



**Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601**

Submission by email to: networkpolicy@acr.gov.au

Friday 9 December 2022

Subject: Rheem CET response to the AER Flexible Export Limits Issues Paper

Thank you for the opportunity to provide feedback to the AER Flexible Export Limits Issues Paper.

This is a joint response on behalf of both Rheem Australia Pty Ltd (Rheem) and Combined Energy Technologies Pty Ltd (CET), as we have a complementary interest in the AER Flexible Export Limits Issues Paper due to the significant number of mixed CER installations that we carry out every year across the NEM and the WEM.

As the largest Australian manufacturer of water heaters with products in over 4 million Australian homes, Rheem offers a wide range of traditional and renewable energy water heater models to the domestic and commercial water heating markets under the Rheem, Solahart, Vulcan, Aquamax & Everhot brands. Under our Solahart brand we are the third largest supplier of photovoltaic (PV) systems in the country. Over the last four years we have also commenced the manufacture and installation of smart electric water heaters, controlled remotely by our technology partner, Combined Energy Technologies.

Combined Energy Technologies is an Australian technology company specialising in energy management for residential, commercial, and microgrid systems. CET provides site energy management systems and has extensive experience in the integration and orchestration of systems with multiple Consumer Energy Resources (CER), including the integration of solar PV, batteries, water heating, electric vehicle chargers, pool pumps and A/C for the benefit of the homeowner, retailer, and the grid.

As Australian based manufacturers, we have made large R&D investments in bringing to market cost effective CER products and technology for the integration and orchestration of behind the meter CER.

Together Rheem and CET are already actively participating in the emerging CER market with thousands of online, mixed, orchestrated CER sites across the NEM and the WEM, with nearly 100% of our sites orchestrating one or more types of CER (generation and flexible load). Over the past decade we have identified and resolved many issues (at live field sites) to ensure that mixed, smart CER sites can be orchestrated to achieve the best financial outcomes for consumers, whilst providing a foundation for grid support services and hence grid security of supply.



Our comments and recommendations are supported by empirical data from an existing fleet of thousands of consumer sites of mixed CER under orchestration across the NEM and WEM. The data from these sites support the technical, architectural, and commercial positions in our feedback to the Australian Energy Regulator Flexible Export Limits Issues Paper, which we believe are in alignment with the principles of the National Electricity Objective (NEO). Our responses to the consultation questions related to CER (in the delivery of DNSP flexible exports) should be read to include only inverter-based CER assets (defined under AS4777.2:2020) unless specified otherwise.

In responding to the Issues Paper, we have made recommendations and raised relevant questions, including the following four fundamental issues in response to the *Broad questions regarding immediate actions* section of the Issues Paper.

The following four issues need to be addressed as a priority to best enable flexible exports:

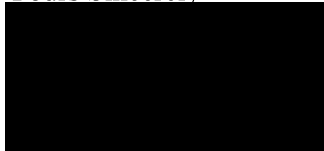
- 1) A requirement that CER supports the CSIP-Aus Native model as a default regardless of the initial CSIP-Aus deployment connectivity model. This will avoid the consumer being locked-in where the CSIP-Aus proprietary Cloud model is the initial installation connectivity option. This would enable consumer churn, and a competitive market for CER services such as flexible export control.
- 2) All CER (inverter based) should support BTM interoperability to enable a consumer to maintain flexible export compliance when expanding their site CER under the CSIP-Aus Gateway model. This could be achieved by adopting the proposed updates to California Rule 21 (with Australian specific modifications) whereby all CER (inverter based) will be required to support CSIP and/or SunSpec Modbus by 2023. Modbus is currently the most widely accepted and implemented BTM protocol for CER interoperability.
- 3) Compliance with a flexible export requires real time connection point power information. Changes to smart meter technical specifications and local access regulations (as defined in the NER) are required to enable the consumer to assign local read only access rights (at the smart meter) to the consumer's own power information. This would mitigate the need for additional connection point Class 1 metering to comply with a flexible export and will significantly reduce consumer compliance costs associated with dynamic connections such as flexible exports.
- 4) All CER shipped and deployed in Australia should comply with its Certificate of Compliance to AS4777.2:2020. Currently no robust mechanism for policing and enforcing compliance with AS4777.2:2020 exists. Even the use of a simple on/off local control option for CER per the AS4777.2:2020 mandatory requirement for inverter-based CER to support Demand Response Mode Zero (DRM0) cannot be relied upon, as some manufacturers do not support DRM0 despite the mandatory nature of this requirement. Further, there is no enforcement mechanism to rectify the many thousands of consumer sites that have CER installed without this capability. In the absence of CER interoperability, and without this minimum on/off control capability it is impossible for a consumer's HEMS (CSIP-Aus Gateway Model) to orchestrate proprietary cloud only controlled CER on a multi-CER site for compliance with a Flexible Export Limit.



If the energy market is to be truly democratised, it is extremely important that any changes to market rules and associated technical specifications are made with the consumer at the centre of the solution. Fundamental to this approach will be that new rules do not favour a particular technology, technology class, or technology manufacturer, and that technology neutrality is not impeded by barriers to entry in creating or modifying energy market rules. Our specific comments and the recommendations attached are underpinned by this approach.

As this submission has been prepared using the expertise of several of Rheem and CET personnel, I would ask that any enquiries related to the submission are directed in the first instance to myself. I will then co-ordinate follow up responses to your enquiries or further meetings with the appropriate personnel within our organisations.

Yours Sincerely



Ashraf Soas
General Manager Energy Solutions
Rheem Australia Pty Ltd



Rheem CET responses to the Issues Paper questions

General questions

- *Do stakeholders agree with the primary use case for the implementation of flexible export limits? [The primary use case is the efficient and increased utilisation of the shared hosting capacity on the distribution network to enable consumers to obtain the benefits of exporting their energy resources such as solar PV to the grid]*

Yes, we agree.

Immediate actions

Capacity allocation

- *Do stakeholders agree with the DEIP Working Group principles for capacity allocation? Why / why not?*

We generally agree. However, the success of any implementation of the DEIP working group principles will be reliant on a number of factors beyond those of the 5 *Export hosting capacity allocation principles*. Other considerations include:

- 1) Price signalling (Supportive Tariffs - Refer: Access and pricing rule change mechanism).
- 2) CER interoperability (Both CSIP-Aus and BTM interoperability).
- 3) Incentivising legacy sites (under principle 5) to transition to a dynamic connection, however this will require remote software enablement support from OEMs.
- 4) As a function of 1) above, "Pass through" of DNSP network tariffs in consumer facing retail energy plans.

