

ORION SUBMISSION ON SPECIFIC QUESTIONS FROM CHARGING OUR FUTURE: A DRAFT LONG-TERM ELECTRIC VEHICLE CHARGING STRATEGY FOR AOTEAROA NEW ZEALAND

Q1 -Do you have any comments about the institutional arrangements for implementation set out in Annex 2, or on the way central government should work with the private sector when implementing the final version?

In our view, a new statutory Crown entity is the preferable approach. EECA provides a good example of an appropriate model.

Q2- If there are any drivers missing what are they and what impact do you think they would have on the content of the final strategy? (See pages 7-8 of the Discussion Document)

We agree with the drivers that are set out on pages 7 and 8 of the Discussion Document. However, we think there are some drivers that are missing or not sufficiently covered by the drivers already identified.

The second to last bullet point states that *“to continue to promote EV adoption, EV chargers should be convenient, accessible and safe”*. We submit that they should also be affordable and reliable. Expressly acknowledging these drivers will not impact the strategy as they are incorporated within the proposed Vision.

We also think two interrelated drivers need to be acknowledged as follows:

- the management of the electricity system; and
- the need for EVs to be integrated into the electricity system in a smart and flexible way.

The greater the number of EVs, the greater demand on the electricity system. Furthermore, integration of EVs in a smart and flexible way will help ensure the electricity system meets customers’ needs in a cost effective and sustainable way, as well as assist with the management of the electricity system.

Again, expressly acknowledging these drivers will not impact the strategy as they are provided for in the Vision.

We also suggest that another driver for this strategy is the need to support customer education on switching to EVs and charging them in the most efficient way. The Discussion Document acknowledges the public’s current enthusiasm for EVs and its desire to continue the momentum in the public’s enthusiasm. We think educating the public about the most efficient way to charge EVs will enhance their experience and contribute to this momentum.

Q3 -Do you agree with this description of the status quo? Is anything missing from this description of the status quo? (See pages 9-11 of the Discussion Document)

Yes, we largely agree with this description of the status quo. Although we make the point that it is difficult to know where EVs are charging (apart from the public sites that require a connection). We have no immediate knowledge of 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.

We submitted on EECA's proposal to regulate EV chargers and commented on the proposed specifications for "smart" chargers in New Zealand. Our submission can be found at <https://www.eeca.govt.nz/about/news-and-corporate/consultations/improving-the-performance-of-electric-vehicle-chargers/>.

The Discussion Document refers to the Government's involvement in co-funding public chargers. By way of background, Orion has had a role in seeding the local EV charger market. We did this to help overcome initial range anxiety in central Canterbury.

Our charger rollout programme began in 2016 and we installed around 30 chargers, of differing kW size, in public sites. We also worked with ChargeNet to install a number of other chargers including those that cover State Highway 73 across to the West Coast.

When other players began to enter the local market we considered there was no longer a pressing reason for Orion to continue on with its charger rollout programme as our initial "seeding the market" activity had been successful. We stopped our charger rollout program in 2019.

We currently have 16 chargers at Orion's offices at 565 Wairakei Road in Burnside, Christchurch, in support of electrification of our vehicle fleet.

As far as we are aware, there are no 300kW chargers in the South Island.

Q4- Do you think this draft vision serves as a useful guide for the EV Charging Strategy? If not, what is missing from the vision? (See page 13 of the Discussion Document)

Yes, we broadly agree with this Vision. However, we ask that there is recognition of smart technology and innovative development. A smart energy system is one that will be able to manage demand and provide a better service for New Zealanders. At this stage, we do not think that is adequately captured by words "secure" and "reliable". We submit that this could be recognised by simply adding in the word "smart".

This suggestion would mean that the Vision would read as follows:

*Our vision: Aotearoa's EV charging infrastructure supports the transition to and use of low-emissions transport by being accessible, affordable, convenient, secure, **smart** and reliable.*

Q5 - Do you agree with the proposed outcomes? If not please explain why

Yes, we agree with the proposed outcomes.

Q6 -Should the final strategy focus on more or different outcomes? If so please identify what these outcomes should be.

In our view, there is room for an additional outcome relating to new jobs and growth opportunities. Developing Aotearoa's EV Charging Infrastructure presents important growth opportunities for this country.

In terms of new jobs, we refer to the recent report from the Boston Consulting Group *The Future is Electric A Decarbonisation Roadmap for New Zealand's Electricity Sector*. That report refers to estimates by Contact Energy that a more renewable based energy market could support 350 new permanent jobs and 7,500 construction jobs over the next 10 years.¹ The Boston Consulting Group also notes that the skills and composition of those employed within the sector will also change as the technologies deployed across the system vary and the functions of various participants within the system change. There is going to be a growing need, amongst other things, for construction managers and EV infrastructure engineers.

