1 August 2025

Energy Policy

Ministry of Business, Innovation and Employment

PO Box 1473

Wellington 6140

By email energyuse@mbie.govt.nz

Submission on proposals to support the uptake of smart EV charging

1. Thank you for this opportunity to make a submission on the Discussion Paper.

2. Orion supports the mandating and regulation of smart charge points (except for public charge point stations) subject to the comments set out in this submission. Smart charge points **matched with incentives** will make it easier to move EV charging to times that suit distribution networks and support appropriate network investment.

3. We provide some background about Orion below and then some general comments before addressing your specific questions in the Appendix to this submission.

Background

4. Orion New Zealand Limited (Orion) owns and operates the electricity distribution infrastructure in Central Canterbury, including Ōtautahi Christchurch. Our network is both rural and urban and extends over 8,000 square kilometres from the Waimakariri River in the north to the Rakaia River in the south; from the Canterbury coast to Arthur's Pass. We deliver electricity to more than 230,000 homes and businesses and are New Zealand's third largest Electricity Distribution Business (EDB). Orion and its various predecessors have been providing this essential service to the region for close to 120 years.

5. Orion is a Lifeline Utility for the purposes of the Civil Defence Emergency Management Act 2002. Orion has a statutory duty under this legislation to ensure it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency.

6. Orion has a fully owned subsidiary, industry service provider Connetics, and together with Orion the two organisations make up the Orion Group.

7. Central Canterbury is a place of rapid growth and transformation, embracing change and innovation, with Ōtautahi Christchurch at the heart of this diverse and vibrant region. Electricity distribution has always been an essential service that underpins regional, community and economic wellbeing. Our service is vital to the wellbeing and livelihood of the people and businesses who live and operate here. Now, it also has a critical part to play in New Zealand's transition to a low carbon economy.

8. In this context Orion's Group Purpose of "Powering a cleaner and brighter future with our community" is central to all we do. As Aotearoa New Zealand transitions to a low carbon economy, the energy sector has a critical part to play, primarily through electrification. Orion has established its purpose to be a vital player in that transition for our community and our region. We are focused on helping our community realise its dreams for a future that is new, better, and more sustainable over the long term.

9. We are very conscious that we face a rapidly changing and massively different energy environment in the decades ahead. The changing landscape facing Orion is primarily driven by three factors – climate change, new technology and increasing demand for electricity. The increasing demand for electricity is driven by the need to both enable decarbonisation at pace, and support population growth.

General comments

10. The Discussion paper refers to "smart chargers". We would prefer that the term "charge point" is used as this is the common correct term (as the technical name EVSE or Electric Vehicle Supply Equipment is not user friendly). The AC charger is in the EV, not in the box that provides power to the EV. On page 4 of the Discussion Paper, it refers to a charge unit. Simply put, if New Zealand were to mandate only new "**smart chargers**" that would prevent the import of most new EV models. We note that the United Kingdom regulations refer to **charge points**, for example the Electric Vehicles (Smart Charge Points) Regulations 2021.[1]

11. In the Minister's foreword, he notes that "*EVs are becoming more common on our roads, and most charging happens at home. While this is convenient for drivers, it also adds to electricity demand—especially during peak times when the grid is already under pressure. If we don't manage this demand effectively, we risk higher infrastructure costs that will ultimately be passed on to Kiwi households and businesses in their power bills. Smart EV chargers offer a practical solution to this challenge. By enabling charging to occur when electricity is cheaper and more readily available, they can help reduce pressure on the grid, lower household power bills, and delay the need for costly network upgrades.*"

12. We make the point that by enabling charging to occur when electricity is cheaper and more readily available, it does not necessarily reduce pressure on the grid, lower household power bills, or delay the need for costly network upgrades. Furthermore, as the correlation between spot prices and network peaks weakens due to the increasing presence of intermittent generation, we expect this relationship to deteriorate.[2]

13. For example, there is an issue with retailers offering free power from 9pm creating local peaks on the distribution network. Consumers using a free power offering will likely adopt a charging regime on a set and forget basis. This leads to new constraints (or secondary peaks) on distribution networks that will ultimately require investment which will drive up costs to

[1] See The Electric Vehicles (Smart Charge Points) Regulations 2021

[2] See the extract from the FlexForum Insight at paragraph 13. Also see the Orion and we* presentation to the EEA Conference on 28 June 2023 on Resi-Flex at PowerPoint Presentation, slide 18 which illustrates forecasted correlations.

consumers unnecessarily. Smart charge points on their own do does not resolve this issue, but matched with incentives it will be easier to move EV charging to times that suit distribution networks. (Without smart EV charge points, it will be harder to incentivise this behaviour.)

