Anna Collyer
Chair
Energy Security Board
Submission by email to info@esb.org.au

3 February 2022

Dear Ms Collyer,

Subject: Energy Security Board (ESB) Interoperability policy consultation paper

SA Power Networks welcomes the opportunity to provide feedback in response to the above consultation paper.

South Australia is at the forefront of the transition to distributed energy, and SA Power Networks is committed to playing our part in enabling and accelerating this transition. We have set a public goal to double the amount of rooftop PV we can accommodate on our network by 2025 and we are working with the solar industry and other stakeholders on a range of initiatives to enable this.

SA Power Networks has been a strong advocate for national open standards for DER interoperability because we consider that such standards will be key to continuing to grow a rich, competitive market for DER, smart appliances, aggregators, VPPs and energy service providers.

SA Power Networks was a founder member of the industry Working Group within ARENA's Distributed Energy Integration Program (DEIP) that has developed the CSIP-AUS, and we have led efforts to progress the use of this standard to enable flexible export limits (also referred to as Dynamic Operating Envelopes or DOEs) for small customers as a means to overcome emerging issues of local distribution network congestion in high-solar areas. With funding support from ARENA, we have worked with the solar industry to help bring the first CSIP-AUS compliant products to market in mid 2021 and launch the first flexible network connection options for residential solar customers in the NEM. There is now a small but growing cohort of customers in congested network areas in South Australia and Victoria that have taken advantage of these products to connect larger systems, and export more energy to market, than has been possible in the past.

SA Power Networks was also a founder member of ARENA's DOE Working Group and was involved in the establishment of the DEIP Interoperability Steering Committee (ISC). We have been an active stakeholder in the development of national DER standards such as AS4755 and AS4777, and we work closely with the South Australian Government on jurisdictional standards and technical requirements such as those associated with the Government's Home Battery Scheme, which was designed to promote interoperability and VPP capabilities, and the state's 'Smarter Homes' regulations.

Our key items of feedback on the ESB's consultation paper are summarised below.

1. We are strongly supportive of efforts to promote the adoption of the CSIP-AUS as a national standard for DNSPs to publish DOEs to DER devices, DER vendor systems, and aggregators.

SA Power Networks ABN 13 332 330 749 a partnership of: Spark Infrastructure SA (No.1) Pty Ltd ABN 54 091 142 380, Spark Infrastructure SA (No.2) Pty Ltd ABN 19 091 143 038, Spark Infrastructure SA (No.3) Pty Ltd ABN 50 091 142 362, each incorporated in Australia. CKI Utilities Development Limited ABN 65 090 718 880, PAI Utilities Development Limited ABN 82 090 718 951, each incorporated in The Bahamas.

www.sapowernetworks.com.au

2. While we see merit in a well-defined assessment framework for use when considering whether certain DER standards should be mandatory in the NEM, it is not clear who is meant to apply the assessment framework proposed in the paper[1]. Section 2.2 of the consultation paper suggests that the ESB intends to take an ongoing role in DER standards governance and use this framework itself to produce recommendations to ministers. The paper indicates that the ESB does not expect to undertake broad stakeholder consultation as part of this process, but rather intends to engage with a single stakeholder group – the DEIP Interoperability Standards Committee (ISC) – to 'review the technical and practical implications of the policy once the initial assessment framework…has been applied'[2]. We do not support this approach because:

    a. A single body such as the ESB will not have the necessary expertise in DER standards, nor a sufficient understanding of stakeholder impacts across the broad range of stakeholders impacted by DER standards, to apply the framework without input from others;

    b. The ESB is not bound by any formal requirements regarding stakeholder consultation and the process proposed does not appear to give adequate opportunity for stakeholder input. In our view the consultation paper and the FTI review would have benefited from a higher level of stakeholder engagement early in the process. As we understand it, key stakeholder groups such as the API Working Group that has developed the CSIP-AUS have not been engaged at all so far; and