The International Energy Agency recently released its report *New Zealand 2023 Energy Policy Review*. This report also noted that

*"To advance energy efficiency strategies, the government should ensure sufficient capacity and skills to deliver on projects. As in other countries, the scale of upcoming energy efficiency upgrades to meet decarbonisation plans will require a significant expansion of skilled workers across the sector. As the government pursues a new NZECS and decides on budgetary outlays, specialty skills training in the energy efficiency space should be given due consideration."*²

The potential for new jobs and growth opportunities was also recognised by the United Kingdom in *"Taking charge: the electric vehicle infrastructure strategy"*.³

¹ See page 197 and also Contact Energy's report *"Crafting a path for New Zealand's 100% renewable electricity market"*, p 12.

² See <https://iea.blob.core.windows.net/assets/124ce0b0-b74e-4156-960b-bba1693ba13f/NewZealand2023.pdf>, page 63.

³ See <https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy>

Q7 - Do you consider any of these outcomes more important than the others? If so, which one(s) and why? (See pages 14 and 15 of the Discussion Document)

Orion does not consider that any of these outcomes are more important than the others.

Q8 - Outcome 1, Do you agree with the focus area under outcome 1? (See pages 16 and 17 of the Discussion Document)

Outcome 1 is that our national EV charging system is underpinned by affordable, reliable, secure and safe power supply and infrastructure. Focus Area 1a is minimising the stress on the electricity network.

We agree with focus area 1a. Minimising the stress on the electricity network is extremely important. For our planning purposes, we are anticipating that around 85% to 90% of EV charging will occur at home in our network area, and the vast majority of this will be off-street charging. When drivers will charge their EVs at home is a critical factor in estimating the impact of EVs on our network. Electricity networks worldwide are anticipating a significant portion of EVs will charge up in the early evening when drivers get home from work. However, the data we have demonstrates that the majority of owners are charging their EVs after 9pm. Consequently, we have a different perspective, based on the latest information coming through from international and New Zealand sources. Through clever pricing, education, and flexibility offerings in collaboration with the sector, we believe we can encourage most EV drivers to charge up overnight (in the trough of the existing demand profile). We believe that this will significantly reduce the effect of EVs adding to our network peak demand and optimise infrastructure investment, but care will be needed to avoid creating new peaks on the low voltage network.

We have been looking at different ways we can achieve this.⁴ For example, we have initiated and partnered with Wellington Electricity on an innovative project called Resi-flex, to explore ways to encourage 'flexibility' from residential consumers, through commercial mechanisms with flexibility suppliers (such as retailers and aggregators). Consumer research and flexibility stakeholder engagement through the project has reinforced the importance of consumer education, choice, and ease of use to maximise participation in flexibility. This year we expect to partner with flexibility suppliers to trial various commercial mechanisms and customer offerings, such as 'smart' tariffs to assess how effectively we can minimise stress on the electricity network, while meeting

⁴ In our response to the [Market Development Advisory Group Options Paper](#) on Price Discovery in a Renewables-based Electricity System, we commented on the need for innovation funding to enable collaborative exploration and co-design of solutions before standardising approaches and scaling successful solutions. We recognise the value of the FlexForum and ENA in driving progress across electricity networks and the energy sector through the identification of priority issues and coordination of action, such as the FlexForum's [Flexibility](#) Plan. As well as seeking to minimise stress on the electricity network, these groups are taking a customer-centric approach and aiming to maximise the value of distributed energy resources (including electric vehicles) to homes, businesses, and the wider energy system.

consumer's needs.

With respect to the discussion under focus area 1a, we found the way in which the Discussion Document sets out current work and further actions somewhat confusing. Are these acknowledged actions that will contribute to giving effect to the strategy? If yes, then our submission is that these should be recognised specifically as such. We comment on those acknowledged current projects in any event.

With respect to the acknowledged current projects under focus area 1a, we look forward to the Government decisions on MBIE's proposals to enhance the regulatory regime for energy efficient products. EECA first commissioned a review of the Energy Efficiency (Energy Using Products) Regulations 2002 in 2019. The Cabinet paper accompanying the Government's decision to begin consultation on energy efficient products and services noted several benefits if changes are made to the regulations such as improved energy efficiency and the end-use of our renewable electricity supply, as well as reduced overall energy costs. Consultation was completed in 2021 and we keenly await the outcome of that consultation.

This discussion also refers to EECA's current work on improving the energy performance of private EV chargers. As mentioned above, Orion made a submission on the discussion document for this consultation in 2022 and we also keenly await the outcome of this consultation. This works needs to be completed if our EV charging infrastructure is going to be reliable and safe.⁵

The third aspect of this focus area refers to the Electricity Authority's work in overseeing the regulatory settings for distribution networks, including exploring settings to facilitate a network of distributed energy resources, including smart chargers. This aspect also refers to the Authority promoting the idea of a separate load control tariff for EV chargers to help encourage consumers away from charging during peak demand.

