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19 January 2024

Mr Mark Feather

General Manager

Strategic Energy Policy and Energy System Innovation

Australian Energy Regulator

GPO Box 520

Melbourne, VIC, 3001

Dear Mark,

RE: Draft Interim Export Limit Guidance note – for consultation

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the AER with a response to the Draft Interim Guidance Note on Export Limits (the Draft Guidance Note). We are very supportive of the work being done by the Australian Energy Regulator (AER) in creating “guard-rails” and providing clear guidance to distribution network service providers (DNSPs) on the expectations on them in setting dynamic export.

While this guidance should prove to be useful for DNSPs, Tesla sees three much broader benefits of this Guidance, and associated guardrails:

1. It should be consumer centric. Any introduction of dynamic exports should be designed in a way to benefit a customer, but also be presented in a way that is transparent on customer benefits (and risks). This will be particularly important in respect of capacity allocation and how that translates to customer performance thresholds.
2. Maintaining jurisdictional consistency. Tesla and a number of original equipment manufacturers (OEMs) noted serious concerns about growing jurisdictional discrepancies in our response to the AER in our response to the AER “Review of Regulatory Frameworks for Flexible Export Limits”. As was previously noted, if NSPs are allowed full discretion in establishing their own requirements then this will result in considerable investment risks in Australia, as OEMs and aggregators are required to design multiple, jurisdictional specific flexible export platforms.
3. Virtual Power Plant (VPP) market operation – an additional point raised by Tesla in our direct submission to the AER was concerns regarding the compatibility of flexible exports and VPP market operation. The importance of VPP compatibility in particular is explored in more in this submission.

While we recognise that this is an emerging space and there is a need to provide an element of flexibility to NSPs while the best model for flexible exports is being determined, we would ask that this document, and the subsequent Rule Change, eventually evolves to set minimum performance thresholds on the actual design of the flexible exports.

As more NSPs start working on models for flexible exports it should become quite apparent which models provide suboptimal outcomes for customers or have a significant impact on industry, and the scope can be narrowed accordingly. Tesla is supportive of this evolving into a Rule Change process while also supporting the AER to develop an “Export Limiting Guideline” (the Guideline) which will be binding on DNSPs. It is important that the Rule Change provides the AER with the ability to update the Guideline on an [annual] basis to account for changing industry best practice.

The initial Draft Guidance Note is an important first step in considering the key principles and issues that should be covered within the enduring Guideline document.

For any more information please contact Tesla.

Kind regards,

Emma Fagan

Energy Policy and Regulatory Manager

General points

Supportive of the work undertaken to date

While Tesla is supportive of the ongoing work by the AER in this The proposed coverage of the initial Draft Guidance Note does appear to be more narrow than the full set of topics recommended to be captured in the enduring Guideline[1] – in particular the Guidance Note does not explicitly cover off on governance arrangements. It would be helpful for the AER to clarify if this omission is due to the fact that the Guidance Note is non-binding? Governance frameworks are an incredibly important topic that should be included in the Guideline and form the basis of the related Rule Change.

As a related point on governance, a number of the comments that Tesla has made in our response below highlights the unresolved need for a more detailed review of roles and responsibilities across solar retailers, installers, OEMs, DNSPs, aggregators and consumers. We believe that this topic warrants a deep dive. To date attempts at reviewing roles and responsibilities have been high level. For topics like this it will be important to do a far more detailed review to avoid poor customer experience in the event of flexible exports not performing based on customer expectations or agreed connection standards.

We would also suggest that the Draft Guidance note should include overall evaluation criterion to assess a consistent set of outcomes to be achieved from flexible export limits as a service offering and resilience measure. We are supportive of the recommendation of the Clean Energy Council (CEC) that the AER develops an overarching assessment framework for making final decisions in respect of the Guidance Note.

VPP alignment

In general, Tesla believes that there is some conflation regarding descriptions of VPPs or orchestrated assets in Australia. For avoidance of doubt, while we recognise it may be necessary for aggregators to respond to network signals, when Tesla refers to VPPs we are primarily focused on orchestrating a number of small-scale assets for market purposes. Being able to effectively access existing and new markets results in new revenue streams, with tangible value that can be passed back through to consumers.

Orchestration for network purposes is usually done to avoid network spend and does not often result in direct pass through of value back to the customer. Our feedback to the AER questions is focused on ensuring that the way flexible exports are implemented is not in conflict with market access, and will not reduce the ability for customers to access these value streams in the future.

Import limits

A large, ongoing concern that Tesla has within the broader dynamic operating envelope space (distinct from flexible exports), is the use and introduction of flexible import limits. We are also concerned about when and how generation limits are used. Both of these mechanisms stand in stark contrast to flexible export limits as they are not about controlling site exports that may have a direct impact on the grid, and

[1] As recommended by the AER in the final report on flexible exports released in July 2023 - https://www.aer.gov.au/system/files/Flexible%20Export%20limits%20Final%20Response%20-%20July%202023_1.pdf

instead result in DNSPs reaching behind the meter to control when and how customers are using energy – either from their own generation or from the grid.

We understand that the AER sees flexible exports as the more pressing priority, however the AER needs to understand that just because there is less talk about flexible imports (and generation) does not mean that it is not happening. Further import and generation controls are already explicitly enabled through both the existing CSIP-Aus, and further fleshed out within the scope of the CSIP-Aus Handbook which is in the process of being turned in a formal Standards Australia Handbook. This effectively gives licence to NSPs to introduce import controls, but in a way that is totally unregulated or ungoverned while it sits outside of the AER remit.

