Taskforce	TBD
	M.2.4	Future trend reporting	CER Taskforce	On hold
M.3 – Market Roles	M.3.1	Define distribution-level market roles	CER Taskforce & AEMC	By end of 2025
	M.3.2	Role of DNSPs in two-way markets	CER Taskforce	By 2026
	M.3.3	Implementation of new roles	CER Taskforce	TBD

Reforms M.2.1 and M.2.2 relate to arguments made by AEMO in 'Section 1.3'. With the 'CER Roadmap: Implementation Plan Update' stating that these reforms have the following revised scope:

> *M.2.1 – Establish data access rights, for collection and sharing of CER and relevant network data to be used for effective compliance with CER standards and utilisation in the market. Stage 2 of this work will look at collection processes where needed. Metrics will be considered in M.1.3 performance reporting.*
>
> *M.2.2 – By end of 2027, establish arrangements necessary for operational CER data including dynamic operating envelopes, network management and reliability and market exchange. This includes defining and implementing priority use cases for the CER data exchange to enable markets and services that incentivise consumer participation in CER coordination. CER Operational data, including that of EV and EVSE, will be captured for use to better manage local networks and the energy system as a whole.*

[18] Department of Climate Change, Energy, the Environment and Water. *National Consumer Energy Resources Roadmap: Powering Decarbonised Homes and Communities*. Canberra: Commonwealth of Australia, 2024. https://www.energy.gov.au/energy-and-climate-change-ministerial-council/energy-ministers-publications.
[19] Department of Climate Change, Energy, the Environment and Water. *National Consumer Energy Resources Roadmap: Implementation Plan Update*. Canberra: Commonwealth of Australia, 2025. https://www.energy.gov.au/energy-and-climate-change-ministerial-council/energy-ministers-publications.

Appendix D. Additional Context: AEMO's Demand Side Factors Information Guidelines

A Federal Government review of the ISP commenced on 22/10/2022, with the Energy and Climate Change Ministerial Council (ECMC) leading the work. The ECMC work led to The Honourable Chris Bowen, Minister for Climate Change and Energy (chair of the ECMC) to initiate three rule change requests to enhance the scope and methodology used in ISP reporting:

1. Better integrating gas into the ISP
2. Improving consideration of demand-side factors in the ISP
3. Better integrating community sentiment into the ISP

This appendix section discusses the second rule change request, and the AEMC's final determination on 'Improving consideration of demand-side factors in the ISP' which was completed on the 19/12/2024. In summary the final determination states that it:[20]

- *requires AEMO to publish a demand-side factors statement in the ISP to provide a transparent and consolidated explanation of the expected development of the demand-side of the market and the distribution network*
- *requires AEMO to publish Information Guidelines to drive a more consistent approach to the collection of relevant information*
- *places an obligation on distribution network service providers (DNSPs) to provide relevant information to AEMO*
- *requires AEMO to publish the information provided by DNSPs in the ISP database.*

As the ISP is released on a biennial basis, the next ISP is scheduled to be released in 2026 with the draft ISP to be released in December 2025. The 'Information Guidelines' document was developed in parallel to the processes used to incorporate the relevant demand side factors in the 2026 ISP. Thus, the document outlines the voluntary approaches utilised in the creation of the 2026 ISP & seeks to codify the guidelines for use in the 2028 ISP and beyond.[21] In summary the draft Information Guidelines states that there are two pathways for DNSPs to provide data to AEMO for the creation of the ISP:

1. **Standard Pathway:** Bottom-up data collection at the distribution transformer level.
   (CER curtailment assessed at a distribution transformer level, with AEMO re-aggregating this information on a subregion level for use in the ISP)
2. **Alternate Pathway**: DNSPs provide detailed power flow modelling results.
   (transmission node-level forecasts of CER provided to AEMO, for aggregation and use in ISP as per above)

[20] Australian Energy Market Commission. *Improving Consideration of Demand-Side Factors in the ISP*. Last modified December 19, 2024. https://www.aemc.gov.au/rule-changes/improving-consideration-demand-side-factors-isp
[21] Australian Energy Market Operator (AEMO), *Demand Side Factors Information Guidelines: Consultation Paper – Standard Consultation for the National Electricity Market*, published 14 August 2025, https://aemo.com.au/consultations.