The Electricity Authority, in its Distribution Pricing: Practice Note Second Edition v 2.2, 2022 has scoped what a good pricing evolution will look like. This includes scenarios with increasing EV charging, and various possible price signals. However, we note that for the most part, electricity distribution companies deal directly with energy retailers, and we do not (nor are we able to) control how energy retailers present or pass on our charges to their customers.

In any event, for us to have a specific load control tariff we need data to forecast the tariff. We are working in a window period in our Time of Use pricing to encourage consumers away from charging at peak (however we are technology agnostic in our approach). Furthermore, we prefer a pricing approach that provides incentive for all load (EVs and other) to move to a time of day that adds least impact to network peak. This provides all customers (with and without capital for new

⁵ Also see <https://www.nytimes.com/2023/05/08/business/energy-environment/norway-electric-vehicles.html> "In Norway, the Electric Vehicle Future has Already Arrived" by Jack Ewing

technology) with viable choices for reducing their overall energy cost

In terms of the Electricity Authority's exploration of settings to facilitate a network of distributed energy resources, including smart chargers, we are currently awaiting the outcome of the Authority's recent consultation on these matters. We made a submission on the issues paper and you can find a copy of our submission at

<https://www.oriongroup.co.nz/corporate/submissions/electricity-authority-submissions/>

The Discussion Document refers to the regulation of EDBs by the Commerce Commission. The Commerce Commission uses information disclosure regulation to measure our performance annually, and we must disclose our pricing methodology under the information disclosure requirements. However, we note that while the Commerce Commission oversees economic regulation, as far as we are aware, they are not looking specifically at EV charging infrastructure systems. If regulated businesses identify constraints due to EV chargers and subsequently need to build additional capacity (i.e. are seeking investment funding for this), then this would be forecast in their asset management plans used to determine regulatory resets.

Under section 54Q of the Commerce Act 1986, the Commerce Commission "*must promote incentives, and must avoid imposing disincentives, for suppliers of electricity lines services to invest in energy efficiency and demand side management, and to reduce energy losses, when applying this Part in relation to electricity lines services.*" There is perhaps an implicit link to promoting EV charging infrastructure through this requirement but we are not aware of an explicit link between the current work of the Commerce Commission and EV charging infrastructure.

One aspect which the draft strategy does not refer to is that EV charging infrastructure should provide for the potential to improve system security through load shedding capabilities and support resilience endeavours (once Vehicle to Grid becomes more mainstream). At a minimum, public charging infrastructure should provide for this in the interests of system security. This will provide another tool in the toolbox to minimise the stress on the electricity network and optimise system investment.

Q9- Outcome 1, Which further actions under focus area 1a would you prioritise? (See pages 16 and 17 of the Discussion Document)

We would prioritise these further actions:

- Use vehicle and electricity supply data to identify and plan for electricity network requirements (i.e. avoid inefficient network upgrades).
- Publish detailed electricity network capacity data so public and private infrastructure planners can see where constraints are to encourage efficient investment.
- Promote the benefits and support the uptake of smart chargers for EVs.

- Work with lines companies to identify opportunities, mitigate risks, and clarify responsibilities in developing EV charging infrastructure.

As noted above, we recently submitted on the Electricity Authority's consultation on "*Updating the Regulatory Settings for Distribution Networks*". As a part of that consultation process the Authority is considering equal access to data and information. The Authority looked at three data needs of distributors being

- Historical non-aggregated ICP-level consumption data and power quality data
- Visibility of location, size, and functionality of (non-exporting Distributed Energy Resources ("DER") installed in LV networks)
- Real-time non-aggregated consumption data and Power Quality Data.

Our position is that in order to be able to plan and build for network resilience, we need access to this data, including EV charger identification. In particular, we think access to real time smart meter data and improved DER visibility needs to be given a higher priority by the Electricity Authority. The more visibility distributors have on their network about congestion and power quality, the better they can forecast and market signal for planning of flexibility services, replacement, renewal, and system growth.

(By way of background, over the past four years Orion has worked in collaboration with, and commissioned various studies from, EPECentre at the University of Canterbury to forecast the potential impact of electric vehicles and residential batteries on our low voltage network, down to street level. The studies focussed on residential areas which were more likely to experience residential infill and EV clustering. The results from this work enabled us to identify LV feeders which will be most vulnerable to load changes arising from the adoption of EVs and residential batteries.⁶ Our EV modelling to date indicates most of our low voltage network has sufficient capacity to meet demand in the short to medium term. In the longer term, as EV adoption increases, our region's population grows and housing intensification increases, reinforcing our network will be required.)

We think it is very important that detailed electricity network capacity data is published so public and private infrastructure planners can see where constraints are to encourage efficient investment. At Orion we publish our load growth map which can be found at <https://www.oriongroup.co.nz/your-energy-future/load-growth-map> . The map on this webpage map shows the respective load growth capacity within Orion's network for 2024.