    c. It is not clear how any recommendations arising from the ESB's application of the framework would be put into effect. In our view the best way to make specific DER standards mandatory in the NEM is unlikely to be through juristictional regulations, but rather to reference them in the National Electricity Rules (NER)[3] or incorporate them in existing mandatory standards such as AS4777. This being the case, to give effect to the ESB's recommendations, ministers would presumably need to direct another party to make a rule change proposal or to update standards. It's not clear how such a process would be efficient as an ongoing means of proposing DER technical standards for national adoption, when such proposals can be put forward directly by an expert body such as the DEIP ISC or Standards Australia, or developed through a consultative process like the AEMC's Access and Pricing review. In our view the evaluation framework may be most useful as a tool for a body such as AEMC to use when considering a rule change proposal, rather than something applied as part of a new process for proposing mandatory standards.

3. The FTI framework is intended to consider the merits of making specific DER standards mandatory. In the examples given, however, much of the narrative is actually about the merits of the outcome that the standard in question is seeking to deliver, i.e., in this case, the costs and benefits, more broadly, of DOEs. This is not the same question. The broader costs and benefits of transitioning from static network connection limits to DOEs have

---

[1] We note that the question of who should be responsible for DER standards governance has been canvassed extensively through the ESB's own DER Standards Governance rule change proposal and the related AEMO rule change proposal that preceeded it. The consultation paper does not appear to acknowledge or consider the learnings from those rule change processes and the stakeholder feedback received.

[2] ESB consultation paper, page 12

[3] This could be either directly, as with the recent changes to incorporate AS4777, or via a properly-governed subordinate instrument as proposed in the Standards Governance rule change proposal.

been examined extensively in other work[4], and are now being tested in pilot projects across the NEM. The business case is sound and DNSPs have already committed to phasing in DOEs using the CSIP-AUS. In this context **the framework should consider only the specific merits of making particular technical standards mandatory at this time**, weighed against the likely outcomes in the absence of such a mandate (the counterfactual or 'base case').
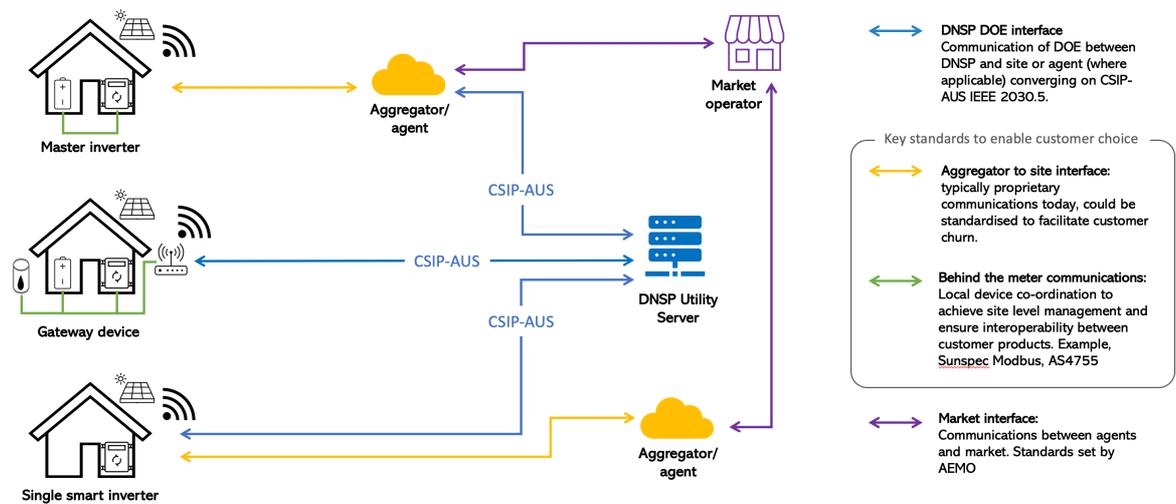
4. The FTI report appears to have a limited view of the actual state of play in this area. It makes no reference to the CSIP-AUS trials already underway in South Australia and Victoria, even though these trials are designed specifically to examine some of the key questions posed by the framework, such as the cost of compliance for OEMs and DNSPs[5]. It also does not mention the commitment by Energy Queensland to introduce the CSIP-AUS. It makes only passing references to other key developments such as the SA Government 'Smarter Homes' regulations and the work of Standards Australia and the relevant standards committee (EL-062).

