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Jenny Gannon
Manager Generation & Customer Standards
Energy Queensland

Via email: standardsfeedback@energyq.com.au

To Ms Gannon

The Clean Energy Council (CEC) welcomes the opportunity to provide feedback on the draft *Queensland Electricity and Connection Manual*.

The CEC is the peak body for the clean energy industry in Australia. We represent and work with Australia's leading renewable energy and energy storage businesses, to further the development of clean energy in Australia. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

Queensland is to be commended for its bold commitments to decarbonising electricity generation and storage, with renewable energy targets of 50% by 2030, 70% by 2032, and 80% by 2035. Supporting this is the Queensland energy and jobs plan ([QEJP](#)) which commits \$42m for integrating electric vehicles (EVs) into a smarter grid to ensure businesses and households can get the most out of their investments, as well as targeting 100% smart meter penetration by 2030.

The CEC recognises the importance of a robust and resilient network. We have supported work towards enabling dynamic operating envelopes for Consumer Energy Resource (CER), with particular focus on dynamic export limits that unlock generation capacity and reward consumers who own CER for making their energy more flexible and supporting the wider system. The CEC welcomes the approach (if not the mechanism) Energy Queensland and their subsidiaries (EQ) have taken to this end, resulting in larger potential photovoltaic (PV) solar system sizes for consumers.

We do not support the proposed implementation of import limits for loads over 4kW such as Electric Vehicle Supply Equipment (EVSE) without evidentiary need, before independent cost/benefit analyses have been carried out and alternatives have been considered to ensure we adopt the least cost consumer and system wide solution. In particular, any proposed solution must support the Queensland Government's renewable targets by promoting uptake and acceleration of EVs and associated services.

We are concerned the proposed changes to EVSE installation may deter consumers from investing in EVs and EVSE>4kW, particularly where EVSE cannot be used sufficiently as a solar soak method or in cases where EVSE is installed on a controlled tariff connection. The proposals will not benefit the customer in self-consuming their solar energy. In the interest of placing consumers at the centre of the transition, we recommend pricing and other market mechanisms to influence consumer behaviour in the most efficient way.

Importantly, customer choice of EV and EVSE and market dynamics should set the pace of innovation. This includes allowing for the effects of dynamic exports to roll out in Queensland, as well as higher penetration of smart meters (accompanied by time-of-use (TOU) tariffs), increased home energy storage, Vehicle-to-Grid (V2G) capacity to be introduced and more is learnt about EV charging behaviour. This will ensure EQ takes an evidence-based approach to whether EV charging poses a significant risk to network stability, with the knowledge that control measures can be taken if the need arises.

The CEC does not currently support the proposed import limits as contained in the draft manual as we believe this will stifle innovation and work against the broader government renewable targets by placing barriers to the uptake of EVs by consumers.

Import limits

We do not believe EQ has made the business case for the need for import limits. Indeed, we are not aware of any other jurisdictions around the world currently implementing or contemplating implementing EVSE import limits. There are many jurisdictions with much lower penetration of solar PV, less abundant renewable resources and much higher penetration of EVs than Queensland, for this reason we think it prudent that import limits not be implemented until;

- the required market mechanisms are in place, such as TOU tariffs.
- there is an evidential need,
- industry is ready and
- an independent cost-benefit analysis for consumers has been carried out that endorses import limits.

Import limits are a double-edged sword for networks. If import limits were to be imposed, to avoid the complexity of an EVSE with dynamic import control, the consumer would most likely consider using Type 1 charging instead. This more often pushes charging into peak times because it takes longer. Further, under such a charging approach, the amount of energy consumed over the peak period is less so the consumer is less likely to be sensitive to TOU tariffs should they be in place. The unintended and negative consequence is that in aggregate this kind of charging behaviour is more uncontrolled load during peak times, a situation the EQ is trying to avoid.

We understand EQ consider this change towards import limits not to be mandatory, but voluntary. However, our reading of the proposed changes seems to indicate that if a consumer wants to install an industry standard 7kW EVSE, according to the QECM, the consumer will be required to choose a connection agreement that imposes an import constraint on their EV charging.