We also think that it is imperative that the government works with lines companies to identify

⁶ A summary of the constraints identified are shown in Figure 5.6.8 of our Asset Management Plan 2023-24 at <https://www.oriongroup.co.nz/assets/Our-story/Publications/Orion-AMP-2023.pdf>

opportunities, mitigate risks, and clarify responsibilities in developing EV charging infrastructure. Collaboration with the transport sector is also very important.⁷

Q10 - Outcome 1, Please provide any comments on the timing of completing these actions. (See pages 16 and 17 of the Discussion Document)

We note that the draft strategy does not set out any timings for the different aspects that it refers to under focus area 1a or the further actions. However, we urge Cabinet to consider the MBIE proposals on enhancing energy efficient products and services as soon as possible. Reform in this area has been contemplated for at least 4 years and there is no reason to delay making decisions on the MBIE proposals.

We also urge EECA to make decisions on improving the energy performance of private EV chargers as soon as possible. As we noted in our submission to EECA, there is a significant risk that “doing nothing” in relation to the regulation of EV chargers will lead to the development of charging habits that will be difficult to change, as well as the installation of poor-quality ‘dumb’ wall mounted chargers. Similarly, delaying making decisions on the matters outlined in the EECA discussion document could also lead to the same sorts of issues in the short to medium term. As soon as possible, we want to see Aotearoa New Zealand focus on smart EV chargers which will minimise the impact of charging on the electricity system and ultimately constrain costs to the broader consumer base (thereby supporting equity).

In terms of the Commerce Commission, the current default price quality path for electricity distribution businesses (DPP3) is due to expire on 31 March 2025 and the Commerce Commission must decide on the next default price-quality path to apply (DPP4) by 30 November 2024. The Commission are also currently reviewing the Input Methodologies (IMs) and the current IM review is due for completion in December 2023.

With respect to prioritisation of the further actions that we support, our submission is that these need to be given priority as soon as possible, particularly with respect to smart EV chargers. We would like to highlight the urgency of access to both smart meter data and EV uptake data. As uptake of EVs accelerates, the risk of unidentified clusters of EV chargers causing issues on the LV network escalates.

Q11- Outcome 2, Do you agree with the focus areas under outcome 2? If not, please explain why. (See pages 18 to 22 of the Discussion Document)

Outcome 2 is that all EV users can safely access and use EV charging when and where needed. Again, we would like to see the specific actions Te Manatū Waka - Ministry of Transport is proposing to achieve Outcome 2.

⁷ Orion is a member of Drive Electric – see <https://driveelectric.org.nz/about/>

We agree with focus areas 2a (improving the equity of, and access to, safe residential/home charging and 2b (accommodating for geographic variation in charging needs and energy supply).

In terms of focus area 2a, it is not immediately clear to us what types of action are contemplated. The Discussion Document references *“support for more inclusive and equitable residential charging is needed if we are to realise our vision for a safe, affordable, accessible and practical EV charging system for all EV users.”* However, we do think this will need to be linked to the Equitable Transitions Strategy that the Government is currently working on.

In terms of focus area 2b, we agree with the comment in the Discussion Document that access to convenient charging points is essential to ensure that rural communities benefit from the transition to EVs, both for local and visiting EV drivers.

We note that in your analysis of focus area 2b, you state that *“on average, rural areas tend to have less robust electrical infrastructure, which can affect the speed and volume of chargers available. Electricity supply upgrades are expensive, and there are often a lack of other sources of electricity demand in the area to support the investment.”* We agree with this comment. Specifically, rural communities are less meshed than urban environments. They have fewer alternative electricity feeds and can suffer from more voltage drop where feeds are long and point load is at the end.

We agree that *“Vehicle-to-load technology – the ability of some electric vehicles to sell demand response services to the electricity grid including by offering electricity generation – could offer resilience to households and electricity networks, including in rural areas. Distributed generation, e.g. small scale solar, wind, or micro-hydro generation, could support the improvement of electricity supply to charge EVs in rural areas.”* However, we do think this needs some further clarification as to whether this is vehicle-to-load or vehicle-to-grid. We note that broad term to capture both, and other variations, is vehicle-to-X.⁸

One thing we would like to point out is that given that outcome 2 is that all EV users can safely access and use EV charging **when and where needed**, we think there does need to be a focus area in relation to charging points at workplaces. While we agree that for the most part charging will take place at home or in associated residential areas, there will need to be charging points at workplaces. Workplace vehicle fleets will need to be charged at work and this needs to be properly accounted for in the strategy. They may also need to be other accommodation for charging work fleets – such as at parking building facilities and the like. This will need to be considered as the customer journey, challenges and solutions will be different across these charging segments.

⁸ Vehicle-to-load (V2L) is a feature that enables an electric vehicle to provide regular AC power to appliances or loads such as lights, laptops, TVs or a refrigerator. Vehicle-to-grid (V2G) technology requires an additional, more advanced bidirectional charger in order to feed electricity back to the grid.