Whilst we generally agree with the statement that:

We expect DNSPs are likely to take differing approaches with regards to the detailed technical approach. We expect that the capacity allocation methodology for flexible export limits should be documented in a DNSP's CER integration strategy as outlined in our DER Integration Expenditure guidance note. This should also detail the consumer engagement undertaken to underpin the DNSP's approach.

As DNSPs may take differing technical approaches to the implementation, it is extremely important that a National Approach is taken to the underlying technical standards / interoperability requirements for the deployment of CER.

The successful implementation of flexible exports is reliant on CER orchestration behind the meter at a DOE-capable connection point. By this we mean that all CER on a site needs to support local (to the CER) standardised communications interfaces and open control protocols. This will enable BTM orchestration of all CER and hence the predictable and



consistent response required to achieve a flexible export. This can only be achieved by interoperability at both a CSIP-Aus level, and (on multi-CER sites) by using the CSIP-Aus Gateway model BTM where CER interoperability must be mandated.

Further, to avoid consumer lock-in (both technically and commercially) all inverter-based CER should support as a default the CSIP-Aus Native model of connectivity to enable consumers to churn to the energy market service provider of their choosing. This does not preclude the use of proprietary connectivity options such as the Cloud model but it does give the consumer choice to avoid lock-in when the CSIP-Aus Native model is also supported as a mandatory default.

Note: The CSIP-Aus Native mode can be implemented by:

- A CSIP-Aus client (software) within the CER, directly accessible via standards based physical interfaces
 - The CER sold (coupled on site) with a Protocol Converter (e.g. SwitchedIn Droplet, Combined Energy EMU edge gateway etc). Here the Protocol Converter provides the CSIP-Aus inbound / outbound connection from the site, and it also provides mapping of CSIP-Aus commands via an open standard based physical interface on the CER using an open protocol such as SunSpec Modbus. Most inverters, with a few notable exceptions, support SunSpec or another variant of the Modbus communications protocol.
 - On a multi-CER site, the CSIP-Aus Gateway model is implemented in much the same way as the Protocol Converter option (e.g. using SunSpec Modbus), with a proviso being that the Gateway is much more than just a protocol converter and typically provides HEMS services on the site as well.
- *Should these principles for capacity allocation be binding for DNSPs?*

Yes, they should. Consumers with legacy static export limit connections, however, should be incentivised to upgrade their sites to participate in dynamic connections. As most CER can be remotely upgraded, consideration should be given to working with manufacturers on how to remotely enable CSIP-Aus and BTM interoperability capability in already deployed CER. This would also widen the options for the many thousands of consumers who are currently locked-in to their CER technically and/or commercially. There is precedent for this, as most CER deployed in California under Rule 21 supports local open standards-based interoperability. Unfortunately, this capability has been disabled for the Australian market by some suppliers.

Further, in respect to Principle 5, South Australia's OTR guidelines will require a CSIP-Aus connection to all new sites from July 1st 2023. This requirement will be mandated for new customer connections, and will only further propagate consumer lock-in unless technical



standards and/or DNSP connection agreements require CER interoperability. This can be achieved at a CSIP-Aus level by mandating that CER supports the CSIP-Aus Native model as a default regardless of the initial CSIP-Aus deployment connectivity model (Native, Cloud or Gateway), and that all CER (inverter based) supports BTM interoperability. This could be achieved by adopting the proposed updates to California Rule 21 (with Australian specific modifications) which will require CER to support CSIP and/or SunSpec Modbus from 2023. Modbus is currently the most widely accepted and implemented BTM protocol for CER interoperability.

- *Should the application of capacity allocation principles by DNSPs be auditable to assure consumers of fairness?*

Yes, they should be auditable.

- *Should principles for static export limits also be developed for use by DNSPs going forward?*

Yes, they should. However, any principles specific to static export limits should encourage and support CER that is “dynamic connection capable” regardless of the connection type selected. This can be achieved by industry accelerating a CER requirement to support local open interoperability, including both to the site/connection point (i.e. CSIP-Aus Native model) and behind the meter (e.g. SunSpec Modbus).

- *Do stakeholders have a view as to whether existing AER guidance material is sufficient to communicate expectations regarding capacity allocation principles for flexible and/or static export limits?*

Ideally the guidance principles should be updated to reflect the issues / requirements detailed in our responses above.

Capacity allocation methodology

- *Is the approach outlined above [see section 3.3.2] in allowing flexibility for DNSPs to develop their capacity allocation methodologies appropriate?*

Yes, with the caveat that mandating CER interoperability needs to be considered as matter of urgency, the reasons for which we have detailed throughout our responses to this consultation.

Whilst the DEIP outcomes report utilised the trials and demonstrations completed or underway as a basis for interim advice on the various calculation methodologies used, the



trials did not evaluate the growing risk that multi-CER sites cannot be orchestrated for compliance with a flexible export when the site also includes proprietary cloud controlled CER. We feel that the importance of this issue has been overlooked and should be factored into the DNSP capacity allocation methodologies as the risk / issue is growing on a daily basis. Our views are based on empirical field-based evidence from many thousands of mixed orchestrated BTM CER sites we have deployed across the NEM and the WEM. We have elaborated on this issue in our responses with specific examples of how proprietary cloud controlled CER (e.g. an AC coupled BESS) impacts on the HEMs orchestration of all other interoperable CER on a consumer site, potentially mitigating compliance with a dynamic connection such as a flexible export limit.

- *Do stakeholders agree that DNSPs should include their capacity allocation methodology in their CER integration strategy?*

Yes, we do. Please also see our answers to the previous Capacity Allocation questions.

- *Should DNSPs be required to publish their capacity allocation methodologies, clearly outlining the trade-offs considered in setting their approach?*

Yes, they should.

- *Should the AER have a role in approving DNSP capacity allocation methodologies? If so, what form should this mechanism take?*

Yes, the AER should have a role to play in this issue. We would suggest that an oversight / approval mechanism be considered by the AER, similar to the TSS (Tariff Structure Statement) approval process but modified for approving DNSP capacity allocation methodologies. This mechanism could be linked for periodic review in combination with the TSS.

Consumer participation (opt-in or opt-out)

- *Do stakeholders agree with the expectation that over the near to medium term, consumers should continue to have the option of static export limits?*

Yes, however we believe that this could be reassessed once all CER is mandated to support interoperability.