14. Here we refer to the summary in the FlexForum Insight "*Actions to make flexible electric vehicle charging an easy and obvious choice for households and businesses*".[3] At pages 4 and 5, the Insight discusses the differences between "scheduled charging" and "integrated or dynamic charging". As the Insight notes

> "*Many EV owners charge flexibly using tools such as timers, in car features or manually flicking the switch to schedule charging in response to the signals and rewards of TOU retail pricing. We will call this scheduled charging. It involves little more than picking a TOU retail pricing package, plugging the charger cable that came with the vehicle into convenient power point and scheduling when the switch is on or off*.
>
> ...
>
> "*Scheduled charging means flexibility is provided to assist in managing predictable market and system conditions based on the typical daily peaks and troughs of power use. However, these typical conditions are frequently disrupted by events such as very cold nights, very hot days, or infrastructure not being in service for repair or due to incidents. Moreover, conditions are expected to become less predictable as we develop a more renewable power system with more intermittent wind and solar generation.*
>
> *Flexibility[4] can provide value and benefit in non-typical situations by assisting to manage the availability of network capacity or energy shortfalls but relies on the flexible resource being integrated* ***into the market and system****. We will call this integrated or dynamic charging. It involves responding to unplanned requests from a distributor, retailer or other flexibility user to provide flexibility to respond to specific market or system conditions that emerge at short notice, unpredictable times, or require a commitment the response will happen. "*

Concluding comments

15. Thank you again for the opportunity to provide this submission.

16. If you have any questions please contact Vivienne Wilson, Policy Lead, Vivienne.wilson@oriongroup.co.nz , (03) 363 9898.

Yours sincerely
Vivienne Wilson
Policy Lead

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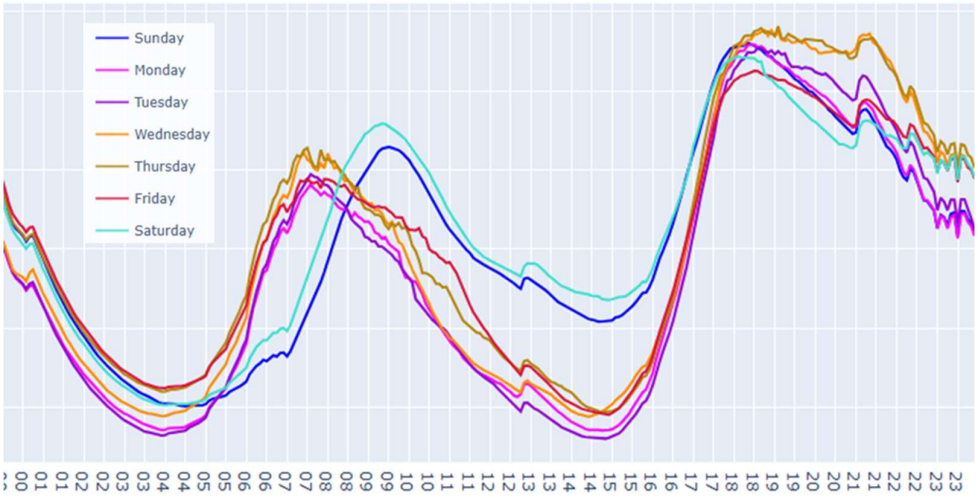
[3] See FF-insights-A-workplan-to-accelerate-uptake-of-flexible-EV-charging-31-July-2024.pdf
[4] The Insight notes that "*Flexible charging is also referred to as 'smart' charging. We talk about flexible charging because the Flex in FlexForum stands for flexibility*."