Q12- Outcome 2. Which further actions under Focus areas 2a and 2b would you prioritise? Please explain your answer. (See pages 18 to 22 of the Discussion Document)

Under focus area 2a, we would prioritise improving our understanding of the issues for access to chargers at home, using data and evidence. This will require access to data in accordance with our comments on focus area 1a. You may find helpful “*Public Electric Vehicle Charging Infrastructure Deliberative and quantitative research with drivers without access to off-street parking*” which is a research report prepared for the United Kingdom Department of Transport in February 2022.⁹

We also note that one of the further actions under focus area 2a is to ensure policies and interventions target an equitable transition to meet the specific needs of different communities. This may mean targeted government investment or intervention where gaps are identified in market provision. In our view this isn’t a further action, this is one of the main aspects of focus area 2a.

The list of further actions also refers to reviewing current regulations relating to residential EV charging to ensure they remain fit for purpose. We are not sure which regulations are being referred to and we think this further action would benefit from further clarification. However, if this is a reference to the Electricity (Safety) Regulations 2010, then again, we don’t think is a further action, we think this is one of the main actions to achieve this outcome. Furthermore, reviewing the Electricity (Safety) Regulations 2010 to cover the safety needs associated with charging EVs is an action for delivery under Aotearoa New Zealand’s first emissions reduction plan.¹⁰

In terms of the further actions under focus area 2b, Orion support prioritising these actions:

- Monitor the expansion of the public EV charging network in line with EV uptake forecast levels across regions to inform investment.
- Provide additional government support (financial or otherwise) to assist the planning and installation of public charging infrastructure that specifically meets the needs of rural communities.
- Support vehicle-to-load technologies that increase resilience of the energy system and for consumers.¹¹
- Investigate the role of stationary battery storage and other charging innovations for rural locations. These measures can help to address seasonal EV charging demand peaks in more remote tourist areas and/or provide a lower-cost option for those areas facing costly electricity network upgrades due to regional energy supply barriers.

⁹ See

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061865/public-ev-charging-infrastructure-research-report.pdf

¹⁰ See Action 10.2.3.

¹¹ We refer to our comment above about confirming whether this is vehicle-to-load or vehicle-to-grid.

Monitoring the expansion of public EV charging network goes without saying, and it does not need to be a further proposed action. It will be a measure of the effectiveness of the strategy. However, we agree that this information will be key to informing investment decisions.

We strongly support the provision of additional government support to assist the planning and installation of public charging infrastructure. We acknowledge that the Government has co-funded EV chargers through the Low Emission Vehicles Contestable Fund and continues to fund initiatives through the Low Emission Transport Fund. However, we don't necessarily agree that it should only be limited to rural communities. (Although the term "rural community" is not defined in the document¹² and as we stated above rural communities are less meshed than urban environments thereby having fewer alternative electricity feeds.

We reiterate that we think one priority must be to support vehicle-to-load technologies that increase resilience to the grid and distribution networks. Our understanding is that vehicle-to-load technology is progressing now in New Zealand. However, vehicle-to-grid is not likely to take off in Aotearoa New Zealand in the medium term due to ASNZ standard restrictions.¹³ In any event vehicle-to-load further supports focus area 1a – minimising stress on the electricity network.

We also think another priority is investigating the role of stationary battery storage and other charging innovations for rural and other targeted locations. You will be aware that for Springs Junction, Meridian is deploying a Battery Energy Storage System (BESS) that makes use of recycled batteries from electric vehicles. The BESS will charge overnight to supply energy to the chargers during the day.¹⁴ We suggest that stationary battery storage and other related innovations need to be done in close collaboration with electricity distribution networks and other parties in the value chain. This will ensure that a range of solutions are considered, and investments are optimised to support the energy system, not just one party.

**Q13 -Outcome 2. Please provide any comments on the timing of completing these actions.
(See pages 18 to 22 of the Discussion Document)**

No comment.

¹² We define "rural" as meaning a circuit, or a section of a circuit, installed in a ruralised area where the average HV span length is approximately 70 - 80 metres, and does not include those circuits located in remote and/or rugged areas

¹³ We understand that there are only two vehicle-to-grid charging units in the South Island.

¹⁴ See <https://www.stuff.co.nz/national/politics/129235228/batterypowered-ev-fast-charging-at-springs-junction-first-of-its-kind> Springs Junction is supplied by the 80km-long Maruia distribution line, which does not have sufficient capacity to supply additional rapid EV charging loads during the day. Springs Junction is served by a single 11kV line that is close to its full capacity.

Q14 -Outcome 2. Are there any actions needed to reflect the particular EV charging needs of disabled communities, Māori, or other groups? Please explain your answer. (See pages 18 to 22 of the Discussion Document)

No comment.