5. The paper identifies the primary benefit of interoperability standards as ensuring portability of customer DER between aggregators and retailers, so that customers are not 'locked in'. It does not recognise that **mandating the CSIP-AUS will not address this issue**. The CSIP-AUS is about standardising the DNSP interface for system limits, not the DER interfaces used by aggregators to control customer DER for market services (although in some cases these may use the same underlying communications protocol, IEEE2030.5). Mandating the CSIP-AUS will not standardise the aggregator-DER interface to enable portability between service providers, nor will it ensure any interoperability of devices behind the meter (e.g. with a home energy management system). This is an important area where some industry stakeholders and customer advocates have been calling for common standards, but the relevant standards in this case will be more like those referenced in the latest version of IEEE1547, e.g. Sunspec Modbus. This is illustrated in the figure below.

---

[4] Eg SA Power Networks' *LV Management Business Case*, January 2019, submitted as part of our 2020-25 regulatory proposal; AEMC Economic Regulatory Framework Review report "*Promoting Efficient Investment in the Grid of the Future*", July 2018; subsequent DNSP regulatory proposals, and recent work by the DEIP DOE Working Group and others.
[5]In the Flexible Exports for Solar PV trial, technology partner SwitchDin has developed reference implementations of the CSIP-AUS standard for both the DNSP Utility Server and the client, and leading OEMs Fronius and SMA are adding CSIP-AUS support natively to their equipment. The FTI report makes one reference to the earlier 'Advanced VPP Grid Integration' trial in South Australia, but that trial preceded the development of the CSIP-AUS.

Four layers of interoperability

CSIP-AUS is an important standard and we fully support its adoption nationally, but customer choice and churn will be facilitated by common standards for the 'last mile' interface from the aggregator to customer DER, and common standards for interoperability of devices behind the meter. In our view these are key gaps in national DER standards today, noting that the CSIP-AUS is well progressed and appears to have good national industry alignment already. This would be a productive area for the ESB to focus its efforts.

6. The evaluation framework appears to be somewhat tailored to the CSIP-AUS, and further work may be required to ensure it is sufficiently broad if it is to be used as a general framework for assessing other DER standards in future.

7. In the case of the CSIP-AUS, the "feature sets" identified are **not** strictly mutually exclusive and therefore **should not be regulated separately**. The CSIP-AUS was developed speficically to identify **the minimum set of features required to deliver the outcome being sought**, i.e. a framework for dynamic operating envelopes in the Australian context. This requires a communications protocol, registration and telemetry functions and cyber security to make it work.

8. The paper and the FTI report appear to misunderstand other key aspects of the CSIP-AUS. This is reflective of a lack of engagement with the API Working Group and others directly involved in the development of the CSIP-AUS during the FTI work:

   a. The paper conflates technical limits with market mechanisms. In particular, it conflates the use of DOEs by DNSPs to expose the physical hosting capacity of the network – which is the purpose of the CSIP-AUS – with the economic curtailment of DER output by traders in response to energy market price signals, which is quite different and is not covered by the CSIP-AUS.

   b. The paper assumes that DER interoperability standards 'apply to retailers'. This is one important use case, but the primary use-cases for the CSIP-AUS today are DER->DNSP utility server, or DER->vendor cloud system->DNSP utility server, both of which can be separate from the customer's retail arrangements.

We have provided some further responses to the specific questions posed in relation to the proposed standards evaluation framework in the attachment.