Phase imbalance

The CEC understands the need to balance load across distribution phases as much as possible in order to support network resilience. However, of concern in the QECM is a maximum current imbalance between phases of 20A (presumably import or export) with the ability to seek permission from the network for imbalance greater than 20A, removed. The 20A limit does not align with AS/NZS4777.1:2016 which stipulates a maximum phase imbalance of no more than 5kVA or 21.7A. This figure of 20A also runs afoul of single-phase loads greater than 4.6kW such as 7kW EVSE with dynamic import control which would, under periods of normal operation, draw more than 20A on one phase. Three-phase EVSE greater than 13.8kW could not be installed either as some EVs have single phase on-board inverters which could draw more than 20A on a single phase.

Recommendations

The CEC recommends:

- removing all references to import limits from the QECM.
- Phase balancing requirements should align with existing Australian Standards endorsed by EQ at 21.7A.
- Market mechanisms such as TOU tariffs and other services that will evolve out of interoperability between EVs, EVSE and the NEM should instead be the approach. Orchestration will be required where EVSE exceed maximum demand capacity in commercial applications and consumers may opt-in to orchestration when they consider the incentives and benefits to be in their best interests. This approach in the first instance is better aligned to the Queensland Government's decarbonisation ambitions.
- EQ have indicated that a method of enforcement is important to their management strategy. All of the mechanisms proposed involve an element of trust that the consumer will abide by the connection manual and inform EQ that they wish to install EVSE over 7kW. With this in mind, there may be other methods of control for EVSE that involve EQ trusting the consumer such as require that the consumer use EVSE with dynamic load balancing, orchestration or provide an exemption to import limit requirements if the consumer is on a TOU tariff.

- A thorough, independent cost/benefit analysis be carried out on the implementation of import limits.

The attachment contains specific comments on the proposed changes to various clauses in the Manual.

If you would like to discuss our comments further, please contact Michael Shaughnessy
MShaughnessy@cleanenergycouncil.org.au.

Yours sincerely

A handwritten signature in black ink that reads "C Hristodoulidis". The signature is written in a cursive style with a large initial 'C'.

Con Hristodoulidis
Director of Distributed Energy
Clean Energy Council

Clause Number (eg. 2.6)	Heading (eg. Unmetered supplies)	Comments (Detail why you consider a proposed change is required)	Proposed Change (Provide alternative wording for the proposed change)	Attachments (Reference any attachments to support the proposed change)
8.4(a)	Phase balancing	<p>In addition to the opening statements. A >20A imbalance between phases requirement is restrictive to the types of appliances consumers can install anywhere else in the world. Achieving this in instances such as installing standard 7kW 1-ph EVSE will be more difficult and expensive.</p> <p>Identifying non-compliance and policing this requirement would also be difficult.</p>	Raise to 21.7A in line with Australian Standards with an ability to seek approval from the relevant DNSP for a disparity greater than 21.7A.	

8.4(c)	Phase balancing	<p>“Any controlled tariff shall be balanced across all phases”</p> <p>Editorial: This may be supposed to read “controlled tariff load”.</p>	<p>“Any controlled tariff load shall be balanced across phases”</p>	
8.5.2	EVSE dynamic and fixed import limits	<p>There are other steps to take before imposing system limits such as; time-of-use tariffs, network tariffs, dynamic export limits (which lead to larger systems).</p> <p>Industry stakeholders including EVSE manufacturers, installers, consumers and network companies are not ready to support dynamic import limits for EVSE.</p>	<p>Revert to status quo; no system limits other than those forced by maximum demand considerations.</p>	
8.5.2.1(b)	General	<p>Editorial: “The fixed import limit, as per Table 44, will be met at all times when EVSE on a dynamic connection is not receiving or able to respond to a dynamic import limit.”</p> <p>Table 44 has no reference to dynamic import limit, perhaps is to read Table 43.</p>	<p>“The fixed import limit, as per Table 43, will be met at all times when EVSE on a dynamic connection is not receiving or able to respond to a dynamic import limit.”</p> <p>Likewise part (c) and part (f)</p>	
8.5.2.4(a)(i)	Control of import limit	<p>(a) The control function for import limitation shall meet the following requirements: (i) Have a limit that will cause the dynamic EVSE to reduce its consumption, preventing import at the connection point greater than the import limit.</p>	<p>Clarify that 4kW import limit is for the EVSE only, and not the whole installation.</p> <p>“(a) The control function for import limitation shall meet the following requirements: (i) Have a limit that</p>	