Appendix

Questions and Answers

1	**Research indicates that most EV charging occurs at home. Do you have any comments on the split between private (home) and public charging and how this may change into the future?**
	We agree that most charging currently occurs "at home". Charging of EVs also occurs at workplaces, and this may increase when workplaces and parking establishments install charge points for fleet vehicles and the like. At Orion, we have installed 38 smart charging points for charging Orion fleet vehicles. Certainly as solar generation increases in New Zealand, we expect more EV charging to take place at work, and smart EV charging points will be able to assist with managing network peaks during the day.
2	**Do you have comments on the current state of private EV charging in New Zealand?**
	On page 6 of the Discussion Document, it states that "*Smart charging provides EV owners with demand flexibility and the opportunity to take full advantage of electricity bill savings that can more than offset the upfront cost of installing a charger.*" We agree that deliberate management of smart charge point use allows EV owners the option to save on their electricity bills depending on the tariff they are on. We note the comment in the FlexForum Insight that "*Integrated charging is not an easy and obvious choice for EV owners. Wall mounted chargers cost roughly $1500 to $2500 to buy and install, but currently do not offer many extra benefits relative to scheduled charging. EECA research says EV owners are happy with plugging into the wall because it suits their needs, wall chargers are too expensive, or are expensive and difficult to install.*"[5] Peak times are not just at 7am-10am and 6pm as we also see an additional peak at 9pm brought on by retailers offering free power from 9pm. The graph below shows the load on Orion's network during a week in July 2024. The lefthand axis shows the loading on the network, the bottom axis shows the hours of the day.

[5] Above n1, p5.



This Evnex EV Charging Insights Winter 2022.pdf indicates how smart charging can make the 9pm issue worse. This graph shows the the mean draw per charger over the course of a day during Winter 2022. In other words, for every charger on the network this is the expected load it would add at that time of day. Simply put, smart vs non-smart charging points do not address the issue. We also need retailers, EDB and Transpower to make sure price signals are clear and respondable for those who are controlling the EV charge points.

3	**Do you agree that smart charging can support network infrastructure needs, and in turn realise benefits for end consumers?**

We agree that smart charge points will support network infrastructure needs, and in turn realise benefits for end consumers. However, smart charge points will need to respond to clear market signals to make a real difference.

By way of example, we provide you with some information about the Resi-Flex Trial relating to EV charging.

Over the last couple of years, the Resi-Flex project which is a partnership between Orion and Wellington Electricity (we*) have been exploring residential demand-side flexibility. The aim is to incentivise flexibility for residential consumers by exploring commercial mechanisms, in collaboration with flexibility stakeholders. Octopus Energy was selected as the first Resi-Flex implementation partner. The trials involve testing multiple commercial mechanisms alongside Octopus' existing managed EV charging service. The commercial model being tested involves retailers/ aggregators receiving discounted lines charges for managing their customers' flexible devices (for example EV charging), whether it is used or not.[6]

The Resi-Flex project will release findings later this year.

4	**What are your views on whether the supply of chargers in New Zealand would move to predominantly smart charging without regulation?**

Orion supports regulation. We are concerned if the Government does not regulate for smart charge points now, we will essentially "miss the boat" in terms of transitioning to smart charge points at the pace required for keeping infrastructure costs down and meeting Aotearoa New Zealand's decarbonisation goals.

Consequently, without regulation, if there is a supply of cheaper non-smart charge units this will no doubt appeal to charge unit purchasers. (Portable 3-pin charge units are excluded from this proposal and are likely to remain the predominant method due to cost.)

We also think it is important for the Government to regulate the minimum functionality relating to communication, interoperability, safety, cyber-security and measurement necessary for smart charging points to provide flexibility.

5	**Do you have any comments on the availability of private EV charging for varying demographics, for example, homeowners versus renters?**

[6] See Orion Wellington Electricity - Incentising flexibility with Resi-Flex 2025

We note the comment in the Flex Forum Insight that

> "*Lots of people live in apartments and find it difficult to identify practical options to provide and use shared, [but] private charging infrastructure. The challenges include physical wiring, the communal location of the charging infrastructure and the potential for a mis-match in the interests and willingness to incur costs between the provider and the users. Residents, tenants, landlords and body corporates need a reference for how they can easily provide, manage and use shared, private charging infrastructure and realise the benefits and rewards of flexible charging*."