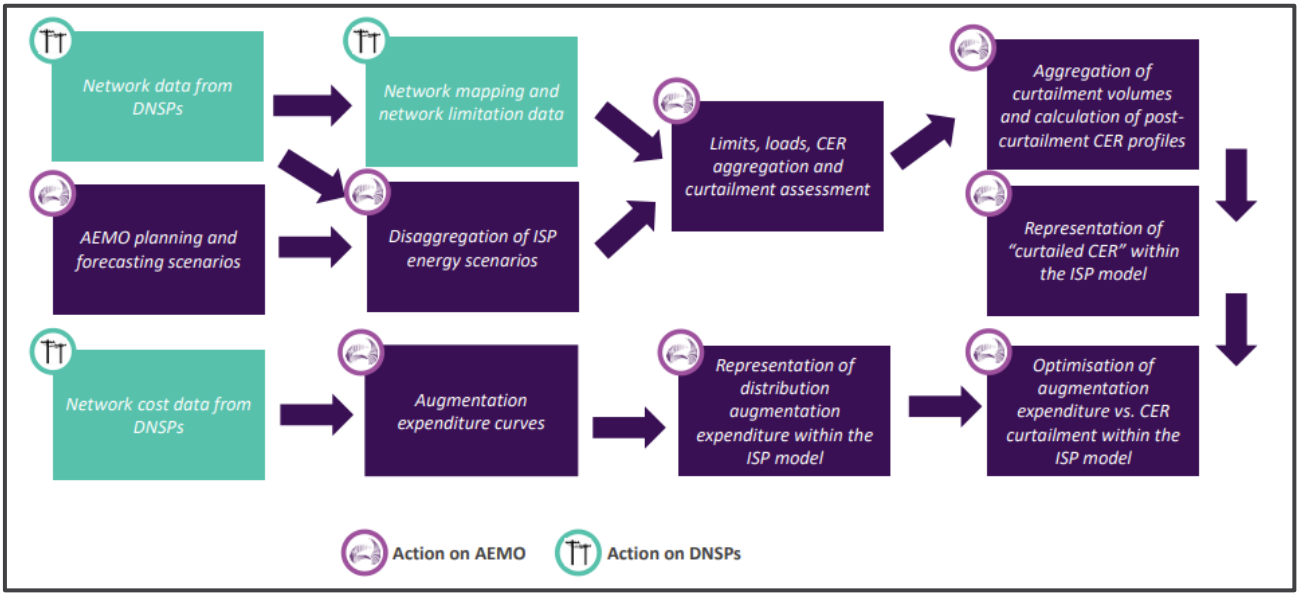


Figure 3: Standard Pathway – DNSP asset data collection (AEMO Demand Side Factors Information Guidelines)

In addition to the above pathway for the integration of DNSP data on LV networks, AEMO specifies the datasets associated with the pathways for use in future ISPs under the draft guidelines. Here we focus primarily on the standard pathway, where AEMO sets out that DNSPs will be required to provide the following datasets:[21]

- ***Distribution substation capacity*** *through the substation unique identifier and name plate capacity. (including disaggregation information such as location information)*
- ***Distribution substation hierarchy*** *to allow distribution substation assets to be mapped to assets at the transmission level.*
- *Currently connected* ***rooftop PV*** *capacity at the distribution substation level.*
- ***Distribution network augmentation costs*** *in terms of the cost per megawatt of additional CER export capacity*
- ***Hierarchy capacity****, which while not essential, may be useful to help define maximum export capacity at different distribution network levels (feeder, zone substation, sub transmission, TNI).*

On 22 October 2025, AEMO published its 'Draft Demand Side Factors Information Guidelines'.[22] These guidelines specify the dataset requirements of the standard 'asset data template' and the alternate 'detailed modelling template':

Table 8: Demand Side Factors - Summary of information requirements

Data Item / Category	Asset data template	Detailed modelling template
DNSP information	✓	✓
Distribution Substation Capacity	✓	×
Distribution Substation Hierarchy	✓	×
Hierarchy Capacity	✓	×
Disaggregation Information	✓	×
Capacity Cost	✓	✓

[22] AEMO *Draft Demand Side Factors Information Guidelines*, published 22 October 2025, https://aemo.com.au/consultations

CER augmentation cost curves	✓	✓
Greenfield/brownfield ratio data	✓	✓
Sampling process and data	×	✓
Detailed modelling outputs	×	✓
Basis of Preparation explanation	×	✓

AEMO also provided DNSPs with draft guidance on the data templates which will be used to gather the aforementioned datasets. AEMO states that they "developed draft data templates for DNSPs to voluntarily provide input for the 2026 ISP, in a Microsoft Excel format" and it is envisioned that this data will be collected on a two-yearly cycle to align with the ISP (aligns with the Inputs, Assumptions and Scenarios Report).[23]

During the current 2026 ISP process AEMO proposes to publish the information "about distribution network capabilities as they will be applied in the ISP model, but not the underlying granular data used to build up insights to be applied to the ISP model."[23] In future anonymization techniques may be agreed to in updated versions of the 'Demand Side Factors Information Guidelines' report, allowing for the reporting of more granular data.

