



EVC response to

Australian Energy Market Commission

CONSULTATION PAPER

**NATIONAL ELECTRICITY AMENDMENT
(INTEGRATING PRICE-RESPONSIVE
RESOURCES INTO THE NEM) RULE**

**NATIONAL ENERGY RETAIL
AMENDMENT (INTEGRATING PRICE-
RESPONSIVE RESOURCES INTO THE
NEM) RULE**

3 AUGUST 2023

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With reference to:

<https://www.aemc.gov.au/rule-changes/integrating-price-responsive-resources-nem>

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Preamble:

The Electric Vehicle Council (EVC), Australia's national representative body for the EV industry, appreciates the opportunity to provide feedback on the AEMC's consultation paper in response to the 'scheduled lite' a rule change request from AEMO.

We note that the consultation paper runs to 63 pages, with a further 27 pages summarising international mechanisms - and that AEMO's rule change proposal runs to 200. We note further the multiplicity of open consultations in this domain. Our response will be relatively brief.

Executive summary of EVC position:

'Scheduled Lite' is proposed as a means by which price responsive resources (such as consumer EV charging) can participate in the NEM.

Based on 3 x ARENA smart charging trials, data collected by C4NET in Victoria from smart meters at homes that have recently acquired EVs, studies undertaken by Energy Queensland, and data the EVC has seen from Tesla, it is doubtful that orchestration of EV charging in domestic homes will deliver meaningful outcomes worth more than the cost of orchestration, by comparison to simple incentivisation approaches.

Despite AEMO's assertions to the contrary by way of the IASR, the baseline consumer behaviour tends towards avoidance of EV charging at peak time. There isn't actually much additional benefit available to extract through orchestration. We address this here:

<https://thedriven.io/2023/07/11/what-does-well-behaved-ev-charging-look-like/>

This said, **provided scheduled lite remains a voluntary mechanism**, we do not object to its creation, because there is the possibility that it will create value via other types of price responsive resources, and it may prove useful with respect to vehicle to grid implementations.

Specific commentary

Responses to selected questions:

QUESTION 1: DO YOU AGREE THAT PRICE-RESPONSIVE RESOURCES NEED TO BE INTEGRATED INTO THE NEM?

1. The Commission has identified five types of issues with increasing volumes of price-responsive resources. Do you agree with this breakdown of the issues? What do you consider the magnitude of each issue is? How is this likely to change over time?

Electric Vehicles will need to charge. EV charging does not need to be centrally orchestrated in order to avoid significant negative outcomes. Refer:

<https://electricvehiclecouncil.com.au/wp-content/uploads/2022/08/Home-EV-charging-2030.pdf>

On current behaviour (ie, unmanaged, and with incentivisation approaches relatively nascent), home EV charging accounts for ~2500kWh/annum of energy use per vehicle, with contribution at peak time of ~250W/vehicle. If we consider the typical contribution to DNSPs from the retail bill to be ~10c/kWh, and the typical LRMC to be \$100/kVA/annum, then we see that the contribution by the consumer to network cost from car charging is about \$250/annum, while the degree to which they create network augmentation requirements amounts to \$25/annum. They're already paying an order of magnitude more than they're actually costing the energy system on this front.

It's a similar story with respect to the wholesale market and energy costs – EVs are already biasing towards consuming energy at off-peak times, so there's very little value in orchestrating to shift the behaviour further. AGL's final report from their ARENA smart charging trial identifies the available benefit as being at ~\$33/annum/EV.... Two thirds of which can likely be achieved through incentivisation.

<https://arena.gov.au/knowledge-bank/agl-electric-vehicle-orchestration-trial-final-report-pdf-678kb/>

The possibility exists that Vehicle to Grid implementations may benefit from the mechanisms described, so the EVC is not opposed in principle to Scheduled Lite being brought into existence, provided the mechanism remains entirely voluntary.

QUESTION 2: REPRESENTING PRICE-RESPONSIVE RESOURCES IN SCHEDULING PROCESSES

1. Is participation in this mechanism dependent on whether price-responsive resources can be separated at or behind the connection point (currently being considered through the "Unlocking CER benefits through flexible trading" rule change)? Please explain what impacts separating CER would have on traders' participation in energy markets.
2. Do you have views on the need to define price-responsive resources or the traders that might coordinate a large amount of such resources?