Interoperability should encompass both local behind the meter control and orchestration of all the consumer's CER assets, (e.g. using SunSpec Modbus, OCPP etc) and with site connectivity supporting CSIP-Aus, specifically the Gateway model to accommodate multi-CER sites. As there can only be one CSIP-Aus connection to a site for the purposes of



implementing a DNSP dynamic (flexible) export, compliance with flexible export signalling requires orchestration of all behind the meter CER, which in turn requires that CER supports interoperability via fully featured open protocols such as SunSpec Modbus (for inverter-based technology) and OCPP (for EVSE) as examples.

Unless this capability is provided, it will be impossible for a consumer's HEMS (CSIP-Aus Gateway Model) to orchestrate consumer CER with proprietary communications to comply with Flexible Export signalling. Even the use of a simple on/off local control option for CER per the AS4777.2:2020 mandatory requirement for inverter-based CER to support Demand Response Mode Zero (DRM0) cannot be relied upon, as some manufacturers do not support DRM0 despite the mandatory requirement of the feature under the standard.

We have raised this issue in the review of CER technical standards, as policing and enforcement of AS4777.2:2020 non-compliances such as the DRM0 non-compliance issue has been unsuccessful to date. The AER, the CEC and the DNSPs have to date not taken any action on non-compliance of CER with DRM0. This makes it extremely difficult to locally control a cloud only controlled CER device as there is no interoperable interface nor any DRM0 on/off control. Without the minimum of a mandatory DRM0 interface for CER control, there is no cost-effective option for a consumer (under the CSIP-Aus Gateway model where a site has multiple CER) to implement site orchestration with other CER to comply with a Flexible Export limit. The Consumer would then be locked-in and unable to expand their CER assets, nor would they be able to maintain control compliance with a dynamic connection (e.g. flexible export).

In the absence of support for full local interoperability, as an interim measure where there is only one CER on a site, the CER should by default support the CSIP-Aus Native model of connectivity (regardless of the initial implementation model such as the proprietary connectivity option of the CSIP-Aus Cloud model). This would allow the consumer to churn their CER asset(s) to the energy market service provider of their choice, avoiding technical lock-in. However, the commercial lock-in imposed by some CER OEMs will also need to be addressed as consumers have not been informed of this issue at the point of purchase of their CER asset.

- *Should consumers be expected to opt-in or opt-out of flexible export limits (where available)?*

Referring to our previous answer, consumers should have the option to Opt-Out until such time as the CER ecosystem has matured and all CER is required to support full interoperability via fully featured open protocols and local interfaces (as detailed above).



Further, to avoid consumer CER lock-in, and as some jurisdictions are requiring that all new CER (inverter based) installations comply with CSIP-Aus, then it follows that CER should support as a minimum the CSIP-Aus Native model of connectivity. Allowing the Cloud model of connectivity for CER without also requiring that CER support the Native model of connectivity will simply propagate CER lock-in, both technically and commercially.

Further, once the consumer expands their site (home) CER assets to two or more, a Gateway (refer CSIP-Aus Gateway model) is required to orchestrate their CER for compliance with the flexible export as there can be only one CSIP-Aus connection per site. This is a logical connection point requirement of the DNSP as it is the connection point power flow that must be controlled to comply with a flexible export. If the CER does not support the CSIP-Aus Native model nor interoperability via open protocols such as SunSpec Modbus, then the site cannot be orchestrated by the CSIP-Aus Gateway model to comply with the Dynamic (Flexible) export signalling from the DNSP.

Jurisdictions that are mandating CSIP-Aus for new CER connections but also allowing the proprietary Cloud model as a standalone option are effectively forcing the consumer unknowingly into CER locked-in situations as:

- 1) There is currently no requirement for CER to support the CSIP-Aus Native model as a default connectivity option (which would enable a consumer to churn away from a CSIP-Aus Cloud model).
- 2) There is no requirement for CER to support local interoperability by open protocols such as SunSpec Modbus, which would allow the consumer to use the CSIP-Aus Gateway model when they have multiple CER. This model also allows for consumer choice of energy market service provider – i.e. no lock-in – a key ESB principle.

There should be no mandated requirement for a CSIP-Aus connection until the above two CER interoperability issues are resolved and, ideally, access to locally real time metering is available.

Compliance with flexible export also requires metering information from the site connection point. Currently this can only be achieved by the CER provider installing their own Class 1 meter, as the consumer has no rights to locally acquired real time power flow information at the smart meter. Addressing this issue would minimise consumer costs, particularly if flexible exports are to be mandated. A change to the technical specification of the smart meter along with changes to the NER are required to enable consumer access



(or access by their nominated agent) to their own power flow data, locally at the smart meter in real time.

As we have detailed above, not all CER is interoperable behind the meter. This is a major issue as sites that have, or evolve to have multiple CER, must adopt the CSIP-Aus Gateway model for compliance with a flexible export. However, when CER does not support local interoperability via standards-based control protocols such as SunSpec Modbus to Gateway communications, then the CER cannot be orchestrated with other CER on the site. This leads to CER conflict as the uncontrolled (or cloud controlled) CER negates actions taken by the Gateway (HEMS) in controlling the interoperable CER. This leads to sub optimal financial outcomes for consumers such as financial loss (solar self-consumption affected, tariff arbitrage affected, unnecessary battery discharge into loads, unnecessary battery cycling reducing the ROI) and impacts to grid security of supply. For example, in the case where a CER (e.g. cloud only controlled BESS) is participating in a VPP for FCAS or DR services, the actions of the proprietary battery system (e.g. a discharge for frequency raise) will be negated by the Gateway (HEMS) that interprets the discharge as excess solar PV, with the Gateway (HEMS) turning on load and hence negating the grid services response. Conversely the actions of the battery monitoring and responding to the NMI level power flow affects the HEMS orchestration of other interoperable CER.

- *Is it necessary for this expectation to be captured in the Model Standing Offer?*

Yes, it should.

Governance of traders and consumer energy resources

- *Do stakeholders require further guidance with regards to the interactions of retailers and aggregators and flexible export limits outside of what is being explored through the existing workstreams?*

Yes. Guidance in the form of a Governance Framework should be considered.

Connection agreement

- *Should DNSPs be required to set out expectations of flexible export limit operation within the connection agreement where there is no trader, or third party involved in the operation? Do stakeholders agree with the rights and obligations outlined above?*

Yes, they should be required to provide details in their connection agreements.