For the avoidance of doubt, we re-iterate that we are **strongly** supportive of adopting CSIP-AUS as a national standard. Our concerns are around the proposed evaluation framework and how it is to be used as part of a broader process of standards governance.

We urge the ESB to:

- **support, and consider ways to accelerate, the current efforts of the API working group and various distribution businesses;**
- **consider leveraging existing mechanisms such as the AEMC's rule change processes to make standards mandatory in the NEM, rather than constructing a new process and framework; and**
- **prioritise work on standards for behind-the-meter and device-to-aggregator interoperability.**

We look forward to continuing to engage with the ESB through the remainder of the post-2025 market review process, and we would welcome the opportunity to meet with the ESB to discuss these matters in more detail. In the meantime, If the ESB has any questions on any aspect of our response, please contact Bryn Williams, Network Strategy Manager at bryn.williams@sapowernetworks.com.au or on 0416 152 553.

Mark Vincent
General Manager Strategy and Transformation

Attachment A – feedback on specific questions

Assessment framework

1. **What are stakeholder views on the framing of the feature sets as described in Chapter 3 (and in the accompanying FTI paper)?**

   - We feel that the intent of the CSIP-AUS has been misinterpreted:
     - The paper implies the CSIP-AUS is intended to resolve a number of interoperability use cases including:
       - "Behind the meter" device interoperability including interoperability on site and between a site and an aggregator
       - Automated DER registration to supplement the DER register
       - Standardising provision of operational (monitoring) data between various parties including customers and aggregators as part of a data sharing market
     - Instead, the intent of the CSIP-AUS was to define the minimum set of data and functionality to enable communication and operation of of dynamic operating envelopes between customers and distribution networks, which includes automated registration and monitoring. To achieve this outcome, it is considered that all defined "feature sets" would need to be implemented:
       - A communications protocol (standardised through 2030.5 or otherwise) (feature set 2)
       - Adequate cyber security controls on the interface (feature set 5)
       - A mechanism to register a device with the DNSP (feature set 4)
       - Ability for the site export to be controlled (feature set 2)
       - Telemetry feedback to provide operational visibility and compliance management (feature set 5)
     - This communication path may include aggregators if the customer has opted in to an aggregation scheme. Various configurations are possible: the IEEE2030.5 client can reside within the customer DER device, in the DER vendor's cloud management system, or in an aggregator's system.
     - Behind the meter interoperability (and therefore concerns about customer porting) are out of scope for CSIP-AUS will need to be addressed by other interoperability standards.
   - Assessment on the applicability of standards should be based on the outcome that is sought to be achieved (focus on the ends, not the means)
     - It does not make sense to examine a standard and determine which parts are applicable without a clear use-case in mind.
     - Once the outcome or use-case is defined, standards or parts of standards can be assessed for applicability

2. **What are stakeholder views on the selected the groupings of functionality for the feature sets? Are these the most appropriate grouping of feature sets, or are there others that should be considered?**

   - See answer above.

3. **What are stakeholder views on each of the proposed criterion as described in Chapter 3 (and in the accompanying FTI paper)?**

- The criteria generally make sense within the context of the paper
- Assessment using these criteria should be focussed on the benefits/drawbacks of mandatory standardisation, not the use case itself. For example, assess the benefits of standardising a DOE technical approach (using CSIP-AUS) rather than assessing the merits of DOEs as a concept.
- "Compliance and monitoring burden" could be reframed more neutrally as "cost for compliance and monitoring"

4. **Are there considerations that have not been captured in the assessment framework?**

- No comment

5. **This assessment framework has been established to assist consideration of the CSIP-Aus standard for inverter based DER (solar PV and battery storage); however, it could also support consideration of other technology groups, such as EV smart charging and smart appliances. What are stakeholder views in respect of the applicability of this framework to other technologies, e.g., could the framework be applied to electric vehicle charging standards as a subsequent exercise?**

- Per answer to Question 1, rather than a framework for assessing components of interoperability standards, the framework should be structured to assess the suite of capabilities required to achieve the stated outcome.