This concern is based on the current market reality. Energy Queensland has recently released their final Queensland Energy Connection Manual (QECM)[2] which includes dynamic import controls for electric vehicle supply equipment (EVSE), and the current "Dynamic Standard for Small IES connections"[3]. Relevant extracts below

8.10.4 *Dynamic*

(a) Technical requirements, maximum and minimum *dynamic* capacities and fixed limits for *dynamic EG* systems are specified in *EG* standards as per clause 8.15.1.

(b) *Dynamic EVSE* shall:

(i) have *dynamic import* limits supplied by the *DNSP* to *dynamic EVSE* at the *premises*. The *dynamic import* limit supplied will be no more or less than the minimum and no more than the maximum shown in Table 46.

(ii) be capable of dynamic operation within the limits as specified in Table 46. The *import* limits are based on the aggregated *import* of all *dynamic EVSE* at the *connection point*.

Table 46 *Dynamic EVSE* limits

	Fixed *import* limit / minimum *dynamic import* limit	**Maximum *dynamic import* limit**
single-phase	≤ 1.5 kW	≤ 15 kW
two-phase	≤ 1.5 kW	≤ 10 kW/phase
three-phase	≤ 1.5 kW	≤ 15 kW/phase

Figure 1: Dynamic EVSE imports included in the QECM

[2] https://www.ergon.com.au/__data/assets/pdf_file/0008/1170953/Queensland-Electricity-Connection-Manual-Version-4-2912908.pdf

[3] https://www.energex.com.au/__data/assets/pdf_file/0008/1072592/STNW3510-Dynamic-Standard-for-Small-IES-Connections.pdf

4.3.3 Import limits at Connection Point

Dynamic Small IES capable of importing electricity from the Distribution Network, such as an ESS, shall be subject to Import limits. The Import limits for a Dynamic Small IES shall meet the following requirements:

a. The dynamic Import limits are supplied by the DNSP to the Dynamic Small IES. The dynamic Import limit supplied will be no less than the minimum and no more than the maximum shown in Table 5 **Table 7**.
b. For Premises with multiple Connection Points the aggregate of the Import limits are applied to the Premises, and all across the multiple Connection Points must collectively will not exceed the limits in Table 5.
c. The Import limits shall meet the measurement and control requirements in Section 4.3.4.

Table 5 Dynamic Import limits

Subcategory		Minimum dynamic Import limit	Maxiumum dynamic Import limit	Techical study required
Single-phase		1.5 kW	18 kW	No
Two-phase		1.5 kW	10 kW per phase[1,2,3]	No
Three-phase		1.5 kW	10 kW per phase[1,2,3]	No
SWER	Single-phase	1.5 kW	10 kW	Yes
	Split-phase	1.5 kW	10 kW per phase[1,2,3]	Yes

Note 1: Multiphase EG Systems shall meet phase balance requirements from Section 4.3.5 of this Standard.

Note 2: Availability of Import limits above the minimum dynamic Import limit in Table 5 are subject to availability of Distribution Network capacity.

Note 3: Aggregate Import limits will not be permitted to exceed Distribution Network capacity limits.

Figure 2: Dynamic IES import controls included in the Dynamic Connection Agreement

In general, we believe that the market rationale for flexible or dynamic exports has been well established. Tesla understands the principles that networks have excess capacity to enable higher levels of export for the majority of the year, but need to constrain exports during those high solar yield/ low load periods. The customer benefits of moving to flexible exports are also clear (based on the current SA Power Networks approach, and others that are under design). The status quo for standard static connections is 5kW, and customers have the potential to double that where they move to dynamic connections.

We do not believe that the equivalent rationale for import controls has been considered. For instance, explaining to customers that they can install a 32A induction cooktop with no restriction, but cannot do the same for EV charging infrastructure, does not appear to have been justified.

Import controls also have a significant impact on customers. Considering residential battery energy storage systems first. For the most part, these will charge from on-site solar. Grid charge is usually associated with storms and other extreme situations where batteries are looking to maximise charge for customers ahead of potential risk of blackouts. For example, during the application of Tesla “Storm Watch”, Tesla Powerwalls will make sure that they are charged to a certain level so customers have sufficient back-up power in case of blackout during a storm. Curtailing battery import during this period creates an outsized negative impact for customers, as it means in the event of a black out they will not have sufficient back-up capacity to maintain loads – which effectively negates the value proposition of a lot of home batteries, and the fact that many customers buy systems specifically for the purposes of home resilience and reliability of supply during grid outages. This is also problematic in that the

restriction of grid charge is applied to a storage asset, which would otherwise be able to provide support during a black-out, rather than to a "dumb" load.

Similar for EVSE, there is no value proposition for customers associated with "dynamic imports". As noted above, the customer benefits associated with flexible exports are clear and relatively simple to understand and convey by OEMs, installers, aggregators and retails. On the other hand, from a customer perspective the status quo regarding grid imports for EVSE is that there is no limit beyond the kW rating of a device. Customers are therefore being asked to trade off installing an asset with no import limits, against installing the same asset with import limits – and no associated incentive for having those systems controlled by a network. Alternatively, they are being told that they cannot install a class of assets (i.e. EV chargers) unless there are import controls applied. The broad rationale being put forward is that this is necessary for "network protection" however there has been no detailed analysis of this, and this rationale does not benefit individual customers.