The Preliminary Positions list provided in 3.3.5 covers most aspects, however, we believe there should be additional obligations on DNSPs such as ensuring that CER meets all Standards based technical and other regulatory requirements that would enable a consumer's CER to comply with the requirements of a flexible export agreement. Further



there should be independent oversight, perhaps by the AER in consultation with consumer bodies such as ECA, in determining the rights and obligations placed on consumers by the DNSPs in their connection agreements.

The national harmonisation of connection agreements where possible would also reduce costs to consumers, OEMs, installers, systems integrators, aggregators, and other stakeholders and would provide consistency in how flexible exports are implemented across the NEM (and WEM where possible).

Governance arrangements for flexible export limits

- *Do stakeholders have concerns about the approach to governance outlined above, particularly embedding elements of the rectification process in the connection agreement?*

We generally agree with the concept of the controlling party such as the aggregator / trader being responsible for adherence to the flexible export limit. However, we caveat this with the issues we have raised throughout this consultation in respect to Standards compliance and interoperability (both CSIP-Aus related and behind the meter orchestration of CER i.e. the CSIP-Aus Gateway model).

A further issue yet to be dealt with is that a controlling party has little to no ability to stop an OEM updating CER software and/or modifying CER features and capability remotely. Our experience is this is a regular occurrence that causes issues with the control of CER on a customer site and could impact compliance with a flexible export.

As such, whilst an aggregator, trader, retailer etc may be the controlling party for the purpose of a flexible export, there needs to be a governance framework which includes a policing and enforcement mechanism to address issues that arise as a result of OEM actions as detailed above. This should extend to a more robust set of governance arrangements that includes enforcement of standards compliance (such as for AS4777.2:2020) and a mechanism for product delisting. This should be led by the AER, policed, and enforced through DNSP connection agreements.

For example, a fundamental issue is that CER shipped and deployed in Australia complies with its Certificate of Compliance to AS4777.2:2020. Currently no robust mechanism for policing and enforcing compliance with AS4777.2:2020 exists, and whilst the CEC does maintain a whitelist (on a self-managed basis) of CER certification (primarily in respect to AS4777.2:2020), the CEC has no role in the investigation of complaints that equipment imported and deployed does not meet its own Certificate of Compliance with AS4777.2:2020.

This and other non-compliances are most likely to be revealed at the time of initial CER installation by installers and systems integrators requiring compliance with DNSP



connection agreements. Hence, DNSPs are in the best position to undertake compliance and enforcement, supported by their connection rules. DNSPs should play a greater role through their inspection and defect notification / rectification processes, with CER that has been reported as being non-compliant, should be investigated by the DNSP, and where confirmed, the DNSP defect tagging, and defect rectification processes applied.

Our field experience suggests an unwillingness by DNSPs to pursue non-compliances unless there is an immediate safety related issue. If the controlling party is to be held responsible for compliance with a flexible export limit, then this compliance gap needs to be addressed to ensure an effective regulatory backed governance arrangement regarding the listing and delisting of CER. We believe that a nationally consistent approach is required, and that the AER is currently the most appropriate body, acknowledging that the AER may need new powers to direct DNSPs. Only then can the enforcement of a 'flexible export ready' mandate be considered.

- *Is it appropriate for a technology provider/OEM be held responsible for devices that do not conform to the export limit set by the DNSP (i.e., where this is no active control)?*

As the technology provider / installer may or may not be the OEM, they are reliant on product certification to standards to enable a consistent deployment and configuration approach across devices to ensure compliance with an export limit set by the DNSP. At this time, as we have raised within this consultation and both the recent AEMC (CER Technical Standards) and ESB (Interoperability) consultations, there are very high levels of both product certification and installation non-compliances present in CER being deployed today.

Further, there is no robust mechanism for policing and enforcement of standards where a non-compliance is reported. It would therefore make sense that the OEM should be held responsible where their devices cannot be configured (or may not even have the capability) for compliance with an export limit. This should not be confined to any one technical feature (enabled by compliance with a particular mandatory requirement of the standard) as installers and systems integrators will utilise differing solutions to conform to export limits. As such it is even more important that a strict CER compliance regime, through policing and enforcement is developed as a matter of urgency.

The above reasoning is also applicable where the CER does not support local standards-based connectivity and open control protocols that enable site orchestration with other CER, for instance under the CSIP-Aus Gateway model to ensure compliance with a flexible export limit.

- *What is the appropriate governance arrangement for managing flexible export limits?*

Please see our answer to the previous question.



- *Is it necessary to develop a separate framework to manage governance where a trader or technology provider is involved in passing-through the flexible export limit (i.e., where there is active control)?*

Yes, we believe a separate framework to manage governance would be appropriate that identifies the roles, responsibilities, policing, and enforcement mechanisms for pass-through of flexible export limits to site CER.

For instance, a non-compliance with a flexible export limit may be the result of a particular CER failing to meet a mandatory requirement of a standard. The source of the non-compliance must be identified before action is taken. A separate framework would provide clarity to such a process.

- *Do stakeholders agree with our view of that consumers should not face significant penalties for non-conformance of their energy resources for flexible export limits?*

Yes, we agree that consumers should not face penalties where non-conformances are out of their reasonable control.

Consumers are largely uninformed in many aspects of their CER journey. They are reliant on Government, OEMs, Traders, Retailers, and Installers to equip them with the necessary information to make informed decisions on what CER to purchase and how to install and configure their CER correctly. Unfortunately, consumers have a lack of information to make informed decisions and often there are complex issues, such as CER non-compliance with standards or CER that does not support interoperability, all of which is beyond their control. This can result in the failure of the CER to comply with a static or dynamic export, and this should not be the responsibility of the consumer.

However, if a consumer has intentionally and knowingly interfered with their CER installation to thwart compliance of their energy resources with a flexible export limit, then this should be addressed, perhaps with a defect rectification notice in the first instance, and potential penalties only once all avenues of rectification have been exhausted.

- *Do stakeholders believe there needs to be a standardised approach to enforcement for consumer energy resources under the control of a trader? For example:*
 - *If notified by the DNSP of an issue with device conformance (where no trader is involved), it is appropriate for the responsibility of rectification to rest with the consumer?*
 - *Where a trader is involved, should responsibility for rectification rest with the trader?*

Yes, there should be a standardised approach as this is a complex area.