Unless the Government regulates to require all home/residential building owners to install smart EV charging points, there are going to be difficulties for renters and apartment dwellers etc to access private EV charging points. We do not envisage the Government taking such a step at this time. However, officials may want to give further consideration to the installation of poleside charging points which are starting to be rolled out in Australia.[7] There may be a number of regulatory issues to resolve if the Government proceeds with a poleside charging point approach.

6 **Is there any other relevant context, such as industry developments or international practice that we should consider?**

As referenced above, we refer you to the FlexForum Insight "*Actions to make flexible electric vehicle charging an easy and obvious choice for households and businesses"*.

We refer to the submission of Electricity Networks Aotearoa and its answer to question 6.

We also note that we have installed more than 600 LV monitors across our network to gain better visibility of our LV network. LV monitoring provides us with real time usage at street level and enables us to respond to changes in network usage and plan our future strategies for the development of the LV system. As more customers adopt technologies such as EVs, and as more multi-unit housing intensification occurs, these street-level LV systems may experience increasing levels of constraint which is likely to lead to investment need.

7 **What cybersecurity risks do you see with greater uptake of smart EV chargers?**

We see a number of cybersecurity risks and we refer you to a paper titled "*Cyber Security of Electric Vehicle Charging Infrastructure: Open Issues and Recommendations*" presented to the 2022 IEEE International Conference on Big Data.[8] The article outlines numerous security

[7] This recent article https://www.abc.net.au/news/2025-05-14/ev-charging-stations-on-power-poles/105089316 provides a first look at the issues associated with poleside charging points.
[8] Authors are Inna Skarga-Bandurova, Igor Kotsiuba, and Tetiana Biloborodova.

issues including -

- MITM - a form of eavesdropping, where communication between two users is monitored and/or modified by an unauthorised party.
- DoS – an attacker prevents a legitimate user from using services, e.g., deprives the customer of charging the EV.
- Denial-of-charge (a type of DoS in V2G system), e.g., Brokenwire - a way to wirelessly abort vehicle charging en masse from up to 47m (151ft) away.
- Malware – mostly used to penetrate a charging station network, targeting one OEM.
- Attack on two-way power flow - by hacking into charging stations, vehicles of a certain type or in a controlled region may be programmed to simultaneously demand or send power at a specific time, overloading the power grid.

We also refer you to an article by King & Wood Mallesons published on 9 July 2025 outlining cyber security risks with consumer energy resources.[9]

8. **Do you see a role for cybersecurity to be managed alongside any requirements relating to smart functionality, or should this be managed by another mechanism?**

Yes, we think the best way is to provide for cybersecurity requirements in legislation that mandates the use of smart charge points. We note that the Discussion Document refers to the requirements introduced in the UK relating to cybersecurity for EV charge points.

9 **Do you agree with the objectives? If you agree or disagree, please explain why.**

We agree with the objectives presented on page 10. However we suggest that objective one is amended to also refer to electricity retailers because for the most part they hold the direct relationship with consumers, and play a key role in this regard.

We note that the second objective refers to time of use pricing. At Orion, we include time of use pricing in our delivery prices.[10] However, whether or not our pricing is relayed to the customer is dependent on the approach of each retailer. Retailers may not necessarily respond to our pricing signals in the products they offer to customers. As mentioned above, smart charge points will need to respond to clear market signals to make a real difference.

10 **Are there any additional objectives you think we should also adopt to inform decisions on this proposal?**

[9] Article attached to submission.
[10] See https://www.oriongroup.co.nz/assets/Our-story/Pricing/Orion-schedule-of-delivery-prices-2025.pdf

We suggest adding in further objectives relating to access to data and data security.

By way of background, at Orion we have visibility over where batteries are installed on our network and connect to our network where they are companion to a distributed energy resource that is not an EV.[11] We also have visibility over changes to connections where customers wish to change the capacity to add an EV charger.[12] However, we do not have visibility over where EVs are located on our low voltage (LV) network other than where we have obtained data under bilateral agreements with organisations such as Evnex. Currently Waka Kotahi only releases suburb information where EVs are registered. More detailed information on the location of registration is needed, for example meshblock data. It would be invaluable to know where EVs are clustered on LV feeders so that we can better respond to potential network constraints.