In addition to the above, the following provides an overview of Tesla's list of concerns regarding the practical implementation of import limits:

- The calculation of capacity limits for import is unclear, and it not clear how they interact with standard 60A household load ratings.
- Which loads are considered to be controllable and why? Applying specific requirements or grid connection processes to some loads but not others creates an asymmetry, and specifically disincentivises smart loads over dumber loads. This is also the case for batteries which will have their ability to import from the grid curtailed.
- How will import limits be effectively implemented? For the most part networks will only have visibility of the total load of a site. A distribution network will not see whether a customer is installing an induction cooktop, electric hot water heater, or multiple reverse-cycle air conditioners. However, there is an increasing push for specific requirements regarding the installation of EVSE which may result in import requirements being only applied to smarter loads – see point above.
- Whether import controls will be applied at the site or device level. Networks are generally pushing for both import and export controls to be applied at a site level. The QECM extract above refers to limits being applied to the *premises*. The IES Connection standard extract above refers to limits being applied at both the premises and the device. This creates significant confusion for customers and opens risk of further customer loads being curtailed – potentially down to 1.5kW for the entire site.

Recommendation: Noting the risks of NSPs operating in an absence of regulation in this space, we would recommend that the AER issues an additional note to say that flexible imports should not be considered, or implemented, by NSPs until more work has been done on the cost-benefit application and there has been additional consideration given to regulatory framework for how they are implemented.

We are at a critical time in our clean energy transition, industry is already in a position where the regulations and regulatory framework is playing catch-up to the work that the NSPs have been doing for the last two years. We cannot afford to have a prolonged period of flexible imports, or import controls being introduced through opaque, back-door mechanisms in an entirely unregulated environment.

Response to specific AER questions and guidance material

4.1.1 Capacity Allocation Principles

What are your views on the AER's proposed approach for amending the DEIP capacity allocation principles? Do you have any specific views on the nature of amendments required to achieve the AER's policy objectives?

DEIP Principles - General

Tesla's initial view of the DEIP principles of capacity allocation is that their broad nature will effectively enable DNSPs to allocate capacity however they want. This is not necessarily a positive outcome – particularly if these broad principles form the basis of the enduring Guideline.

From a customer, OEM and aggregator perspective, we believe the best approach to capacity allocation is one that is:

- Simple
- Easy to understand by customers
- Easy to apply by VPP operators, using aggregated assets for market access.

The main gap in the DEIP principles (which Tesla did not address in our previous submission to the AER) is ensuring that the approach to capacity allocation translates into a form that is easily understood by customers. We see this as being distinct from ensuring customer transparency. NSPs might be transparent in their approach to capacity allocation – but it may be extraordinarily complicated. We are supportive of principles 1,2 and 5, but we would also recommend the addition of a principle to the effect of "capacity allocation should be provided in a manner that is clear and simple for customers to understand and apply to their own situation".

For the most part, the proposed approach from SAPN in allocating capacity to customers appears reasonable – whereby customers are given a fixed service level threshold[4]. This model gives most customers a guaranteed service level of 95% which equals max. (10kW) export 95% of the sunshine hours.

It would be helpful for the AER Guidance to specifically call this approach out as being customer focused and simple to understand and implement.

Principle 3: Capacity allocation can initially be based on net exports and measured at the customer's point of connection to the network.

Tesla has concerns about Principle 3. While the wording of the principle is limited to "measuring exports" at the customer connection point, the flow on implication of this is that those export limits are firmly **applied** at the customer connection point.

We flagged concerns with this (at a high level) in our last submission, and in the last 12 months, have gained further insights into the risks associated with making a blanket "apply export limits" at the point

[4] https://ehq-production-australia.s3.ap-southeast-2.amazonaws.com/4f745914c05ddd17e885ad2cf206dca503b05314/original/1669776424/e507120f95f386e1a7b26a1110657eda_SAPN_220130_People_Panel_Recommendation_-_Energy_Transition_-_221130.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIA4KKNQAKIOR7VAOP4%2F20231219%2Fap-southeast-2%2Fs3%2Faws4_request&X-Amz-Date=20231219T211018Z&X-Amz-Expires=300&X-Amz-SignedHeaders=host&X-Amz-Signature=026263254ad7fe494c7f5d14edefb28118afa8aabcb95585a9639a571bcede16

of connection claim. The risks associated with a blanket “customer connection point” model, rather than allowing for more nuance, is articulated below.

Issue 1: CSIP-Aus native inverter integration

The major concern previously raised by Tesla related to the compatibility of a connection point export limit, and the CSIP-Aus native inverter integration method. For clarity we are supportive of allowing this CSIP-Aus, testing method and the optionality associated with the NSP integration approach. However, it does result in direct incompatibilities with a blanket connection point export limit.

Where an inverter is directly integrated into the NSP system they receive the signal direct to device. If there are multiple devices behind the meter and the NSP chooses to only send one signal per site, then there is no simple solution for multiple assets to receive the one signal and adjust output. The only options to address this are:

- Wait for a behind the meter interoperability standard to be developed (note there is an active workstream considering this at the moment, but we are unlikely to see any standardised approach for 2-3 years+. This timeline will be preceded by other NSPs implementing their own flexible export connection requirements).
- Expect every solar inverter currently natively integrated with SAPN and the CSIP-Aus to update their integration model, or partner with every other inverter in market to operate as a HEMS device themselves.
- Ban customers from having more than one device behind the meter. This would currently ban retrospectively adding a AC coupled battery to a customer’s existing solar system and in future may also prevent adding EV charging infrastructure.