There may be particular cases where non-compliance rectification works should be the responsibility of the Consumer or the Trader, (Consumer intentional interference, trader failure to control the installed CER in compliance with a flexible export signal), however as detailed in our responses above, where device non-conformance (product or installation) is the issue, then as there could be complex contributing issues (such as non-compliance with standards).

A governance framework will be required to assign responsibility for non-conformance and rectification works, following a framework that identifies the roles, responsibilities, policing, and enforcement mechanisms for non-compliant CER. For example, a device conformance issue is hardly something that a consumer is equipped to deal with. Multiple parties have been involved in the installation and configuration of CER at the consumer's site. The OEM (via equipment standards, safety requirements, product features, and product performance standards), the installer (via installation standards) and the DNSP (via their connection rules) all have a role to play here in the installation, configuration and sign off of the consumer CER. The consumer (not unreasonably) would believe these parties have a duty of care to ensure that the CER complies, is installed, and configured in accordance with required standards and regulations.

- *What should be the responsibilities of traders in ensuring consumer energy resources do not exceed any export limit set by the DNSP?*

The issues that would face Traders (such as aggregators) in their ability to comply with a flexible export limit has been raised throughout this response. Adherence to a flexible export limit requires all CER to support interoperability on multi-CER sites. Further, a single CER site that does not support the CSIP-Aus Native model or a BTM open control protocol locally (eg SunSpec Modbus) and only supports the CSIP-Aus proprietary Cloud model of connectivity may result in technical and commercial CER lock-in of the consumer. That is the consumer is unable to expand their site/add further CER whilst complying with a flexible export limit.

Therefore, any Trader's responsibility for compliance with export limits relies on their ability to orchestrate consumer energy resources to comply with any export limit set by the DNSP. This in turn requires the industry to mandate that CER supports local interoperability as detailed throughout this response. For existing sites with proprietary CER, basic control functionality must also be made available locally on the CER for simple on/off control to ensure compliance with any export limit. As we have detailed throughout this response, the widespread non-compliance of CER in supporting the mandatory DRMO on/off local control mode of AS4777.2:2020 makes it impossible to cost effectively and safely control such CER, mitigating compliance with a DNSP mandated flexible export limit.

These issues need to be resolved prior to imposing any responsibility on a Trader for compliance with a DNSP issued export limit.



Notification period for a dynamic limit

- *Does the issue of a framework for providing forecast information on expected dynamic limits need to be considered in the short term?*

Yes, we believe there should be a framework. As we will be operating across all DNSP service areas in the NEM and WEM a consistent approach to provision of forecast information for dynamic limits should be an immediate priority to avoid unnecessary bespoke software implementations for every DNSP.

Whilst the suggested notification period of 24 hours in advance is an appropriate timeframe, compliance with an export limit will be dependent on several factors including the number of CER devices behind the meter and the extent to which they support full interoperability (CSIP-Aus Gateway model) and hence can be orchestrated to comply with the imposed limit. This will be a significant factor in the extent to which site / home CER can be prepared to ensure compliance with a dynamic limit. Our comments are based on both our fleet of mixed CER sites across the NEM and WEM and our initial findings as a participant in the AEMO project EDGE. Further, these factors, including the optimum window, may differ dependent on the dynamic limit constraints imposed by an individual DNSP.

- *Do stakeholders consider this will be sufficiently addressed through the Scheduled Lite workstream?*

No, at this time we do not consider the Scheduled Lite workstream is sufficiently advanced to provide the necessary confidence that a dynamic connections framework encompassing all issues will be a deliverable of the Scheduled Lite workstream.

Broad questions regarding immediate actions

- *Do stakeholders agree with the areas identified above as requiring immediate attention?*

Yes, we do.

- *Do stakeholders consider there are additional matters requiring immediate attention not covered here? If so, what are they, and what specific factors should we be considering?*

To ensure a dynamic connection delivers the necessary firmness and predictability for a DNSP, and that the implementation is both cost effective for the consumer and does not lead to consumer CER lock-in, in our experience, there are three main issues that need to be addressed prior to a DNSP mandating compliance with a dynamic connection (e.g. a flexible export limit). These can be summarised as follows:



1. A requirement that CER supports the CSIP-Aus Native model as a default regardless of the initial CSIP-Aus deployment connectivity model. This will avoid the consumer being locked-in where the CSIP-Aus proprietary Cloud model is the initial installation connectivity option. This would enable consumer churn, and a competitive market for CER services such as flexible export control.
2. All CER (inverter based) should support BTM interoperability to enable a consumer to maintain flexible export compliance when expanding their site CER under the CSIP-Aus Gateway model. This could be achieved by adopting the proposed updates to California Rule 21 (with Australian specific modifications) whereby all CER (inverter based) will be required to support CSIP and/or SunSpec Modbus by 2023. Modbus is currently the most widely accepted and implemented BTM protocol for CER interoperability.
3. Compliance with a flexible export requires real time connection point power information. Changes to smart meter technical specifications and local access regulations (as defined in NER) are required to enable the consumer to assign local read only access rights (at the smart meter) to the consumer's own power information. This would mitigate the need for additional connection point Class 1 metering to comply with a flexible export and will significantly reduce consumer compliance costs associated with dynamic connections such as flexible exports.

There should be no mandated requirement for a CSIP-Aus connection until the above issues are resolved.

Leverage existing work

Monitoring export limit performance and information provision

- *Are there any additional metrics that should be considered that have not been incorporated into the broader export services review?*

In the Gap Analysis as detailed in Section 4.2.1 *Communication Protocol*, referring to the statement:

“The application of CSIP-Aus is currently being considered under the ESB’s Interoperability workstream. This workstream is expected to set a path to a common communication approach to enable interoperability of devices in the NEM.”

Consistent with the issues we have raised throughout our response, the currently proposed connectivity options of CSIP-Aus do not *enable interoperability of devices in the NEM* as the option remains (refer CSIP-Aus Cloud model) for proprietary communications protocols between a CER and an OEM Cloud platform. This further propagates consumer CER lock-in both technically and commercially as the consumer cannot churn their CER asset to the energy market service provider of their choice, nor can they expand their site



to include multiple CER under the CSIP-Aus Gateway model if any of their CER devices only supports the Cloud model of connectivity. Please see our responses above that detail the minimum requirements for CER interoperability to *enable interoperability of devices in the NEM*.