Q15- Outcome 2. Please provide any comments relating to targets for EV charging infrastructure. (See pages 18 to 22 of the Discussion Document)

Orion supports targets for EV charging points, and supports further research being undertaken on regional requirements, including consultation with groups and individual in regional New Zealand, to inform targets and approaches to deployment across the country.

The target proposed for urban and suburban areas will need to be carefully thought through. The Discussion Document states that in urban areas with limited off-street parking (referring to central Auckland and central Wellington) we could aim to have one public charger for every 20-40 EVs. However, we make the point that quite often areas with limited off-street parking also have limited on-street parking and limited public areas. For example, steep hilly areas in Christchurch are not necessarily amendable to installing public charging points.

However, as electrification of the transport system is a key lever for meeting NZ's net zero ambitions it may be inevitable that some government funding or support will be needed particularly where investment ahead of demand is enabling to unlock benefits. We provide some more comments on distribution upgrades later on in this submission. We note that this is one of the further actions proposed under focus area 2b where it refers to supporting rural communities.

As the Discussion Document points out, it will require a collaborative approach to inform regional investment.

In Canterbury we would want to work with the charging point providers to make sure that our network is able to support new connections. As noted in the United Kingdom's electric vehicle infrastructure strategy¹⁵

Where people charge also impacts the costs of installing chargepoints and of reinforcing the electricity network to manage the increased demand, at either a national or a local level. For example, several rapid charging points in a single "hub" location may require one large upgrade to the high voltage network. Servicing a similar number of on-street chargers might require a larger number of smaller connections to the low voltage network."

¹⁵ See HM Government *Taking Charge: the electric vehicle infrastructure strategy*, page 122

Q16- Outcome 3. Do you agree with the focus areas under outcome 3? If not, please explain why. (See pages 23 to 25 of the Discussion Document)

Outcome 3 states that Aotearoa's EV charging system is underpinned by integrated and streamlined cross-sectoral planning and standards. We agree with this outcome.

There are three focus areas.

Focus area 3a is improving standardisation and interoperability. We agree with focus area 3a and ask that this is given priority in relation to payment systems and smart chargers. We do not see any benefits in delaying decisions on these matters. We again refer to our detailed comments on the ECCA discussion document in 2022 considering private EV chargers.

We note your comments about considerations for local government on page 24 of the Discussion Document. The draft strategy refers to "*national level guidance may be necessary to ensure consistency in charging networks while still accommodating diversity in local charging needs and behaviours*". The document also says that local authorities may need support in achieving the right solutions for their local area. It is not immediately clear to us what this might entail. However, we note that guidance alone may not be sufficient.

There may need to be legislative amendments to the Local Government Act 1974, and in particular Part 21 (for example section 334), as well as Land Transport Rules to allow for the efficient construction of public charging points in the road corridor.

We note that last year Waka Kotahi consulted on "Reshaping Streets".¹⁶ Decisions following this consultation have not yet been released. The Consultation document proposed a variety of changes including a collection of proposed changes to legislation, including land transport rules. These changes focused on how local authorities could make changes to streets to support public transport, active travel, and placemaking. This proposed some changes to the Local Government Act 1974 and a new Land Transport Rule.

In terms of authorising EV charging points on roads¹⁷, we are interested to know the Ministry's views on how these changes will be given effect to. For example, will they be authorised under a local authority bylaw made under section 22AB(1)(o) of the Land Transport Act 1998 (parking restrictions) or section 334 of the Local Government Act 1974 or a new Land Transport Rule? This does need to be properly thought through. If the legal authority for this type of infrastructure located on the road corridor is not clearly established, it will create delays in the future as these issues are worked through.

Focus area 3b provides for optimising data capture and use. We strongly agree with this focus area.

¹⁶ See <https://www.nzta.govt.nz/about-us/consultations/archive/reshaping-streets-consultation/>

¹⁷ We note that road is widely defined under section 315 of the Local Government Act 1974 and section 2 of the Land Transport Act 1998.

Q17- Outcome 3. Which further actions under Focus areas 3a, 3b, and 3c would you prioritise? Please explain your answer. (See pages 23 to 25 of the Discussion Document)

In terms of focus area 3a, we would prioritise these further actions:

- Promote national consistency and reliability of service and a customer centric approach to EV charging.
- Support and enable data sharing where appropriate (e.g. EV charger and/or network providers) to support standardisation and interoperability.

As with our comments on standardisations and interoperability, in our view, promoting national consistency and reliability of service will encourage more people to switch to EVs. A key part of this is adopting a customer centric approach.

We also support prioritising data sharing to assist with standardisation and interoperability.

In terms of the reference to supporting local authorities to implement the required public charging infrastructure, we think this would benefit from further clarification. What is the support that is intended? Is it financial support or something else?