The options above are all infeasible for a combination of impacts on customers, commercial and administrative impacts for aggregators, and lack of current Standard to enable this work. For context on the scale of the problem, there are ~400 inverters on the CEC list that are currently deemed to be CSIP-Aus compliant. ~60% of the approved inverters use native inverter integration, ~50% only offer native inverter integration[5], so if a blanket “site level export limit” is applied and interpreted as a single signal, then this will impact on a very large number of customer sites.

It is possible to apply a site-export limit that is sent to more than one asset behind the meter with the intent that at least one asset is smart enough to change their behaviour to ensure the site export limit is not breached. In working with SAPN on considering this issue, Tesla demonstrated the technical feasibility of sending the same site export limit to multiple assets behind a meter to achieve a single site export limit response (i.e. Asset A and Asset B both receive a 1.5kW export limit, and Asset B adjusts behaviour in response to Asset A to ensure that a 1.5kW site export limit is not breached, rather than both assets exporting 1.5kW for a 3kW site export limit).

For the purposes of the SAPN application of flexible exports, both SAPN and the South Australia Office of the Technical Regulator (OTR) recognised the complexity of this issue, and after significant industry engagement, they have updated the OTR Technical Guidance[6] to exempt AC coupled batteries from

[5] https://assets.cleanenergycouncil.org.au/documents/products/Inverters-with-SCC-231005.pdf

[6] https://www.energymining.sa.gov.au/__data/assets/pdf_file/0007/808225/2022D066388-Technical-Regulator-Guidelines-Distributed-Energy-Resources-Version-1.5-1.pdf

needing to comply with dynamic export limits. This recognises and addresses the immediate incompatibilities between customers who have both a solar inverter and an AC coupled battery.

A minor change to the wording of the principle may be to specify that a site export limit can be achieved through either a single signal sent to a site or signals sent separately to devices, provided they can achieve a site level outcome. This change or wording, however, does not address the concerns raised in Issue 2 below.

Issue 2: Need to differentiate between different services and potentially different technology types

The second issue with the principle of "applying export limits at the customers point of connection", is that we may need a more nuanced approach for different services. An export limit designed to apply to, and manage the impacts of, extended, multi-hour energy exports is unlikely to be suitable for a 1 second frequency control ancillary services (FCAS) response.

Similarly, the design of the dispatch model being considered through the "Integrating Price Responsive Assets" Rule Change[7] will almost certainly need to differentiate between dispatchable and non-dispatchable behind the meter capacity, including differentiating between passive solar exports. There will be a significant amount of design between now and any future date that a dispatch model might be available and used in market.

However, if a principle of "export limits apply at the connection point" is adopted with no nuance, it may result in incompatible systems being built. As noted in our introduction above, one of our key priorities is ensuring that the application of flexible exports does not impact on VPP market participation. We see that this principle is the one most likely to create issues.

Recommendation: we would recommend that this principle is reconsidered. While it might seem simple on paper, the site-based export limit model has resulted in significant technical application issues in South Australia to date. And there is a risk that a single site-based export limit model will be incompatible with future VPP market participation stemming from the Integrating Price Responsive Assets Rule Change.

Principle 4: Capacity should be allocated to small customers irrespective of the size or type of customer technology (for example, solar or batteries) at the customer premises.

The points raised in Issue 2 above apply equally to Principle 4. While the final design of the "dispatch model" in the Integrating Price Responsive Assets Rule Change will take years to finalise, there is a high likelihood that the scheduling of capacity will need to differentiate between orchestrated (or dispatchable) and non-orchestrated (or passive) capacity. This may result in the need to differentiate between the "type" of customer technology – recognising the difference between orchestrated and non-orchestrated capacity more so than different system types.

The "type" requirement also conflicts directly now with the OTR Guidance exempting AC coupled batteries.

Recommendation: We would suggest deleting "type" from this principle.

[7] https://www.aemc.gov.au/news-centre/media-releases/integrating-price-responsive-resources

Other AER proposed amendments

We are supportive of the other minor additional amendments proposed by the AER.

Should the capacity allocation principles be binding, and if so, should these be codified in the National Electricity Rules or set out in a binding AER Guideline?

If Tesla's proposed changes above are not accepted, then we would not recommend that the principles are binding. At the very least they need to be able to adapt for future market development. In the short-term, the SAPN experience shows how broad-brush principles that seem simple on paper can still fail in implementation.

4.1.2 Capacity allocation methodology

What are your views on our proposed approach for improving transparency in DNSPs' capacity allocation methodologies? Is the guidance provided sufficiently targeted and proportionate for achieving the AER's policy objectives? Are there any other areas where further guidance is required?

As noted above, we are supportive of a very simple approach to capacity allocation and believe the SA Power Networks model is a good starting point. We are supportive of the proposed requirements in the Guidance Note to consult on the establishment of the capacity allocation. This consultation needs to be targeted both with customers, and with OEMs, aggregators and electricity retailers who will all be impacted by the application of the capacity allocation.

