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To the NSW Committee on Transport and Infrastructure

Re: Responses to questions from the committee on iMOVE's submission to the Inquiry into EV Charging Infrastructure

Thank you for the opportunity to expand on our response to your inquiry. It is encouraging to see that the committee is taking a thorough and considered approach to this important issue.

We have responded to your questions below in the order they were posed in your letter.

In your submission, you discuss the importance of flexible funding and operating models for public and private investment in EV charging infrastructure.
a. Can you provide any examples of potential suitable funding models?
b. Are there any examples from other jurisdictions you are aware of?

iMOVE anticipates that a variety of funding models will be needed to establish a distribution of EV Charging points that will adequately serve the drivers of electric vehicles in NSW.

The choice of funding model will depend on the characteristics of the location or situation. We have summarised the funding model options in the table on the next page. Links have been provided to examples of each model; some from Australia, some from overseas.

To achieve consistent determination of which model to use in each circumstance, it will be necessary to establish guidelines that can be used to evaluate individual opportunities. This is likely to be particularly important to the determination of whether, and how much, public funding should be provided. Development of such guidelines or decision-support tools is likely to require further research and calibration with NSW government policies.

Model Type	Key Features	Typical circumstance	Funding Source	Ownership/ Operation	Example Location
Direct Public Funding	Grants for chargers in priority locations	To ensure coverage in sparsely populated and/ or unprofitable areas	Government grants	Public or private operator	ACT, Australia
Local Gov. Facilitator	Uses VPP, Stobie poles, equity focus	Particularly relevant to LGA's that are hosting their own renewables projects	VPP, council funds	Council/ private/ utility	SA, Australia
Community-Owned	Local engagement, crowdfunding	May appeal to community groups or cooperatives who are already delivering other community services	Community, local gov	Community group	Europe
PPP Concession	Long-term, risk-sharing, user tariffs	Leverages private capital and expertise; incentivizes reliability and innovation. But requires careful contract design to balance public interest and private returns.	Private + public	Private partner	India, Europe
Charging as a Service	No upfront cost for host, managed service	Suited to high-traffic, profitable locations. Enables rapid scaling. Reduces risk and complexity for site hosts/ landlords	Private + public	Private company	Australia
Owner-Operator	Full control, direct revenue	May suit some existing petrol station operators	Site host, grants	Site host	US, Australia
Third-Party Operator	Lease/rent model, no host investment	May suit operators of existing refuelling franchises or large-scale carparks	Private	Private company	Australia
Flexible Concession	Based on Contracts with variable concession periods or performance-based extensions to period and scale.	Allows adaptation to market changes and technology evolution. Suited to 'start small and grow with demand situations'	Private + public	Private, flexible terms	UK

In your submission, you discuss the 'differentiated infrastructure needs' for planning. How would you identify the infrastructure needs for NSW when planning for EV charging infrastructure?

The need for EV charging infrastructure is not homogeneous. Different vehicle types, such as buses, trucks and light passenger vehicles have different needs for charging infrastructure. Similarly, the requirements for physical layout, power levels, and ancillary functions differ between vehicle types and even within some vehicle types (e.g. small vs large vs HPV trucks). Development of the NSW EV charging ecosystem will need to take into account the operational, technical and physical requirements of the various vehicle groupings. This consideration of diverse charging requirements will be required in order to design a suitable charging system across the state and to inform the investment decision for individual sites.

Some examples of the aspects that must be considered are:

Site selection: Charging facilities need to be placed at locations where there is a clear need for that type of charging facility. This will differ for different vehicle types and will depend on our understanding of vehicle movement patterns. For instance, we would expect there to be demand for high power truck recharging at convenient large footprint stopping points along key freight corridors. But at suburban shopping centres we would expect the strongest demand would be for low or medium power charging facilities built into the associated carpark. Location of chargers at well-frequented stopping spots is suggested. If movement patterns and dwell times are not already known for the various classes of vehicle, we expect they could be estimated the relevant Origin Destination (OD) data.

Physical design: The physical design of the charging facility will need to be cognizant of the space requirements for different types of vehicles, the placement of chargers to accommodate the variety of charge port locations on the vehicles, appropriate configurations (drive or pull through) to avoid the need for large vehicles to reverse.

Charging technology selection: For trucks, DC fast charging is generally preferred despite its higher cost, whereas for some car recharging cheaper, lower powered options can often be tolerated. Charging technology continues to evolve and technologies for on-route and wireless charging options are maturing. This evolution needs to be monitored, as it is possible that some of these alternative charging methods could become attractive, particularly for transport that is carrying heavy loads and, or is time sensitive.

Grid and energy management: High concentrations of charging infrastructure may put significant strain on the grid. This is particularly challenging for truck and bus recharging facilities which require high power levels. Strategies to support off-peak charging and smart grid management can mitigate this but obviously require network level planning.

Other aspects that may need to be considered:

Ancillary services at charging points.
Understanding the time sensitivity of the traveller and the options for them undertake ‘useful’ activity during the charging period.

Local community engagement
Charging infrastructure can be implemented by private sector or public sector operators but in every case the establishment of physical infrastructure will impact the local environment. For this reason,

we recommend that the relevant local community be consulted in the decision processes related to charger location and format.

