

I am an electric vehicle owner and driver, based in Hobart, and I would like to make the following feedback regarding the consultation paper for supporting a statewide electric vehicle charging network. I am also a member of the Australian Electric Vehicle Association (Tasmanian branch) however please note this is a personal submission and not a representation of the association.

Overall I think such a network should be designed to be future-proof, regarding connection types, charge speed and vehicle capacity expansion; and sites should reflect a long-term vision where an electric car is able to travel around the state with the same ease as they currently do with a petrol car.

All new electric vehicles available for sale in 2018 & 2019 have a range of over 200 km (most of them, over 300 km). While there are older electric vehicles with a short range (100 km or less – such as the one I own) in Tasmania, the proportion of these vehicles across the future statewide EV fleet will be insignificant. It would not be cost effective to build a network around vehicles of these capabilities – they primarily have a future as urban city-only vehicles. Instead it would be preferable to design such a network for the 200-300 km range vehicles which are available now and arriving in the coming 12 months.

I have observed that:

- Many destinations, such as hotels and tourist attractions, are attracting the installation of suitable “slow” chargers (as appropriate to their location), without government assistance;
- Larger cities, such as Launceston, Burnie and Hobart, have installed or are in the process of installing 50kW DC fast chargers, without government assistance; but there does not appear to be interest in the highway locations

My recommendations are that the focus of government support should be two categories of sites which complement these existing sites:

1. **Large “charging hubs” on primary routes** – fully featured charging locations dedicated to EV charging including ultra-fast charging (150kW-350kW speed) multiple charging bays, on-site energy generation/storage, customer services.
 - 150kW-350kW speeds - offer the equivalent charging times to existing “rest stop” times experienced by petrol car drivers. While 50kW charging would be immensely beneficial, and most stops would only be 20-30 minutes, it may still take up to an hour in some situations. 150kW or faster would be needed to be “as convenient as petrol”
 - On-site energy generation/storage – primarily for economic reasons to minimise the grid upgrades required of such a site.
 - Food/beverage services can be provided under a commercial arrangement with private operator(s) – or if located in a town centre, these services would be provided by existing nearby businesses.
 - The site can initially start with as few as two charging stalls, but designed to easily increase capacity as demand grows to as many as 10-20 bays.
 - Consult with Tesla to co-locate supercharger stalls in the hub. Tesla funds the installation of these stalls, and supporting the installation of supercharger stalls would lighten the demand on the other public fast chargers.
 - Ideal location for the first hub would be Campbell Town. This site is within 135 km of Devonport, Launceston and Hobart and 200 km of many regional centres (for example, almost all travel from the north of the state to the south east of the state would traverse through this location.
 - An ideal location for the second hub would be the Deloraine/Elizabeth Town area. This could be the focus of a future round of funding.

- These locations would not compete with, but would supplement, locations in Hobart, Launceston and Burnie.

Sites such as these are being installed interstate, with Australian company Chargefox building 18 ultra-rapid charger locations between Adelaide, Melbourne, Canberra, Sydney and Brisbane (<https://chargefox.com/site/ultra-rapid-network>) They are being financed from a variety of private and public sources, including the national motoring associations (RACV, NRMA, etc.) as well as, in the case of the Victorian locations, the Victorian Government (<https://www.premier.vic.gov.au/victoria-charging-ahead-with-electric-vehicles>)

Other examples of this style of charging location include (NB. These sites are of a much larger scale than what would be suited in Tasmania, but are indicative of the potential design, layout and features):

- Kettleman City, California – a 40-stall Tesla supercharger location - <https://www.teslarati.com/tesla-mega-supercharger-lounge-food-kids-area-kettleman-baker-ca/>
- Sortimo Zusmarshausen, Germany – a 144-stall site, still under development, in Germany - <https://cleantechnica.com/2017/09/13/company-planning-worlds-largest-ev-fast-charging-station-along-a8-germany/>
- Humpolec, Czech Republic – a 12-stall site, with generic standard chargers combined with Tesla superchargers - <https://electrek.co/2016/07/19/teslas-first-supercharger-czech-republic-eon/>

2. Individual DC fast chargers on tourist routes – up to four basic sites with 1-2 individual 50kW fast chargers in existing car parks, in key locations on tourist routes on the east and west coast.