We do not think that exploring policy options to ensure chargers are efficient and safe should be a further action. In our view this is one of the main actions to achieve outcome 2. As mentioned above under the further actions for outcome 2, a review of the Electricity (Safety) Regulations 2010 in relation to EV chargers is an action identified in Aotearoa New Zealand's Emissions Reduction Plan.

Further actions under focus area 3b are

- Explore the value of mandating real-time broadcasting of the location, type and availability of public chargers (e.g. through EVRoam).
- Investigate other user information the market would want EVRoam to capture, e.g. nearby services, price, etc.

We agree with these actions under focus area 3b. Up to date information gives people options about when they can charge their cars and how they can plan their days.

With respect to the further actions under focus area 3c, our view is that the first two bullet points (Explore the costs and benefits of introducing charging infrastructure requirements for new developments (residential, commercial, and industrial); and investigate potential changes to planning strategies (for local and regional councils, e.g. minimum numbers of EV parking bays in certain locations)) must be prioritised above the other actions.

The second bullet point under further actions for focus area 3c needs to be considered as part of the RMA Reforms. As part of these reforms Te Waihangā New Zealand Infrastructure Commission and the Ministry for the Environment are currently developing the first National Planning

Framework (NPF) to provide government direction on infrastructure consenting. The NPF will direct resource management decision-makers (including the proposed regional planning committees) on how they should coordinate, plan and fund infrastructure. Te Waihanga is responsible for drafting the infrastructure chapter of the NPF. The intent of the infrastructure chapter is to improve the efficiency and cost-effectiveness of infrastructure. The NPF will focus on critical infrastructure and infrastructure required for national climate change and natural hazard resilience goals.¹⁸

In our view, the infrastructure chapter of the NPF will need to include provision for EV chargers. EV chargers are essential to achieving national climate change goals.

Q18- Outcome 3. Please provide any comments on the timing of completing these actions. Type your answer here. (See pages 23 to 25 of the Discussion Document)

Our submission is that these further actions under 3a and 3b need to be completed as soon as possible. In terms of further actions under focus area 3c, we understand that the work on the Infrastructure Chapter in the NPF is proceeding at the moment.

Q19- Outcome 4. Do you agree with the focus areas under outcome 4? If not, please explain why. (See pages 26 to 28 of the Discussion Document)

Outcome 4 is that Aotearoa's EV charging market functions effectively, can adapt and evolve over time, and is attractive to users, operators and investors. We agree with this outcome. As the Discussion Document points out, charging infrastructure delivery will be achieved by a wide range of actors working together to share knowledge and best practice to drive investment in optimal charging locations and options.

Focus area 4a is accelerating commercial investment. Focus area 4b is enabling innovation in new technology and business models. Orion supports both of these focus areas, and comments on focus area 4a.

Under focus area 4a, we note that you refer to a number of current work programmes underway. For example, the work being carried out by the Electricity Authority in relation to significant first mover disadvantage issues facing customers connecting to distribution networks. We note that in an open letter from the Electricity Authority dated 19 September 2022, the Authority stated that an area of focus is electricity distributors' response to any significant first mover disadvantage (FMD) issues facing customers seeking to connect to their networks (new and expanded connections).¹⁹ The Authority went on to say that

¹⁸ See the briefing to the Incoming Minister for Infrastructure February 2023. Te Waihanga New Zealand Infrastructure Commission

¹⁹ See https://www.ea.govt.nz/documents/2631/Letter-to-distributors-re-pricing-September-2022_w2bVZa1.pdf

“The Authority expects that distributors’ pricing methodologies and/or capital contribution policies will ensure that first movers and exacerbators are generally neither advantaged nor disadvantaged compared to other customers. For connection assets, we expect that:

- *In the first instance the distributor should charge the first mover based primarily on the cost required to supply them*
- *Distributors should rebate the first mover as subsequent movers connect such that the first mover and subsequent movers end up paying a share based on their comparative needs*

We expect that distributors will consider FMD issues for upstream assets, but understand that for the 2023/24 pricing year this consideration may only feature in their roadmaps.”

EDBs do not deliberately create barriers to slow down new connections, and connections range in complexity, cost, scale, and capacity requirements. This will be the same for installing new connections for EV charging infrastructure as the connections will differ in scale and complexity. Certainly, referring to the Orion purpose of *“Powering a cleaner and brighter future with our community”*, and our focus area of facilitating decarbonisation and hosting capacity at lowest cost, we are keenly aware of the need to facilitate EV charging connections. By way of example, at Orion when a third party contacts us with a view to installing EV chargers, we work with them to help determine the best location for the chargers given electrical needs. We also regularly hold conversations with business owners seeking to install EV charging in their carparks, and work with them over options here and direct them to potential EV charger suppliers.

Our position is that it is useful for providers of EV chargers to engage with us early sharing their broader strategy so that we can partner with them informing about optimum locations for chargers that could reduce costs and timeframes for deployment.

We say more about this under Outcome 5.