[23] Australian Energy Market Operator (AEMO), *Demand Side Factors Information Guidelines: Consultation Paper – Standard Consultation for the National Electricity Market*, published 14 August 2025, https://aemo.com.au/consultations.

AEMO's 2025 Electricity Network Options Report also provides a detailed overview of the compulsory and optional datasets under the standard 'asset data template' as shown in Table 9 below.[24]

Table 9: DNSP Standard Pathway asset data template

Table	Field Name	Field ID	Provision
Distribution Sub Capacity	Distribution Substation Site Unique Identifier	D_id	Compulsory
Distribution Sub Capacity	Distribution Substation Site 'Name plate' Capacity (megavolt amperes [MVA])	D_name_capacity	Compulsory
Distribution Sub Capacity	Distribution Substation Site Available export capacity (MW)	D_export_capacity	Optional
Distribution Sub Hierarchy	Distribution Feeder Identifier	FDR	Optional
Distribution Sub Hierarchy	Zone Substation Identifier	ZS	Optional
Distribution Sub Hierarchy	Sub Transmission Station Identifier	STS	Optional
Distribution Sub Hierarchy	Transmission Node Identifier (TNI)	TNI	Compulsory
Hierarchy Capacity	Available export capacity Distribution Feeder	FDR_export_capacity	Optional
Hierarchy Capacity	Available export capacity Zone Substation	ZS_export_capacity	Optional
Hierarchy Capacity	Available export capacity Sub Transmission Station	STS_export_capacity	Optional
Hierarchy Capacity	Available export capacity Transmission Node Identifier (TNI)	TNI_export_capacity	Optional
Hierarchy Capacity	MV/HV Connected CER Capacity	total_pv_non_lv	Optional
Disaggregation Info	Historic maximum demand	historic	Optional
Disaggregation Info	Historic minimum demand	historic_min	Optional
Disaggregation Info	Latitude	lat	Compulsory
Disaggregation Info	Longitude	long	Compulsory
Disaggregation Info	Currently Connected CER Capacity – Rooftop PV Capacity (MW) per Distribution Substation	total_pv	Compulsory
Disaggregation Info	Currently Connected CER Capacity – Total PV Inverter Rating or Site export limit per Distribution Substation	total_site_export	Optional
Capacity Cost	Network Level ID	level_name_ID	Optional
Capacity Cost	Hierarchy Type	level_code	Optional
Capacity Cost	Financial Year	fy_cost	Compulsory
Capacity Cost	Tranche	tranche_cost	Optional
Capacity Cost	CER Export Capacity Cost $/MW	export_cost	Compulsory
Capacity Cost	% Overhead network assets less than 33kV (wires and poles)	OH_MV_cost	Compulsory
Capacity Cost	% Underground network assets less than 33kV (cables)	UG_MV_cost	Compulsory
Capacity Cost	% Distribution substations including transformers	TX_MV_COST	Compulsory
Capacity Cost	% Overhead network assets 33kV and above (wires and towers / poles etc)	OH_HV_cost	Compulsory
Capacity Cost	% Underground network assets 33kV and above (cables, ducts etc)	UG_HV_cost	Compulsory
Capacity Cost	% Zone substations and transformers	TX_HV_cost	Compulsory
Capacity Cost	% Easements	land_cost	Compulsory
Capacity Cost	% Meters	meter_cost	Compulsory
Capacity Cost	% "Other" assets with long lives	other_long_cost	Compulsory
Capacity Cost	% "Other" assets with short lives	other_short_cost	Compulsory

[24] Australian Energy Market Operator (AEMO), *2025 Electricity Network Options Report*, August 2025, https://www.aemo.com.au/consultations/current-and-closed-consultations/2025-electricity-network-options-report-consultation