Allocation levels

In respect of "allocation level" options, our preference would be for all customers within a single state (or single NSP jurisdiction) to have the same allocation options. Reiterating the point regarding the need for compatibility with VPP market operations, VPP aggregators or retailers will have a single DUID set up per state, having different allocation principles applied across different customer segments increases the risks that aggregators and retailers will not be able to simply comply with their market bidding compliance obligations.

We are also not supportive of individual customers receiving individual export signals. The data requirements grow exponentially with every level down you from single export limit per state > zone substation > local LV area > individual customers. Below is an example of NSW that compares the number of data points that would need to be captured each year depending on the granularity of the signal, assuming that export limits are sent on a five-minute basis.

Table 1: Possible NSW datapoints p.a. at different allocation level granularity

	Total	Data points p.a. (assuming signal sent every five min)
Solar customers (approx).	900,000	94,608,000,000
Local LV area (est.)	20,000	2,102,400,000

Zone substations	729	76,632,480
Distribution network	3	315,360
State	1	105,120

As per our comments above on the need for flexible export to be compatible with VPP market bidding behaviour, this is another critical example. A 50MW VPP made up of 10,000 5kW hour systems, cannot possibly ingest 10,000 different levels of export across their customer base and adjust market bids accordingly. This is a current problem for FCAS market bidding behaviour (and yet another reason FCAS should be exempt from flexible export arrangements) and will be a future market issue following on from the Integrating Price Responsive Assets Rule Change

We are therefore, concerned with the AER determination that no allocation level is ideal. The current information in the Guideline seems to let NSPs select any level they want. As noted above, there are some levels of granularity that should be ruled out – individual customers certainly, and local LV area at the very least. Even applying capacity allocation at a different zone substation level will likely make market participation of VPPs so complex and administratively burdensome that they are effectively ruled out of market.

Recommendation: Allocation should be considered at the state level as a first priority. We recognise that some areas may need to be carved out of a state-wide approach for capacity allocation, but this is still preferable to a more granular model of capacity allocation – particularly noting the increased impact on data storage and risks to market integration.

Capacity allocation models

Tesla's preference is for either the equal allocation or proportional allocation with a fixed service level attached. If the SAPN model of providing a fixed 95% service level was applied, then either model would work. A proportional allocation model might provide a slightly better overall service level by recognising that there are some systems that will need to be constrained more than others.

Tesla believes that both the "value-based allocation" and "Pay for more allocation" are likely to be overly complicated frameworks layered over an already complicated market change. It would be incredibly difficult for these models to be designed for, and explained to, customers, and may create increased risk of customer gaming or social inequity.

The "value-based allocation" model raises questions about what the customer accepts or signs up for at the point of grid connection. The risk for this model is assigning higher value to a customer who may change their position over time. If capacity is allocated at the point of connection, there are a couple of concerns that need to be addressed:

- Many customers will not be able to join a VPP until *after* their system is installed. If capacity is awarded at the point of connection and is dependent on the customer being part of a VPP, then most customers will not be able to meet this threshold requirement.
- Even where a customer is already part of a VPP, or agrees to be part of a VPP to get around the concerns raised in the dot point above, there would be nothing preventing the customer from churning to a different retail offer the next day or week or month. In that instance would the customer retain the preferential capacity allocation?

From a VPP development perspective, it is more helpful to start with a simple capacity allocation proposition. If aggregators know that all customers have max export 95% of the time (like the SA model), then it creates a simple framework to build a VPP business case around. The move to dynamic exports already benefits VPP developments by potentially increasing the total kW capacity that can be registered. The incremental benefits a VPP operator might receive in preferential capacity allocation is likely to be outweighed by the additional complexity of the model.

In respect of the "pay-for-more allocation" method, we think this model should be considered further to avoid potential social inequity risks. On one hand it may be introduced with low variance between models (i.e. customers have a choice between 10kW export 95% of the year at a cost of $10 p.a. or 90% p.a. at a cost of $4 p.a.), or it may be introduced with significant variance (i.e. customers can pay to access their 10kW export 99% of the year at a cost of $100 p.a., or can access their 10kW export 50% of the year at a cost of $1 p.a.). We are supportive of customer choice in general, but the risk of high variance between the allocations considered under a "Pay for allocation model" may result in lower socio-economic households needing to except reduced capacity allocation. In turn, this may lock them out of accessing other benefits in the future, such as joining a VPP or being able to sell additional services from their system.

Recommendation: Tesla recommends that while these two models merit additional consideration, as a starting point the "equal allocation" and "proportional allocation" models should be put forward as the default with the other two requiring additional consideration or justification before they are adopted – with specific consideration given to what happens if a customer moves to being not in a VPP

What areas of the National Electricity Rules and National Energy Retail Rules do you consider will likely require amendment to give effect to the AER's proposed approach for improving capacity allocation methodologies and transparency?

Tesla believes that this is a question best explored during the Rule Change process when all Guidance Note elements have been finalised. We have some comments on amendments to the Model Standing Offer that will be necessary (see comments on 4.3.1 below) and will be happy to work with the AEMC and the AER on other Rules that may need to change to provide additional customer protection.

What time periods should DNSPs consider in allocating network hosting capacity? For the allocation model, over what timeframe should capacity allocation be considered?