			will cause the dynamic EVSE to reduce its consumption, preventing import at the aggregated EVSE connection point greater than the import limit.	
8.5.2.4(a)(i)	Control of import limit	4kW trigger point for EVSE to be dynamically controlled is too low, considering most residential 1-ph connections have a maximum demand capability around 15kW.	Raise trigger point to 7kW to allow industry standard EVSE to be connected without being dynamically controlled.	
8.5.2.4(c)	Control of import limit	Applies to all EVSE on site.	Raise trigger point to 7kW to allow at least one industry standard EVSE to be connected without being dynamically controlled.	
8.10	Active Device Management	These methods are not currently appropriate for EVSE.	Remove requirement that EVSE over 4kW need to adhere to this clause.	
8.10.2	Emergency backstop mechanism	<p>No EVSE currently on the market are designed to work with a GSD.</p> <p>EVSE installed on a controlled tariff do not benefit a consumer if they have solar installed.</p> <p>System security is a concern with Audio Frequency Load Control (AFLC). Any malevolent bad actor can buy AFLC emitting devices online and connect it into the network.</p>	Remove requirement that EVSE need to meet import limits until management mechanisms are developed and tested.	

8.10.3	PeakSmart	No EVSE currently on the market are designed to work with DRED.	Remove requirement that EVSE need to meet import limits until management mechanisms are developed and tested.	
8.10.4	Dynamic	It is unclear what installation size these requirements pertain to.	Clarify system size eg. 100A/phase is referenced for other clauses.	
8.10.4(b)	Dynamic	<p>The CEC does not believe industry, EVSE OEMs or EQ are ready for dynamic import capability via CSIP-AUS, leaving only controlled tariff connections and emergency backstop mechanism as the remaining methods to comply with dynamic import limits. Considering neither solution provide genuine 2-way communication and variable power reduction, the CEC does not support this course of action.</p> <p>CSIP-AUS is written for inverters and is not well suited to EVSE meaning research, development and implementation are likely to be protracted, leaving consumers in a compromised position meantime.</p>	Raise trigger limit to 7kW so as not to disadvantage consumers while industry is preparing.	
8.10.4(d)	Dynamic	<p>4kW import limit regardless of connection size is too low.</p> <p>Identifying non-compliance will be very difficult, for example, a residential installation with typically high consumption may mask 7kW EVSE consumption that does not have dynamic control. If you were to find a consumer with non-compliant equipment, it would be difficult to prosecute them or compel them to rectify. Networks are generally reluctant to disconnect supply of a consumer.</p>	Expand import limits for EVSE to 7kW	

8.10.4(d)	Dynamic	The three-phase Maximum dynamic import limit in Table 43 of equal to or less than 15kW/phase aggregate EVSE is too low. It is not clear for what installation size this applies to.	Base on maximum demand of the installation instead of a static maximum dynamic import limit of 15kW/phase. Allow for orchestration (coordination of EVSE charging).	
8.10.5	Basic management via network device	This method does not appear to have been developed yet.	Remove references to import limits until method has been developed and tested.	
8.11.1	General	The manual does not define 'Dynamic equipment'	Define 'dynamic equipment'	
8.11.2	Connection of communication systems	The CEC has advocated for harmony across Australian states for the method of dynamic export implementation for inverters. SAPN mandated CSIP-Aus whereas EQ are using CSIP. EQ propose CSIP-Aus for EVSE which are not the target technology	Consider exemptions to dynamic control of EVSE >7kW for consumers with a smart meter (and accompanying TOU tariff), to avoid or delay complication of product compliance.	
8.14.2.2 Table 44	Switched loads	For installations <100A/ph Row 2 "230V equipment – with active device management Type 2 and Type 3"	Revert to status quo in current QECM "230V controlled equipment" – most EVSE can be controlled. Define what controlled means. We recommend it be defined to mean controlled by a 3 rd party provider (eg. VPP), inherent dynamic load balancing, via an app or any method of control other than manual switching.	

8.14.2.2 Table 44	Switched loads	Introduction of Note 2 on nameplate rating means that consumers cannot limit their EVSE through the onboard methods (eg. dip switches or software)	Remove Note 2 to revert to status quo	
8.14.2.2(d)	Switched loads	There appears to be one rule for domestic cooking appliances and another for EVSE. EVSE can be dialled down in many ways and can provide diversity the same as a cooking appliances can.	Allow control of EVSE by other means, such as: controlled by a 3 rd party provider (eg. VPP), inherent dynamic load balancing, via an app or any method of control other than manual switching.	
13.3	DNSP obligations	DNSP powers are quite strong; able to enter to inspect, rectify to safe, maintain, test and disconnect all or part of the installation.	Revise to address unsafe parts of an installation, not the whole installation.	