Electric Vehicle charging in the context of the home does not need to be separable from the main metered supply in order to be 'well-behaved' with respect to the energy system, or to deliver consumer benefits associated with consumers electing to modify their behaviour with respect to EV charging. The consumer can derive the bulk of available benefit on a simple ToU retail product.

If it proves necessary to create separation behind the connection point in order to make the scheduled lite mechanism work, that can be expected to add cost and complexity, which would make it a less attractive way to manage (for example) vehicle to grid.

QUESTION 8: ARE THERE PREFERABLE ALTERNATIVE ARRANGEMENTS?

1. Are there any alternative solutions that you think would be preferable to AEMO's proposal and more aligned with the long-term interests of consumers? What are the costs and benefits of any proposed alternative arrangement?

With respect to efficient integration of home EV charging into the energy system, ensuring the availability of attractive time-of-use retail tariff products to consumers, which effectively incentivise 'grid-friendly' EV charging behaviour without penalising normal 'balance of home' use, should be a focus.

The EVC is active in this area:

<https://electricvehiclecouncil.com.au/about-ev/charging/>

https://www.linkedin.com/posts/ross-de-rango-29a88013-inspired-by-an-excellent-analogy-about-apples-activity-7097516212384907264--qja?utm_source=share&utm_medium=member_desktop

Notes with respect to the AEMO paper:

https://www.aemc.gov.au/sites/default/files/2023-01/ERC0352_Rule%20Change%20Request_Scheduled%20Lite%20-%20including%20Appendix.pdf

Appendix A of AEMO's work deals with the justification for the mechanism.

To the extent that EVs are used as part of the justification, the work is deeply flawed. Some examples are provided below.

Appendix A, Page 9:

"To reduce operational risk arising from the additional uncertainty in the system, sufficient flexibility¹² is required within the system to deal with unexpected events. In the absence of enhanced operational tools and regulatory frameworks, curtailment and intervention may be required to maintain adequate system security across all timeframes¹³.

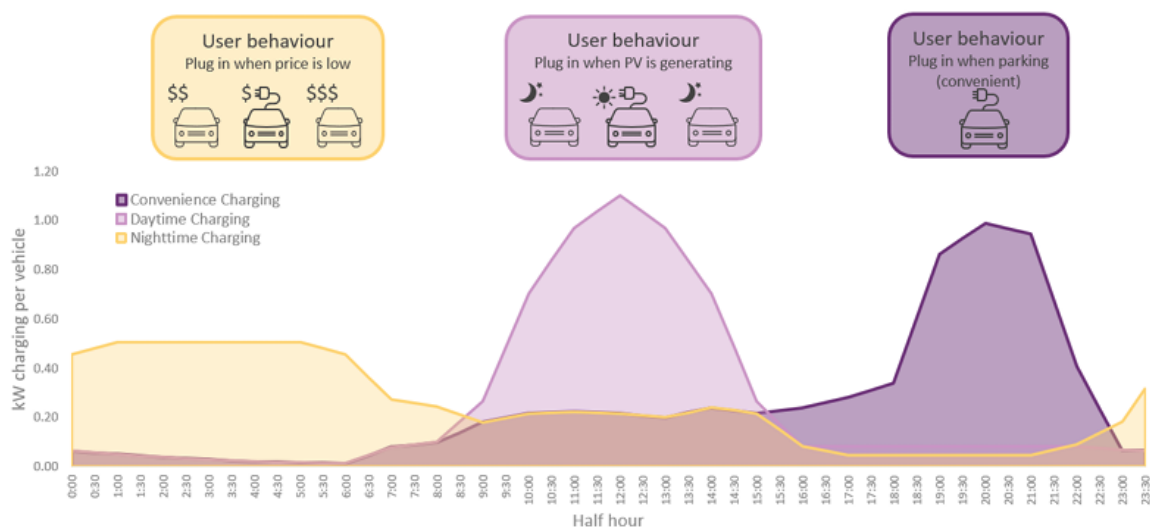
The Scheduled Lite mechanism would enable visibility, predictability and dispatchability of distributed resources, minimising uncertainty within operational timeframes. Successful integration within market scheduling processes will avoid otherwise necessary curtailment of resources and activation of emergency reliability and security mechanisms, supporting timely commitment decisions in the market and driving more efficient use of security and reliability measures."