Further, the requirement for a change to an export or import level of a dynamic connection is affected by price signals that CER reacts to, which is a function of the customer facing retail energy plan. Network tariffs (price signals) are an effective mechanism to encourage behaviour that mitigates network constraints. A review of how retailers reflect the underlying network tariff in their customer facing retail energy plans should be the subject of a separate review.

- *Should the AER publish data on the performance of individual DNSPs in terms of their flexible export service for consumers?*

Yes, they should.

Device capability to respond to flexible export limits

- *Regarding the governance of a potential CSIP-Aus requirement, do stakeholders consider there should be a mandate for devices to be CSIP-Aus compliant for new connections in the NEM?*

Yes, locally accessible control interfaces supporting open communications protocols are critical to ensuring CER compliance with flexible exports.

If CSIP-Aus is adopted as the preferred connectivity standard for DNSP to device/site communications then CER (inverter based) should support the Native model of connectivity (for a single CER site) as a minimum and a fully featured, locally accessible interoperable protocol (e.g., SunSpec Modbus) to enable expansion to the CSIP-Aus Gateway model on multi-CER sites as the default connectivity options. We have detailed above that these requirements are necessary to ensure that consumers are not locked-in, either technically or commercially, to their CER supplier. These requirements are also required to enable CER to be orchestrated effectively in the delivery of dynamic connections such as flexible export limits. Whilst the specific protocol(s) adopted are not consequential, what is key is that the CER can be controlled via local interfaces with fully featured open protocols.

Further, we do not concur with the view that a mandate would also come at a cost to consumers. There are far greater costs to a consumer where they become unknowingly locked-in technically and commercially to a particular proprietary CER supplier (which is happening now on many thousands of sites), eliminating their ability to churn their CER asset to the energy market service provider of their choice. Nor can they expand their CER



assets under BTM orchestration (e.g., via the CSIP-Aus Gateway model) if a CER asset does not support interoperability.

DNSPs require a single connection to a site for implementation of a flexible export. This requires all CER on the site to be controlled (orchestrated) to comply with the flexible export. When a CER asset only has a proprietary cloud control option it cannot be orchestrated with other CER. This will cause significant issues for the consumer (including financial) in meeting a flexible export limit and mitigates consumer choice in asset churn.

Given the imminent changes in California under Rule 21 for all CER to support interoperability, and as most CER sold in Australia is also sold California, there should be minimal additional costs (if any) for OEMs to support interoperability on Australian sold products.

- *Do stakeholders have views on how this mandate could be most effectively implemented?*

The work of the ESB (interoperability workstream) and the AEMC (review of technical standards) must resolve the issues raised in respect to CSIP-Aus interoperability (Native mode compliance) and BTM CER interoperability. Further, the issues raised in respect to a compliance, policing, and enforcement mechanism for CER in respect to the mandatory clauses of AS4777.2:2020 also needs to be addressed as a matter of urgency.

All these CER issues will need to be resolved to ensure consumers can comply with any mandated flexible export requirement.

Interval length

- *Do stakeholders agree that DNSPs are best placed to determine the interval length of flexible export limit operation? If not, what guidance would stakeholders like to see on this issue?*

At this time DNSPs are best placed to determine interval lengths that are suited to their particular networks. We would suggest, however, that an oversight / approval mechanism be considered by the AER, similar to the TSS approval processes but modified for dynamic connection interval length approvals.

Demonstrating investment need

- *Do you agree the AER has sufficient guidance on what information DNSPs are expected to provide to justify specific flexible export-related proposals?*

In addition to the overview of information DNSPs are expected to provide to the AER, we believe that DNSPs have an obligation to comply with the National Electricity Objective



(NEO) when mandating compliance with a dynamic connection such as a flexible export connection.

As consumers will incur costs to comply with a dynamic connection, it is not unreasonable to expect that the tests under the NEO should apply when considering the mandating of a consumer dynamic connection such as a flexible export limit. That is, the NEO test should be applied at all steps of the process:

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- *price, quality, safety and reliability and security of supply of electricity*
- *the reliability, safety and security of the national electricity system.*

Further, as it is the DNSP that will approve (under their connection agreement with the consumer) the proposed CSIP-Aus compliance solution, we believe there is a duty of care that should be observed by DNSPs to ensure that consumers are informed whether the proposed CSIP-Aus connectivity method for their CER will result in technical and/or commercial lock-in. As we have highlighted above, there is a preference for CSIP-Aus to be used as the preferred solution for the implementation of a dynamic connection, however, the current CSIP-Aus connectivity models do not preclude CER lock-in despite section 4.2.1 *Communication Protocol* stating that:

The application of CSIP-Aus is currently being considered under the ESB's Interoperability workstream. This workstream is expected to set a path to a common communication approach to enable interoperability of devices in the NEM.

We have detailed throughout our responses changes that we believe are necessary to ensure the accuracy of this statement in the enablement of CER interoperability. DNSPs should be putting the consumer at the centre of any decision-making process, ensuring that rules and regulations they put in place for the implementation of dynamic connections are in compliance with the NEO. As such *the long-term interests of consumers of electricity* are best served by dynamic connections (such as flexible exports) that require participating CER devices to support interoperability. This should include an ability for the consumer to churn their site CER assets between providers and between the three CSIP-Aus connectivity models (Native, Gateway and Cloud). If this cannot be achieved ahead of any National CER Interoperability Mandate / Standards, then any implementation of a dynamic connection should be on an Opt-in basis only.

- *Do DNSPs need more information than is currently available to demonstrate the investment need for flexible export limits?*

We do not have sufficient information to respond to this question.

Consumer protections



- *Beyond the issues being canvassed in the Review of Consumer Protections for Future Energy Services and the AEMC's review of CER technical standards, are there any other specific consumer protection issues we should explore in the context of the implementation of flexible export limits?*

Yes, consumer CER technical and commercial lock-in as detailed throughout this response is an issue that needs to be addressed. This includes CER extended warranties that are provided on the provision that the consumer only monetises their CER asset with the OEM or the OEM's nominated energy market service provider.

Further, we are seeing instances of CER OEMs restricting or modifying access (remotely and often post sale) to CER features and capability, despite the CER asset being fully owned by the consumer. This includes remotely enabled software restrictions on CER, extending to denial of access to mandatory operating requirements of standards such as AS4777.2:2020. Such restrictions are only removed when ongoing commercial agreements are reached with the OEM, irrespective of the concerns or wishes of the consumer.