Appendix E. Simplified Venn Diagram

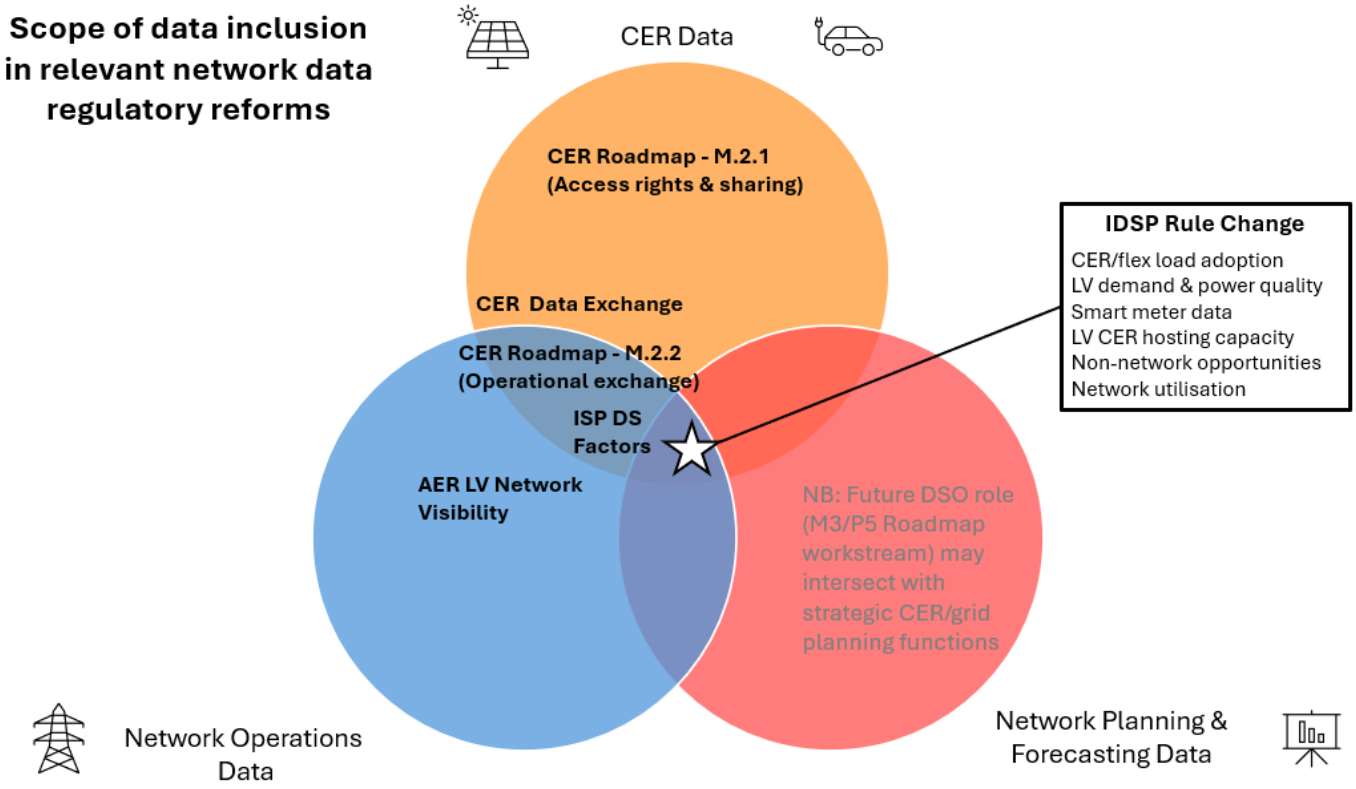


Figure 4: Simplified Venn diagram of relevant regulatory landscape for network data regulation

Appendix F. CER Asset Level Data (Outside Scope of Networks)

Table 10: CER Asset Level Data (Outside Scope of Networks)

Example Datasets	Covered?	Source
CER Metadata / Standing Data (e.g. CER type, identifier, location, capacity, asset owner, registered agent, VPP or DOE enabled?, frequency of available data, fault data automatically reported?)	CER Roadmap CER Data Exchange	OEM / Aggregator
Network Allocation Level (device, site, network node, TNI)	CER Roadmap CER Data Exchange	OEM / DNSP
Local Voltage [V]	CER Roadmap CER Data Exchange	OEM
Local Frequency [Hz]	CER Roadmap CER Data Exchange	OEM
Device Limit Settings [kW, kWh, max. current A]	CER Roadmap CER Data Exchange	OEM / Aggregator / DNSP
Communication Status [active/inactive] (e.g. for receiving DNSP Constraint such as a DOE)	CER Roadmap CER Data Exchange	OEM / Aggregator
Device Status [Fault active/resolved]	CER Roadmap CER Data Exchange	OEM / Aggregator

UTS Institute for Sustainable Futures