Tesla believes that capacity should be allocated for the life of the system, subject to site upgrades. This mirrors the current approach and reduces complexity for customers. Customers should, of course, still be allowed to update their connection agreement themselves at their own cost, where network offers change or customers feel like they want a different offer. However, customers should not be expected to negotiate their own capacity allocation every 2 or 5 years or whatever other shorter period is considered to be reasonable by a network.

4.2.1 CER Integration Strategy

What are your views on the nature of changes required to address the issues identified in the problem statement and promote the AER's intended policy outcome?

Tesla agrees with the position that DNSPs should include, as part of their commentary, an overview of how two-way pricing interacts with flexible exports. The work done by SA Power Networks in their industry and community consultation provides a good example of demonstrating the interaction with between the two policies. In that consultation, SA Power Networks highlighted that solar export costs would be used to cover the cost of the proposed performance thresholds, and therefore only customers benefiting from the higher rates of dynamic export would be charged for it (not all energy customers).

Given the interrelationship of the two policies (flexible exports and two-way pricing), it will be critical that the AER applies the same principles in assessing NSP Tariff Structure Statements as they apply in assessing the approach to flexible export. Some points that the AER should keep in mind in this review:

- Where two-way pricing is introduced ahead of flexible exports, are solar export charges designed to just cover the cost of existing network infrastructure, or are they designed around future performance thresholds for flexible exports?

Another area that it would be interesting for the AER to consider over time is whether the application of two-way pricing has, in any way, reduced the need to use flexible export. In general we understand that the two-way pricing mechanism is designed to cover network costs, and not to influence customer energy use behaviour, however it would feel like an adverse outcome of the two policy reforms if customers were paying for solar exports and still being frequently curtailed. Ultimately the intended outcome of the two policies should be to jointly drive customers to use, or store, as many kWh of solar generated as possible. This has positive consumer, environmental and economic outcomes.

4.2.2 Developing flexible export limits business case

This requirement is critical for the effective development of flexible exports, and will be even more critical as the AER thinks more about how they want to assess alternative controls that are already baked into CSIP-Aus (specifically import controls – see commentary above).

From a first principles perspective, in assessing the business case, the AER should look for:

- The model used to assess network hosting capacity and whether there is sufficient evidence to support the model being proposed.
- Whether the dynamic export model being proposed provides customer benefits and is well supported by customers, as demonstrated through appropriate consultation.
- Whether the NSP has consulted with AEMO to ensure that the design of the flexible export model (including flexible pricing intervals) is compatible with VPP market participation.
- Whether alternative pricing signals have been considered in a way that might provide better customer outcomes.

What should be considered the minimum level of information in relation to hosting capacity assessment that networks should provide during their regulatory determination?

As a minimum, the expectation on NSPs should be to model of network capacity constraints that has been independently verified or is able to be independently verified by the AER.

What are best practice measures networks can adopt when it is difficult to perform hosting capacity assessments?

Where traditional network approaches are not able to be used for assessing network hosting capacity, and smart meters have not been widely deployed, we would encourage the networks to work with inverter OEMs to consider data sharing approaches that could assist with increased visibility. There are over 3 million solar PV systems installed on residential properties in Australia and each one is backed by a significant live data set that could provide useful information to NSPs.

Notwithstanding the above, if networks are unable to provide network hosting capacity assessments then the AER should align on a minimum customer standard that is applied as an alternative. This standard should also default to being generous for customers rather than overly conservative. Ultimately, we want to avoid a situation where networks are able to default to lower export limits on the basis that they are not able to undertake a detailed network hosting capacity study. A generous default for customers will result in a better incentive for investment in technology to assess hosting capacity.

What are your views on whether the AER should expand the guidance within our DER integration expenditure guidance note?

No feedback on this point.

4.2.3 Connection policy

Has the AER identified relevant issues and matters relating to export limits (static and flexible) that should be addressed in DNSPs' connection policies? Are there any matters that need to be added or removed and if so, why?

Tesla is supportive of all elements the AER recommends to be addressed. As noted in our introduction above, the requirements may need to become more prescriptive over time as DNSP best practice is established.

What are your views on the AER's proposed implementation approach of seeking amendments to provisions in the National Electricity Rules governing matters addressed by the AER's Connection Charging Guideline to implement our draft position?

We are supportive of these requirements being explicitly included in the National Electricity Rules. To provide more flexibility in updating the guidance, the AER might consider a combination approach where the requirements are embedded into the NER, and the AER maintains the authority to put out annual guidance material with updated expectations as best practice becomes more obvious.

4.3.1. Connection agreements and consumer participation

What are your views on the key areas identified by the AER as needing to be addressed in the terms and conditions of connection agreements that include flexible export limits?

A major consideration in respect of Model Standing Offers is how flexible exports (or imports) are captured within the model standing offer.

As a live example, Energy Queensland has recently updated their Queensland Energy Connection Manual (QECM). This includes a requirement for EV charging equipment to either receive flexible imports or be capped at 20A.

The QECM is, in turn referred to within the Model Standing Offer as a document that needs to be complied with. However, the Model Standing Offer does not refer to any version numbers and also allows for QECM replacement documents to be included without triggering a review of the Model Standing Offer by the AER. While we acknowledge that flexible imports are outside of the scope of this Guidance Note (and the potential regulatory vacuum that creates), this type of approach would seem to be in direct conflict of the following point made by the AER in the Guidance Note Consultation Paper:

> *"DNSPs seeking to implement and use flexible export limits should seek AER approval for amendments to their Model Standing Offers to provide greater clarity and certainty of contractual obligations under static and dynamic connection arrangements."*

Our concerns with import controls being unregulated and the risk this poses to average consumers – particularly those installing EV charging equipment, is well documented above.