These issues and other similar issues are arising where CER OEMs are seeking to create closed eco systems which are incompatible with grid services such as flexible exports and result in financial loss and lock-in of consumers. A governance framework to ensure CER commercial neutrality is required, perhaps by addressing such CER specific issues within Australian Consumer Law (in consultation with the ACCC). This requires urgent attention to address these growing issues.

Data protection and privacy

- *Are more data protection and privacy requirements needed for the implementation of flexible export limits beyond those already available in the current framework and what is being considered in the ESB data strategy?*

Yes, as we have detailed in our answer to the following question, a Dynamic Connection requires real time connection point power flow information for compliance. It can be argued that the site/home power flow information belongs to the consumer. As private information can be inferred (such as appliances installed, their time of use, occupancy of the home etc) from power flow information, then the consumer power flow data should be protected in accordance with the Privacy Act. Recent press points to possible loopholes in the protection of this consumer data. See:

<https://www.abc.net.au/news/2020-09-07/amazon-will-soon-see-inside-millions-of-aussie-homes/12582776>

In the same way that the existing ring-fencing framework prevents DNSPs from sharing ring-fenced consumer power information for purposes other than the approved purpose



for which the information was acquired (e.g. compliance with a dynamic connection), we believe that similar ring fencing provisions should be applied to any other party that has access to the consumer power data. The ESB data strategy and current framework should be reviewed to ensure it is the consumer that has the rights to assign (or refuse) the use of their own power flow data for any purpose other than what is required by law for the purposes of implementing a direct control service such as a dynamic connection, the billing of their electricity usage, and other necessary maintenance requirements of entities such as metering service providers.

- *What impact is there likely to be on metering service providers from the implementation of flexible export limits?*

As we have detailed above, compliance with a Dynamic Connection requires real time connection point power flow information. To significantly reduce consumer compliance costs associated with flexible export limits, changes to smart meter technical specifications and local access regulations (as defined in NER) are required to enable the consumer to assign local read only access rights (at the smart meter) of the consumer's own power flow information to the third party of their choice that is responsible for implementing and maintaining a dynamic connection such as a flexible export limit.

Local access to the smart meter power flow information will significantly reduce the equipment and installation costs consumers will otherwise incur for an additional (connection point) Class 1 metering arrangement, which would otherwise be required to comply with a dynamic connection.

Consumer understanding and interest

- *Should the Customer Insights Collaboration workstream be leveraged to improve consumer understanding of flexible export limits and/or for consideration of impacts upon consumers and consumer sentiment?*

Yes, we believe it should.

- *What do consumers need to know about flexible export limits at each step in the journey to properly understand and engage with them?*

Consumers should be fully informed.

A governance framework should be developed with a "step by step" guide to flexible exports and CER selection / installation.

- This should include education on the potential for CER lock-in (technical and/or commercial) as this will affect the ability of a site to comply with a flexible export limit, particularly if the proprietary CSIP-Aus Cloud model is allowed to prevail in



the absence of a requirement that all CER supports as a default open standards-based interoperability. It should not be the consumer that is burdened with the inability to choose and comply with a flexible export limit due to the lack of guidance from industry and regulators on CER compliance with standards and support for interoperability.

- The suggested consumer education process / governance framework should also explain the minimum technical requirements of CER to enable site churn between the energy market service provider of their choice and the requirement that CER supports locally accessible standardised control interfaces and full featured open control protocols. This will be especially important on multi-CER sites to enable orchestration of behind the meter CER to support a flexible export limit.
 - This framework could extend to a “whitelist” of devices that comply with minimum standards for interoperability and support commercial neutrality (e.g. no requirement for the consumer to take services from the OEM or their representative to access full CER functionality and/or access extended warranty arrangements). Any whitelist would require oversight by a suitable entity (e.g. the AER) tasked to ensure compliance, policing and enforcement of whitelisting requirements.
- *What communication materials do consumers need to understand the opportunities offered by flexible export limits?*

Any communications materials should be from an authorised and trusted source. A CER specific information repository like the Government “Energymadeeasy” comparison service could be developed to educate consumers on all aspects of flexible export services. This could extend to a government sanctioned CER whitelist as detailed in our answer to the previous question, and could encompass the governance framework we have proposed, i.e. a step by step guide to flexible exports and CER selection / installation. Further, the services provided by such a consumer resource could extend to a reporting / tracking service for complaints (e.g. non-compliances associated with standards, interoperability, installation, service providers etc).

Integration with export pricing

- *How do stakeholders see flexible export limits and network tariffs interacting, for example, on the basic export level?*

We have addressed parts of this question in our answer to the following question. In addition to our comments below, a flexible export limit design could set the basic export level (say 1.5kW) as a minimum level to which a flexible export enrolled site may be constrained. Where network constraints (such as a solar minimum demand issue) warrants curtailing sites with flexible export capability to below the basic export limit (e.g., to zero export), then predetermined incentives could be paid to the consumer to offset any rebate they are receiving from their retailer for exports up to the basic level.



This would also seem a reasonable approach to normalising the financial impact on a consumer able to participate in flexible exports vs a consumer with a fixed export limit that is set to the basic export level.

- *What types of tariff structures could apply to flexible export limits?*

Several DNSPs are proposing wholesale tariff structures and installation incentives that are designed to encourage take up (where not mandated) of flexible export connections. It is widely recognised that the solar duck curve occurring notionally from 10am to 3pm is the major contributing factor to network minimum demand issues. As such some of the new network tariff structures proposed by DNSPs include the free use of the network for imports (consumption) during the period from 10am to 3pm (to encourage load shifting and hence solar self-consumption) along with free exports outside this period.

Further, in alignment with the recent “Access and Pricing” rule change, there is a move by DNSPs to design banded export charges into their proposed tariff structures for the solar minimum periods. Noting that consistent with the “Access and Pricing” rule change the trend is to allow a minimum 1.5kW of no charge export. As technology solutions will be required for compliance with a flexible export, the same technology should be designed to mitigate any exports that may incur charges and ideally the technology solutions will have the capability (e.g. HEMS) to orchestrate CER resources (generation and flexible load) behind the meter to optimise solar PV self-consumption. This same technology would also utilise tariff arbitrage to move/control load and generation for the financial benefit of the consumer.

The pricing signals of these innovative tariffs will only be effective if the incentive is passed through to the consumer by their electricity retailer. This pass through of underlying network cost reflective tariffs is an area of tariff design that requires particular focus by the AER and other market bodies. A cost reflective DNSP network tariff structure that supports consumer uptake of flexible exports has no value if there is a lack of support by retailers in passing through the tariff structure in its intended form.