- These locations would not see a high level of traffic but are vital to allowing statewide freedom of movement with electric vehicles
- 50 kW charging speeds – a good balance between a fast charging speed and a realistic cost.
- Two locations on the west coast between Burnie and Hobart via A10 (total distance 421 km) – one at Queenstown, and one in the Derwent Valley area (Tarraleah is ideally located, if technically feasible)
- Two locations on the east coast between Launceston and Hobart via A3 (total distance 414 km) – one at St Helens, and one at Swansea

I note that the funding available would not cover the entirety of these proposals so it would require either additional private or local government investment, a future second stage, or implementation of a subset of these options.

(Q1) Should the Tasmanian Government support the installation of both destination (slower charge) and Inter-regional DC fast chargers?

Destination chargers have a relatively low installation cost, and as a result they are being installed by various organisations (private and local government) around the state without any incentive. For the most part, there is minimal benefit in spending additional resources to subsidise the installation of these.

(Q2) What factors should be considered in determining what type of charger should be installed where?

The primary focus of the funding should be on DC fast chargers.

DC chargers themselves are available in different charging speeds – generally small towns on the busiest highways, where people want to “fill up and go” should be the target of the faster speed chargers (150kW or higher). Larger cities or tourist towns (where people will be visiting for longer periods) are suited to 50kW DC fast chargers.

(Q3) Which locations (for example high-population areas or less-populated regional areas) should the Tasmanian Government consider as the highest priority for installing electric vehicle charging stations?

Most DC fast charging occurs on long road trips; as a result the government should primarily support DC fast charging station locations in popular “rest stop” towns – places on busy primary routes which are already recognised as popular “break” locations for drivers. Charging stations should also ideally be situated at junctions of highways or major roads, to serve drivers on as many different routes as possible.

Initially, the focus should be on the busiest routes, so towns such as Campbell Town or Deloraine would be ideal. Almost all travel within the state will pass through one or both of these towns, and almost all population centres from Smithton and Scottsdale to Port Arthur and Geeveston are within 200 km of one of these locations.

(Q4) Which amenities are important to have nearby electric vehicle charging stations to facilitate a positive and convenient user-experience?

Through experiences at other charging facilities nationally and internationally, there are many features which are very important to a successful fast charging facility.

- Access times – a charging facility should be available 24/7. There is no requirement for a site to be staffed and therefore no reason to artificially limit access to certain times of day.
- Safety – the facility should use a combination of lighting, CCTV and passive security (within view of the general public)
- Food, drink and toilets – it is important to be near these facilities but they can be provided by nearby establishments and not necessarily the charging provider. Toilets should be 24/7 accessible and the food and drink providers, if not 24/7, should have long opening hours (combined between all nearby options)

While the options above are the most important, other facilities which could allow for an improved experience include:

- Wifi – this is particularly beneficial in regions with poor mobile coverage
- Facilities for travellers with children or pets – close to a playground or a dog-walking area

Charging units should be located so that they are not easily blocked – often EV owners are happy to park in “less frequented” parts of a car park because this means it is less likely that non-electric vehicles will block the charging units. They should also be placed such that the units can be accessed from different parking locations if possible. This ensures that if the assigned spaces are blocked then there are alternate options for access.

In the example of the Campbell Town “charging hub” in my introduction, the site would be a dedicated EV charging location and could offer all amenities in a self-contained centre, similar to a service station. This could include air pumps (for inflating tires) and water/squeegees for cleaning windscreens.