   For example if the stated outcome is "to enable a standardised interface for EV Smart Charging connections with charge network operators", features required may include:

   - Registration of a charger in the network
   - Remote start and stop capabilities
   - Telemetry to enable billing
   - Load management setpoint controls

   A framework could be developed to assess the merit of standardising these functions, but it does not make sense to assess each of these features in isolation.

Applicability

6. **Understanding consumer needs will be important to support effective interoperability settings and secure acceptance for application of standards. What might be implications for the way households and businesses use their DER devices and how they may choose to interact with systems and markets?**

- The framerwork should seek to assess consumer acceptance of interoperability standardisation but not interoperability as a concept.

7. **Is there an assumption that existing fleets of devices would need to be grandfathered? If so, how long might be appropriate? Would sunset arrangements need to be considered to address potential issues of inequity issues?**

- We would expect existing customers would be on grandfathered arrangements until they upgrade or replace their system as this is established practice. This is our intention in SA. Customers may also transition to compliance on an op-in basis.

8. **Is it appropriate for new standards to apply to all retailers? How would aggregators and embedded network providers be treated?**

- CSIP-AUS applies to devices, DNSPs and aggregators (where applicable). The standard will apply to retailers if they are operating as an aggregator.

Compliance timeframes

9. **How might we assess timing of industry readiness? Is it appropriate for timing to be considered as part of the feature sets, rather than conformance to the entire standard, to allow gradual phasing in of functionality over time?**

- Vendors will not invest in developing compatible products until they are confident that there is a clear requirement, and mandatory national standards provide that clarity.
- Phasing in of functionality only works if interim functionality can fully deliver on one or more use-cases that have value.

  o For example, dynamic operating envelopes cannot be enabled unless registration, cyber security, protocols, telemetry and device capability are in place.
  o It does not make sense to mandate partical capabilities and impose requirements on customers until the benefits can be realised.

10. **Is there a case for phasing in introduction of the standard (or relevant aspects of the standard) across different jurisdictions based on need? What might these considerations include?**

- Yes, but consideration should be given to when the benefits of standardisation will be realised (per previous questions)
- National standardisation sends a clear signal to industry to invest in developing the capability, greatly increasing industry adoption and choice for customers
- Jurisdictions are very likely to implement interoperability schemes (e.g. DOEs) regardless of national standardisation.
  o Early standardardisation will prevent significant duplicated effort between implementations
  o It will also prevent significant rework if standards are introduced after bespoke implementations are rolled out per jurisdiction
- Phasing could include an optional period where jurisdictions can mandate the standard as required, followed by a national mandate at a later date. This will retain optionality and give industry confidence their investment won't be wasted

11. **Are there other parameters (additional to those described in Table 1) that may also be valuable for consideration of inclusion in this process?**

- No comment

Related decisions

12. How and when is the certification and compliance mechanisms determined? What are the likely lead times to establish such a capability?

- Standards provide greatest benefit when a centrally managed certification process exists. This ensures OEMs can certify once and sell products in multiple jurisdictions.
- It is likely CSIP-AUS certification capability will be available end 2022-mid 2023, but interim measures can be accommodated.

13. What might be likely systems and processes required to ensure that customers can easily switch providers that conform to these new standards? How does this relate to other IT and systems upgrades identified as part AEMO regulatory and IT systems roadmap?

- CSIP-AUS is not intended to be applied for communication between aggregators and customer devices, and therefore is not intended to address portability concerns
  - Other "behind the meter" interoperability standards will need to be introduced to bridge this gap
  - For example we could consider adoption of inverter standard changes in the US that address device level interoperability. This could be achieved through inclusion of interoperability requirements in AS 4777, per USA inverter standard IEEE 1547 – we consider this to be the highest priority gap in DER standards, and the one which will deliver the greatest value for customers and industry

14. Are there other cross-cutting issues that stakeholders consider need to be raised and explored as part of this policy assessment?

- No comment