- *Do stakeholders have views on how export tariffs and flexible export limits could be implemented to complement each other?*

Please see our answer to the previous question.

Compliance and enforcement of technical standards that facilitate flexible export limits

- *Are there any issues stakeholders consider will fall outside the AEMC’s review of technical standards and consideration of associated roles and responsibilities the AER should be aware of?*



As we have detailed throughout our response, there are a number of issues that need to be resolved to ensure that flexible exports are achievable by all consumers who embrace CER. Further, solutions are required to ensure that the consumer is not adversely affected financially in complying with a flexible export requirement, nor inadvertently caught in a CER locked-in situation as a result of a DNSP mandated flexible export.

Summarising our answers to the *Broad questions regarding immediate actions* section of this response, our recommended actions are as follows:

- 1) A requirement that CER supports the CSIP-Aus Native model as a default regardless of the initial CSIP-Aus deployment connectivity model. This will avoid the consumer being locked-in where the CSIP-Aus proprietary Cloud model is the initial installation connectivity option. This would enable consumer churn, and a competitive market for CER services such as flexible export control.
- 2) All CER (inverter based) should support BTM interoperability to enable a consumer to maintain flexible export compliance when expanding their site CER under the CSIP-Aus Gateway model. This could be achieved by adopting the proposed updates to California Rule 21 (with Australian specific modifications) whereby all CER (inverter based) will be required to support CSIP and/or SunSpec Modbus by 2023. Modbus is currently the most widely accepted and implemented BTM protocol for CER interoperability.
- 3) Compliance with a flexible export requires real time connection point power information. Changes to smart meter technical specifications and local access regulations (as defined in NER) are required to enable the consumer to assign local read only access rights (at the smart meter) to the consumer's own power information. This would mitigate the need for additional connection point class 1 metering to comply with a flexible export and will significantly reduce consumer compliance costs associated with dynamic connections such as flexible exports.
- 4) All CER shipped and deployed in Australia should comply with its Certificate of Compliance to AS4777.2:2020. Currently no robust mechanism for policing and enforcing compliance with AS4777.2:2020 exists. Even the use of a simple on/off local control option for CER per the AS4777.2:2020 mandatory requirement for inverter-based CER to support Demand Response Mode Zero (DRM0) cannot be relied upon, as some manufacturers do not support DRM0 despite the mandatory nature of this requirement. Further, there is no enforcement mechanism to rectify the many thousands of consumer sites that have CER installed without this capability. In the absence of CER interoperability, and without this minimum on/off control capability it is impossible for a consumer's HEMS (CSIP-Aus Gateway Model) to orchestrate proprietary cloud only controlled CER on a multi-CER site for compliance with a Flexible Export limit.



- *Are there any issues that stakeholders consider will fall outside of CSIP-Aus that the AER should consider?*

Whilst all specific CSIP-Aus related implementation issues have been detailed in our response, a further issue of concern is in relation to external devices and external measurement devices as defined in AS4777.2:2020 for flexible export limiting compliance.

Within the latest issue of AS4777 there is ambiguity, as it could be read to require that any export control metering devices need to be tested/certified with a specific inverter series, otherwise they cannot be installed. Referring to the standard, it is important to distinguish between the external devices used for export limiting in Part 1 and the external measurement devices used for measuring active power flow at the connection point in Part 2. Where an external device is used to implement an export limit, Clause 3.4.8 of AS/NZS 4777.1 applies. Clause 6.3 of AS4777.2:2020 applies where the Generation Control function of an inverter is used to implement the export limit.

DNSPs may choose to exclude the use of external devices for export limiting in their connection standards but this would impose restrictions on consumers as to what external devices they can use to comply with an export limit, inadvertently enabling technical and commercial lock-in to a particular OEM that chooses only to certify their own metering with their own inverter equipment.

The lock-in issue could occur if a DNSP requires export limits by an inverter function in accordance with Part 2 (Inverter Requirements), however if a DNSP considers export limits implemented with an external device in accordance with Part 1 (Installation Requirements) as acceptable, there is no issue.

To date DNSPs have indicated that they will not be enforcing the Part 2 requirement however certain vendors are misleading the industry on this issue to capitalise commercially and in doing the consumer is unknowingly being locked-in to that OEM/vendor. DNSPs, ARENA DEIP, and most industry vendors are supportive of an urgent amendment to the AS4777.2:2020 standard to remove this ambiguity and ensure technical and commercial neutrality in the supply and installation of equipment required for compliance with a flexible export connection.

As this topic is extremely technical only an overview has been provided here. We would be happy to provide further information if required by the AER.

- *Do stakeholders foresee issues with DNSPs monitoring device performance?*

In addition to the remedies that have been proposed in 4.2.10, consideration should also be given to whether a separate data channel that is not dependent on the consumer internet connection should be provided and paid for by the DNSPs. An alternate/backup



communications path to a CSIP-Aus compliant site could be used as a risk mitigation strategy for widespread public communications network failure (e.g. NBN, Mobile Network) such as an extreme weather event. This backup path could use the DNSP SCADA infrastructure and local communications technology (independent of public networks) such as powerline telecommunications between the customer site and the nearest DNSP SCADA concentrator site.

Future actions

Efficient communication of flexible export limits at scale

- *Do stakeholders have any views on which data exchange model may be the most efficient for the NEM?*

We agree that an appropriate data exchange model will assist in a consistent forecasting approach.

Our experience to date has been that a minimum 24-hours advance notice is appropriate for communicating an updated limit, as this allows a HEMS to prepare the CER at a consumer site. For example, a commercial agreement with a DNSP may exist to shift load into a solar minimum period, which optimises self-consumption in lieu of wasting solar power generation that may otherwise be curtailed if the flexible export limit was changed with little notice.

It is our view that the appropriate data exchange model will evolve over time with insight from market trials such as the AEMO Project EDGE which we are participating in as an Aggregator of mixed BTM CER. Further we agree that there is *“benefit in awaiting the outcome of the ESB’s Interoperability workstream as it has the potential to deliver insights on guidance on these Issues”* and we have detailed throughout our response the value (from direct field experience) that interoperability of CER brings to the consumer, DNSPs and network security of supply, enabling firmness and predictability in the delivery of a dynamic connection for compliance with a flexible export limit.