Safety factors
Electricity is accompanied by a well-known set of risks. Creation of an EV charging ecosystem will dramatically increase the number of 'points of interaction' between people and high levels of electrical power. The technology to do this safely is well established. However, it will be important to ensure that construction standards, usage behaviours and equipment maintenance to be kept at a high level.

Premature obsolescence
Given the rapidly evolving nature of battery technology, it is possible that the format of charging facilities may change even during the period in which the charging ecosystem is being established. It may therefore be prudent to prioritise investment and installation activity according to the immediate level of need. In this way we may be able to minimize the investment in facilities that are at risk of premature obsolescence.

In your submission, you discuss the important of integrating infrastructure planning within broader land use and transport strategies.

a. What areas of NSW government should be involved in planning for electric vehicle and other alternative energy source infrastructure?
b. What broader portfolios should be considered in integrated planning, for example, urban road planning, parking structures etc? Charging models

As transport facilitates every aspect of our social and economic lives, our planning for transport infrastructure needs to be cognizant of needs and trends across the whole of society.

It is incumbent on us therefore to first explore and estimate the emerging needs for transport generally and electrified transport in particular. From this basis we can identify which other government functions need to be engaged in the planning process.

Our current understanding is set out in the table below. In the first column we identify functions in the NSW government which we believe need to be engaged in the planning of the EV charging ecosystem. However, as our knowledge of the structure of the NSW government is a bit thin, we apologise if our nomination of the relevant department (in the second column) is incorrect.

Government function	Department/ Portfolio Area	Role in planning for EV charging ecosystem
Land use planning, Housing and Urban Development	Department of Planning, Housing and Infrastructure (DPHI) Planning for new areas of housing, commercial and industrial activity and associated road structures	Embeds charging infrastructure in new residential and commercial developments through planning controls Ensures EV charging is integrated into new and upgraded road networks, including commuter corridors
Municipal vehicle charging facilities	LGAs /Local Government/Councils Office of Local Government, which supports councils in integrated planning and reporting, and ensures local strategies are consistent with state objectives.	Enables local council to use their good understanding of local demand and local travel patterns to provide leadership Incorporates EV charging considerations into in public and private parking, including kerbside, off-street, and apartment parking Community amenity
Transport decarbonisation Driving mode shift	Transport for NSW/ Transition to NetZero strategy Provision of Public transport services	Ensuring effort directed to the establishment of EV charging aligns with the government priorities in the transition to Net Zero
Renewable Energy Planning	NSW Climate and Energy Action (within the Department of Climate Change, Energy, the Environment and Water)	Aligns EV infrastructure with renewable energy generation and storage projects, including hydrogen and solar
Grid capacity	Utilities and Energy Providers The Department of Climate Change, Energy, the Environment and Water (DCCEEW) i	Coordinates grid upgrades and ensures sufficient capacity for widespread EV charging and alternative energy sources
Co-location with existing fuel suppliers	NSW EPA? NSW Office of Fair trading?	Need to leverage preexisting investment in transport refuelling infrastructure
Identify key tourism destinations Identify ev charging demand from tourist traffic	Department of Creative Industries, Tourism, Hospitality and Sport	Supports destination charging in regional and tourist locations to promote sustainable travel
Infrastructure installation informed by requirements for Accessibility and Inclusion	The Building Commission NSW?	Designs infrastructure to be accessible for all users, including people with disabilities and those in regional areas
Environmental Management Pollution prevention Reduction in State carbon emissions	NSW EPA	Ensures projects deliver community benefits, minimize impacts, and align with net-zero targets

Government function	Department/ Portfolio Area	Role in planning for EV charging ecosystem
	NSW Climate and Energy Action (within the Department of Climate Change, Energy, the Environment and Water)	
Emergency services / fire management alert to the increasing risk of battery fires and able to respond	The Department of Communities and Justice (DCJ)? Fire and Rescue NSW (FRNSW) NSW Rural Fire Service (RFS)?	The use of EVs requires new ways of dealing with accidents and problems with batteries, such as thermal runaway. We need to better understand the risks to manage them effectively.
State strategy and financing of infrastructure	Infrastructure NSW, as overseers of the State Infrastructure Strategy, ensuring major projects align with long-term state priorities.	Align development of EV charging ecosystem with State infrastructure strategy
Attraction of private sector investment into establishment of charging facilities (both stand alone and embedded in other commercial and residential developments	Investment NSW Department of Planning, Housing and Infrastructure Treasury.	Need to align the effort to attract private investment with EV charging with the overall effort to attract investment into NSW. Need to encourage installation of EV charging into all new construction projects.

Next steps

The electrification of the transport system is a dynamic process and subject to many trends and influences.

We can already make reasonable predictions for both the extent of uptake of light vehicles, and we are monitoring the development technologies for heavier vehicles. However, there are many other areas in which our understanding is insufficient for the development of sound policy. In these areas we recommend that further investigation be undertaken.

To successfully develop the EV charging ecosystem in NSW will require us to deepen our understanding of these changing circumstances.

Yours faithfully

Ian Christensen
Managing Director
iMOVE Australia

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