The Discussion Document also refers to the Commerce Commission’s work on information disclosure. Tranche 1 which included new disclosure information provisions on network connections has been completed.²⁰ Tranche 2 is just getting underway and this will focus on possible quantitative metrics to report EDB’s speed of provision of new electricity connections. As far as we are aware, a focus on the specific type of connection is not part of the connections process consideration and disclosure. As mentioned, Tranche 2 is in relation to the time taken for new connections, but it does not refer to the specific purpose of the connection.

²⁰ See <https://comcom.govt.nz/regulated-industries/electricity-lines/projects/targeted-information-disclosure-review-for-electricity-distribution-businesses>

Q20- Outcome 4, Q2. Which further actions under Focus areas 4a and 4b would you prioritise? Type your answer here. (See pages 26 to 28 of the Discussion Document)

We would prioritise working with investors, charge point network operators and providers, and other key parties to support investment in public chargepoints, as well as data access and sharing where appropriate to accelerate commercial investment.

Q21- Outcome 4. Please provide any comments on the timing of completing these actions. Type your answer here. (See pages 26 to 28 of the Discussion Document)

Our submission is that work on these matters should start as soon as possible.

Q22- Outcome 5. Do you agree with the focus areas under outcome 5? Type your answer here. (See pages 29 to 37 of the Discussion Document)

Outcome 5 is that our national EV charging system supports the transition to, and use of, low-emissions transport modes across the wider transport system. Orion agrees with this outcome and the two focus areas under this outcome. Focus area 5a is progressing work on heavy vehicle charging (buses and trucks). And focus area 5b is decarbonising other modes across the system and ensuring a coordinated investment approach.

Work needs to progress on both of these focus areas if Aotearoa New Zealand is going to meet its climate change commitments. On page 31 of the Discussion Document, it notes that many truck depots may need to have higher capacity electricity connections installed to support the higher electricity demand from EV charging. In many cases, there may need to be upgrades to electricity distribution or transmission networks to support the additional demand too. There is further discussion of the first mover disadvantage issue that is mentioned in focus area 4a, and connections to EDB networks.

The discussion under outcome 5 in the Discussion Document further refers to First Mover Disadvantage and capital contributions. Our capital contributions policy can be found at <https://www.oriongroup.co.nz/assets/Company/Corporate-publications/CommercialTermsNewConnectionsExtensions.pdf>.

We are currently considering our approach to FMD. Top of mind are economic considerations of which the primary objective is the balance between socialisation (shallow charging) and causer pays (deep charging) in respect of the three arms of the energy trilemma- equity, sustainability and security.

We are also thinking about these types of matters

- applying price averaging over similar groups of connections, because it is not practical to single out individual connections for cost-specific delivery pricing;

- the life and future utilisation of new connections are not known, so the present value of future delivery charges cannot be calculated with certainty;
- the assets involved have very long lives and it may not be viable to lock customers into a contract over a matching period;
- network reinforcement is incremental - it is often more efficient for us to add large amounts of capacity at a time (unlocking economies of scale);
- As the network expands, existing customers should share in the benefit of greater utilisation of shared assets (and other enhanced economies of scale);
- some anticipatory capacity must be available before it is required to ensure that developments are not unduly delayed.

**Q23- Outcome 5. Which further actions under Focus area 5a or 5b would you prioritise?
Please explain your answer. (See pages 29 to 37 of the Discussion Document)**

In our view, the further action under focus area 5a being research and engagement with the sector to understand how a public journey charging network for heavy vehicles might look (based on critical freight infrastructure networks) should be prioritised. The same can be said for the further action under focus area 5b which is research the present and future systemwide charging needs for heavy vehicles, planes, trains, and ships, including opportunities for co-location of journey and destination charging.

We need to start thinking about and planning for heavy vehicle (and other types of vehicles) charging. We don't think this should be put on the backburner, simply because these types of vehicles are not yet that common. As the IEA states²¹

*Given the high construction and grid integration costs, the business case for very fast charging infrastructure of more than 350 kilowatts (kW), or even more than 1 megawatt (MW), may be uncertain, especially in the initial years of electric HDV market deployment. This uncertainty coupled with long lead times and investment requirements needed for HDV megawatt charging capacity along transport corridors are challenges. **Policies and measures to support the development of charging networks, may have an important influence in the timely roll out of charging infrastructure for EVs including HDVs. Strategic planning is required to optimise the design and development to be compatible with HDV operational needs.** Coordinated roll out will need to focus first on the most heavily used freight corridors.*

²¹ See <https://www.iea.org/reports/global-ev-outlook-2022/trends-in-electric-heavy-duty-vehicles#abstract>

Q24- Outcome 5. Please provide any comments on the timing of completing these actions. Type your answer here. (See pages 29 to 37 of the Discussion Document)

Our submission is that these two further actions need to be completed in the **next 3 years**.