As an additional recommendation we would recommend that the AER Guidance Note requires that the Model Standing Offer is reviewed by the AER where it is updated to include flexible exports *or refers to any other document that has been updated to include reference to flexible exports or imports.*

As the Rule Change process progresses we would also suggest specific Rule Changes that allow for more discretion in when Model Standing Offers are reviewed

5A.B.2 requires DNSPs to submit Model Standing Offers and 5A.B.6 requires DNSPs to submit amended Model Standing Offers, both for review and approval by the AER.

However, there are no rules that trigger a review of a Model Standing Offer where either:

- A reference document within the Model Standing Offer has been amended to the extent that it results in significant flow-through changes to the Model Standing Offer and the impact on customers; or
- A market customer or another body requests the AER to review the Model Standing Offer on the basis that they believe it has been amended directly, or through the inclusion of additional or amended reference documents – see points above.

Recommendation: the AER should consider updates to the National Electricity Rules that triggers a Model Standing Offer review where the intent of the Model Standing Offer changes through updates to reference documents.

Are there any areas that should be included, removed, or further clarified, if so, what are these?

We are supportive of the terms and conditions included in Table 4. These are all critical items that should be included to aid customer understanding. We are particularly supportive of the need for a clear dispute process for customers, as there is a heightened risk in flexible exports not providing the level of service agreed to, while industry is in the early stages of delivering these new service offerings.

It is also important to note that most customers will not necessarily use a DNSP or a Model Standing Offer as their preferred source of information (or necessarily even know of the existence of such documents). Most customers installing rooftop solar PV and/or a residential battery, will consider their solar retailer/ installer or the equipment OEM as their trusted source of information.

As more jurisdictions start introducing flexible exports and the approaches start to differ (particularly within states), it will become increasingly important for installers, retailers, aggregators and OEMs to also have readily available access to the individual Model Standing Offers. Noting that this is a significant step change for industry, and we want to make the transition for customers as clear and simple to understand as possible, we would recommend that the AER consider setting up a single landing page with every Model Standing Offer that includes flexible exports. This will not only make it simpler for installers and retailers to readily access all information regarding flexible exports to support their customer conversations, it will also make it easier for electricity retailers and aggregators to craft their VPP offerings.

Recommendation: the AER should stand up a landing page with links to all Model Standing Offers including flexible exports.

Should DNSPs have a positive obligation to notify consumers of non-compliance with flexible export limits once becoming reasonably aware?

This is important, and equally important that information is provided in a manner that does not result in a negative customer experience. At a fundamental level, this point ties into the broader unresolved point about roles and responsibilities, with clarification required before a customer communications approach is finalised. For instance, an NSP message might let a customer know that their system is non-compliant with flexible exports and encourage them to check their wifi connection or general connectivity.

If this turns out not to be the issue, then there needs to be a clear decision on who is responsible for resolving. It would be a terrible customer experience if a message from an NSP told a customer to get in touch with an installer, who then directed them to speak to an OEM, or vice versa. With the worst possible outcome being that the issue remains unresolved due to the lack of a compliance framework and understanding of roles and responsibilities.

Recommendation: a separate piece of work on roles and responsibilities specific to flexible exports is needed.

Should the connection agreement include provisions for amending or seeking a review of the flexible export limit? What do stakeholders consider an appropriate minimum timeframe and circumstances for flexible export limits to be amended, while still providing investment certainty to consumers who invest in CER?

As noted above, once a connection agreement is entered into, we do not believe that the NSP should have any ability to change the flexible export agreements that a customer has access to. Customers

should retain the ability to proactively amend their connection agreement, and we would also expect the current model to be retained where customers are required to enter into a new connection agreement where new generation assets are installed, or there is a significant enough upgrade to trigger a new connection agreement.

With reference to the criteria for AER approval of Model Standing Offers under Chapter 5A of the NER, what are the key issues the AER should consider in relation to flexible export limits?

No additional feedback other than those points raised above.

What are your views as to whether the AER should seek such a rule change regarding Model Standing Offer and connection policy requirements?

Our recommendation on potential amendments to 5A.B.6 in respect of Model Standing Offer is made above.

Is there any additional information DNSPs should provide consumers to enable them to make an informed decision about whether to opt-in to flexible export limit arrangements?

We are supportive of the consumer experience information areas outlined by the AER in Table 5.

In addition, we also think it will be important that the connection agreement itself also includes some of the requirements of the Model Standing Offer – specifically the level of performance agreement that a customer will receive (as well as the factors that may affect performance).

As noted above, this is a complicated change, and many solar PV customers are not actively engaged with their local DNSP or will know where to source this information. To better aid with consumer awareness, we would also recommend that DNSPs run training sessions for installers and solar retailers to pass this information back through to customers.

Is the AER's expectations of information DNSPs should make available to consumers to promote informed decision-making and consumer confidence in the operation of flexible export limits reasonable and fit-for purpose? Are further changes required to better achieve the AER's intended policy outcomes?

The AER expectations appear balanced. As with everything relating to flexible exports, as an evolving industry it is important to note that these expectations may need to evolve over time as industry best practice becomes more apparent.