In addition, we agree with the ENA that one of the objectives of the changes must also be data protection. Smart EV charge points collect detailed information about usage patterns, location, and behaviour, and protecting this data from unauthorised access and misuse is essential to maintain consumer trust.

Therefore, we suggest the two new objectives could be worded as follows:

- **EV owners, electricity networks and flexibility providers benefit from access to real time data** – all parties have automated access to key pieces of electricity data
- **EV owners' data is subject to data security and privacy protections** – EV owners are reassured that their data is protected and secure from unauthorised and inappropriate use.

11	**Which option do you prefer and why? Are there other options you think should be considered?**

Orion prefers option 4A, but we do note that buying a smart charge point should be considered as part of the cost of purchasing an EV.

12	**Do you agree with our assessment of the options against the objectives? If you agree or disagree, please explain why.**

Yes, we agree with the assessment of the options against the objectives.

13	**What are your views on the functionality outcomes that could be adopted?**

[11] We do not have visibility over installed batteries in our region that are not connected to our network.
[12] See https://www.oriongroup.co.nz/connections/get-connected

a. Are there any outcomes that you think should be required?

b. Do you think any functionality outcomes above should not be included, and if not why?

c. Are there any different types of requirements we need to consider for V2X chargers?

Question (a)

We suggest including a functionality outcome that relates to **safety**. The UK Regulations provide that a relevant charge point must be configured so that it will not allow a relevant person to carry out a specified operation where to do so would or may result in a risk to the health or safety of persons. The Explanatory Memorandum for the UK Regulations notes that "*There is little evidence that introducing smart functionality into EV charge points increases safety risks. However, this instrument does include a provision to help mitigate any potential risks that could occur, to ensure consumers are protected. The instrument mandates that during operation, the charge point must be setup to prevent users carrying out certain functions (such as a 'consumer override' of certain default functions), where these may result in a safety risk*."[13]

We also suggest including a functionality outcome relating to **maximising battery life**. Charging the battery to 100% whenever possible can degrade the battery over time. EV experts generally recommend keeping an EV charged between 20% and 80% for daily driving. It would be helpful if the smart charge point comes with software to prevent overcharging. Similarly, we also suggest including a functionality outcome that allows for **throttling** to manage charging speed. This means the charging rate can be changed based on grid or network conditions, potentially reducing demand during peak times.

Question (b)

We note that you have not included randomisation as a functionality outcome. We note that randomisation will **not** solve issues with grid or network constraints if a substantial number of charge points come back on line as they will all be on after the random period. Randomisation of more than a few minutes is undesirable from a customer's point of view e.g. charging from own solar which can fluctuate with clouds; if 70% of a half hour has fluctuating cloud and charging is delayed by 5 minutes each time there could be no charging in that period. Randomisation of less than a few minutes could have some benefit with high EV penetration in terms of voltage/frequency drop.

Question (c)

In terms of different requirements for V2X charge points, more data and functionality options will be important i.e. charge, hold, discharge. The segment of customers choosing V2X are likely to want to engage with the power system (otherwise would simply opt for Vehicle to Load) so standardisation/interoperability is the key. (We note that

[13] See https://www.legislation.gov.uk/uksi/2021/1467/pdfs/uksiem_20211467_en.pdf

standardisation/interoperability is not unique to V2X.)

14 **Do you think there is a case for voluntary or mandatory labelling of EV chargers, and why or why not?**

a. If you support labelling, what content do you think should be incorporated in the label?

Orion supports mandatory labelling. For owners new to EV ownership, there is a steep learning curve getting used to the vehicle and its charging requirements. Clear labelling on the smart charge point will be helpful. As is indicated further on in the Discussion Document mandatory labelling will likely create a level playing field across all EV charge points meaning that consumers can more easily compare everything available on the market.

We also support the submission of the ENA where the ENA provides comment on what the labelling should contain.