This implies that in the presence of scheduled lite, curtailment will be significantly less necessary. This is misleading at best, given the rate of solar deployment, and the differential behaviour that can reasonably be expected between incentivisation on pricing (which is the assumed baseline condition prior to scheduled lite), and control.

In EV charging, for example, the difference in achievable behaviour between incentivisation, and control, is about 0.05kW per vehicle. This isn't going to move the needle compared to the 5kW solar installation on the roof of the house the car is parked in; that 5kW solar system will still need to be curtailed.

Appendix A, page 10, figure 3:

Figure 3 Example home/work electric vehicle charging profiles – medium residential average half-hour charge profile (2022 ISP Step Change scenario)



Source: AEMO 2022 ISP Inputs, assumptions and scenarios workbook. NOTE: Recently updated ISP forecasts suggest that the convenience charging profile and daytime peak have declined significantly relative to the 2022 ISP Step Change scenario. These updated forecasts will be reflected in the 2023 inputs, assumptions and scenarios report and workbook once released.

This profile has already been debunked in the 2023 IASR, which has significantly reduced the forecast impact of EV charging at peak time. The EVC notes that the 2023 IASR still significantly over-estimates the probable impact of EV charging at peak time. It has ignored multiple Australian studies, including 2 x ARENA funded smart charging trials and the collection of Victorian smart meter data undertaken by C4NET. In 2021, it was incorrect by a factor of 5; the view of the EVC based on the real world charging behaviour data is that it's still incorrect by a factor of about 2.

Appendix A, page 13:

“Peak demand reaches new records as unmanaged EV charging grows, and security and reliability mechanisms are used frequently to account for uncertainty in supply requirements and ensure supply demand balance.”

Per above, the data indicates that this is not actually occurring. AEMO clearly have a belief state that this will occur, which is not borne out by the actual data, but which is being used to justify AEMO's preferred outcome in this matter.

Appendix A, section 4.3, Electric vehicle participation

“The potential rate of participation by EVs in Scheduled Lite is unclear given their low uptake to date”

Millions of dollars have been spent in ARENA co-funded trials (AGL, Origin, Jemena) to probe the system level value of orchestration of EV charging. Multiple other data sets exist as well, and multiple consumer surveys have been run.

It's clear that consumers are very happy to move their EV charging behaviour in response to simple price signals, without orchestration. Consumers will without doubt have access to retail products of this type, which will deliver the bulk of the available system benefit associated with consumers making good choices about when they charge their cars.

It's clear that the operation of a wide-scale orchestration solution for customer EV charging, in the manner conceived by scheduled lite in combined with the measures laid out in the flexible trading arrangements proposed rule change, will likely deliver marginal system benefit over this baseline, at substantial cost to consumers.

Absent evidence to the contrary, the potential rate of participation in Scheduled Lite by EVs can reasonably be assumed to be low.

We note, however, that other load types may potentially prove to be a good fit for this type of approach – for example, aggregation of domestic hot water assets as a biddable units of load – and that as identified in the AEMO paper, scheduled lite may be able to perform a useful service in the aggregation of solar export and in the development of VPPs.

If scheduled lite is created, and turns out to be useful in those types of cases, then it may have utility in V2G at some future time. So, while the EVC is critical of elements of the justification for this project, we are not in-principle opposed to it.

Appendix B, page 20:

“In addition to broad stakeholder support for a voluntary mechanism, the ESB noted concerns about low uptake (and therefore limited benefits) and the possibility of Scheduled Lite moving towards a mandatory mechanism in future.”

This is key. As noted above, we do not oppose the creation of a solution like this, or oppose the offer of solutions along these lines to EV drivers on a voluntary opt-in basis. We do, however, expect there will be limited uptake amongst EV drivers, because the value for the driver is negligible, and the key desirable outcomes are readily achievable in lower cost ways that the consumers prefer.

Should AEMO, in future, point to lack of uptake as justification for mandating consumer participation in efforts along these lines, we would expect to see oversight from the OBPR of a significantly better justification, grounded in more rigorously collected and analysed data.