What are your views on the need to amend relevant provisions in Chapter 5A of the National Electricity Rules to provide greater clarity on the need for Model Standing Offers to include specific terms and conditions that address issues relevant to flexible export limits?

As above, we have included some comments on potential Model Standing Offer requirements that should be changed in the Rules, and would recommend that the full Rule Change consideration is made when the Guidance Material is finalised.

4.3.2 Consumer and industry engagement

What additional engagement or information do you consider DNSPs should undertake or provide to ensure consumers are well-informed in the decision-making process and continue to be engaged throughout the later stages of the customer journey?

As above, while consumer engagement directly from the DNSP is going to be important, for the most part, customer conversations will be managed by the solar installer/ retailer. It is critical that they have simple access to all information.

What are your views on what effective engagement looks like between DNSPs and relevant industry stakeholders?

There is a broad range of approaches for engagement with industry, and it will be critical that industry engagement in developing flexible exports and associated customer information is collaborative and genuinely a two-way flow of information. It will be important for NSPs to recognise that, while they may be just starting on the design of their own flexible export process, industry will have already been through the design, integration and implementation with one or more other NSPs. Industry insights will be critical in ensuring effective design and learning from past issues encountered to create a more efficient process.

We want to avoid engagement being considered as a tick-the-box exercise. To this end we would see industry engagement as needing the following elements:

- NSPs being required to set up industry technical working groups with a variety of members including OEMs, aggregators and retailers. Membership in this group should be targeted and focused on people bringing actual expertise, but should not be closed (i.e. the NSP should not restrict the total number of people within a group, or self-appoint their own members).
- The Technical Working Groups should be required to meet frequently during the design of flexible exports. At least once a quarter, but bi-monthly might be more appropriate during early design and integration stages.
- The Working Group forums should be genuinely collaborative. They should not be a forum for NSPs to present pre-conceived outcomes to industry, but rather a forum for co-design of requirements.

As an additional recommendation, to confirm the effectiveness of consultation, we would recommend that the AER undertakes semi-regular engagement with industry peak bodies to determine the effectiveness of industry engagement. If NSPs are not being considered to meet the principles above, then the AER should be able to direct them to change their engagement process, or risk being found to be non-compliant with this initial Guidance (and ultimately an NER Rule). The SA Power Networks DER Integration Working Group (DERIWG) should be considered as industry best practice in this respect.

What, if any, additional information (other than what is outlined above) should DNSPs seek to provide to industry stakeholders?

The points in Table 6 provide a relatively broad coverage. As per the above, this information provides a handy guide for DNSPs in what information they should provide to industry to enable integration and implementation *after* the design has been completed, but should not be considered best practice for engagement. It will be critical that industry engagement is not considered to be DNSPs presenting

foregone conclusions to industry, and is instead a co-design approach. To this end, the AER should clearly delineate between:

- DNSP/ industry engagement during the *design* of flexible exports; and
- DNSP/ industry engagement to enable the effective *implementation* of flexible exports once the design has been completed.

Recommendation: industry engagement needs to occur both during design and in providing training after the design elements are finalised.

The AER should set up a process with the industry peak bodies to independently consider whether industry consultation has been effective.

Which stakeholders should be responsible for conveying information to consumers at each step of the consumer energy resources journey?

As above, we think there is still a gap in the roles and responsibility expectation that needs to be addressed. We think this is a much bigger topic that warrants separate consideration rather than being considered as one of many points within this Guidance.

4.3.3 Compliance with technical standards

Should DNSPs be required to demonstrate the compliance actions that they have taken when putting forward expenditure proposals?

Tesla does not believe that this obligation should sit with DNSPs. AEMO is already well progressed in understanding non-compliance issues and working with OEMs on suitable fixes. Managing this through AEMO leads to a single compliance process across the country. Requiring the DNSPs to manage compliance issues would likely lead to 13 separate processes that are largely the same. This is inefficient and overly burdensome for OEMs.

We suggest that AEMO maintains responsibility for this work and improving compliance rates. We do not think the Guidance Note should make any direction to DNSPs to do their own work improving compliance rates as this will almost certainly lead to duplicative processes.

What are appropriate processes for DNSPs to go through if a consumer asset is identified to be non-compliant with a relevant technical standard? For example, should a customer be reverted to a static export limit (note: this would only occur after a period where the DNSP and retailer have communicated with the customer to rectify the problem)?

We do not think the NSPs should be managing compliance with technical standards beyond compliance with flexible export requirements. Where these are not complied with, the NSPs should consult on different options with the aforementioned proposed Technical Working Groups.

Are there examples where government agencies or network businesses are already implementing practical solutions to increase compliance with technical standards?

Yes – AEMO has been doing this work for >2 years through their Project Match[8] in partnership with UNSW and all major Australian OEMs.

Complaint handling and dispute resolution

What information should DNSPs collect to facilitate complaints to be resolved?

In the event that a customer is complaining that their flexible export capacity performance thresholds are not being met we would expect the NSPs to already have enough information to verify this. Customers should also have the opportunity to provide information from their own apps – OEM, or aggregator, to provide counter information.

What is the role of DNSPs to co-ordinate complaint resolution, including identifying the responsible party, which may be the OEM, installer, or trader/aggregator?

Refer to points above on roles and responsibilities.

[8] https://arena.gov.au/projects/project-match/