15 **What types of chargers should your preferred option be applied to? For instance, if you think different types of chargers (for example public vs private, or chargers smaller or larger than 2.4kW) should be subject to different parts of your preferred option, please explain.**

We do not support a requirement for public charge points to be "smart". The public want to be able to drive to a public charging point, use the charging point and then continue with their journey.

Our position is that if the charge point is fixed at a property and requires an electrician to install the charge point, then the charge point should be "smart". We do not support regulating "portable charge points" because it will be difficult to provide incentives to portable charge points as the incentives link to whatever ICP the portable charge point is connected to.

16 **Do you agree with our assessment of the scope against the objectives? If you agree or disagree, please explain why.**

We agree with the assessment of the scope against the options as set out on page 15 of the Discussion Document. However, we think that the assessment that "*Smart requirements for home chargers improve customer experience, and public charging behaviour could be impacted by managed charging*" should be changed to read "*Smart requirements for home chargers improve customer experience, and public charging behaviour* ***would*** *be impacted by managed charging*". We think it's highly likely that public charging will be affected if public smart charge points are mandated.

17	**If you agree with option four – requiring EV chargers to be smart:** **a. What types of chargers should the requirements apply to? For example, should there be a minimum or maximum size?** **b. Is there a case to regulate public chargers as well as private, and what are the risks of including or excluding public chargers?**

Question (a)

Noting our comments above where we exclude portable charge points, the requirements should apply to all fixed AC charge points greater than 3.6kW.

Question (b)

As with our answer above, our position is that the Government should not regulate public charge points at this time by requiring them to be smart.

18	**18. Do you agree with our assessment of the costs and benefits of each option?**

Option 1

We do not agree with the assessment of this option in totality. While electricity costs will increase for the next few years to cover the costs of infrastructure investment, it is likely that costs will level off. As noted by Te Waihanga in the Draft National Infrastructure Plan

> "*Meeting our legislated net-zero carbon emissions goals will require a meaningful uplift in electricity investment over the next 30 years. This will include a need for new electricity generation, transmission, distribution, and 'firming' generation to supplement variable renewables like wind and solar. … Most of this investment is front-loaded in the next 10 to 15 years; however, we will also have to account for added renewal spending in the second half of the forecast period*".

However, there will be savings on fossil fuel costs with a shift to EVs.

Option 4

We agree with this assessment, but note our comment above that buying a smart charge point should be considered as part of the cost of purchasing an EV.

19	**Are there any impacts you believe we should consider that are not covered?**

We refer to the ENA submission which notes that

- As the market transitions to smart charging, non-compliant devices may be decommissioned, raising questions around secure disposal, recycling, or potential repurposing.
- The introduction of smart functionality will require upskilling of electrical contractors and installers.

20 **Are there any unintended consequences on the market for EV chargers or wider EV market you think we haven't considered?**

Regulation to require smart EV charge points is only part of the message and a key aspect of requiring smart charging points will also be the accompanying messaging to New Zealanders that "everyone saves if EV charging is managed". Smart on its own is not the complete answer to supporting network infrastructure needs, and realisation of benefits for end consumers.

21 **How do you see the proposal affecting different people and groups (e.g., business users, manufacturers, consumers)?**

We refer to the submission of the ENA and the table setting out the benefits, and costs/risks of various groups.

22 **Do you have and feedback on the next steps for this proposal?**

We note that the EEC Act will need to be amended before a requirement for smart charge points can be promulgated. We do not see the need for a further consultation period on amendments to the EEC Act before it is introduced into Parliament. Our view is that the Government should proceed as soon as possible with these amendments, and interested parties will be able to make a submission at Select Committee on the amendments.

We note that one of the amendments to the ECC Act includes streamlining the regulation making process so that once Cabinet has decided to regulate a certain product, EECA can draft technical requirements for approval by the Minister for Energy. We agree with this proposal but we would like to have an opportunity to comment on the draft technical amendments before they are approved by the Minister for Energy.

23 **Do you have any comments on implementation or a transition period for potential regulations?**

We note that the Discussion Document states that there is a transitional period of at least six months before any new requirements can come into force, as per New Zealand's World Trade Organisation obligations.

The UK Smart Charge Point Regulations had a 6-month transitional period between the making of the regulations and the coming into force of the regulations.

We agree with a 6-month transitional period.