(Q5) What type of operation and maintenance issues should be considered to ensure a positive and convenient user experience?

(Q8) What are the expectations of users with regards to reliability and availability of installed charging stations and how could these expectations be met?

(Q9) How important is providing multiple chargers at each site to cover for availability and possible equipment failure?

I’ve answered these questions together, as the following actions can be taken to improve operational, reliability and availability issues:

Ideally charging units should have:

- A maintenance arrangement with a qualified company with a local (Tasmanian) presence for any faults which occur.
- Multiple DC fast charging units per site, where electrical and physical capacity exists. As well as offering backup in case of one unit experiencing a failure, this will also help in the overall capacity of the network over busy periods.
- They should be configured to “fail open” - if the billing or communications systems are down, but the charger is technically functional, it should still enable the vehicle owner to receive a free charge. This acts as both an incentive to the charging provider to provide high quality service, as well as preventing a driver from being stranded by not being able to charge.

At larger dedicated “charging hub” sites, an AC Type 2 socket option could also be available. While a slower charge rate, this provides a backup for cars without fast charging ports (e.g. older plugin hybrids, home conversions, or the Renault Zoe); for cars with deprecated fast charging ports (e.g. CCS1); if a vehicle requires an adaptor that the driver doesn’t have; or if a vehicle’s DC charging components or adaptor has a fault. If physically located away from the DC chargers, it can be a temporary workaround to a blocked DC fast charger, and if driver is planning to visit the town for an extended period, they can opt to use an AC slow charger rather than the DC fast charger.

Some site operators choose to encourage use of an AC charger by making it free (compared to the fast charger). Note that an AC charger does not necessarily need to exist at the same physical site as the DC fast charger, but at another premise in the town (within a kilometre or so). In some cases such a suitable site may already exist.

(Q6) What is the preferred payment mechanism(s) for electric vehicle charging station from a user perspective and an operator perspective?

The preference will vary from customer to customer, but all payment systems should be electronic and contactless. This can take the form of either a phone application, a contactless credit card, or a contactless card/fob provided by the charge network operator. The first two are preferred as the customer does not need to pre-arrange signing up to the network (e.g. it can be done on the spot via a phone app, or can be used casually with a credit card)

It would be preferable if all DC fast chargers in the state were part of the same charging network, to reduce complexity.

(Q7) Should charging stations offer an online booking system?

No. This would just add extra complications and overheads to the process that may confuse new EV owners. Initially the demand on each site would be low so this will not be necessary. A preferred option to

managing queues would be to monitor usage of sites and upgrade capacity if necessary. The planning/approval/design process for each site should cover the future capacity of each site so that upgrades are pre-approved and can be completed quickly (within a few months) if required.

(Q10) What funding delivery model would work best to stimulate potential suppliers to install electric vehicle charging infrastructure in Tasmania and why?

(Q11) What level of funding (eg a percentage contribution to upfront costs) would be reasonable for potential partner organisations/businesses to make towards the installation of electric vehicle charging infrastructure and why?

As an end-user of the system I do not have a preference in this matter. I do note that there are several different categories of organisations who would benefit from such a network. These include the electricity companies, the businesses operating near each charging site and the local councils. Funding or support could be shared between these organisations as well as the state government and the charge network operator. Motoring organisations such as the RACT would also have an interest - the equivalents in some other states (RAC WA and NRMA) have funded or are in the process of funding the entirety of networks in their states.

The above organisations may support the deployment of fast chargers in existing programs – for example, TasNetworks has a fast charger support scheme, for which some sites may be eligible.

(Q12) Who should be responsible for ongoing costs and maintenance?

(Q13) Should fees for charging at a station be based on commercial pricing or be subsidised to some extent?

Fees should be charged at standard commercial rates. Making it free (even for a short period) only sets an expectation that is not sustainable long term.

(Exceptions for slow charging or failure in billing communications systems are detailed earlier in this submission)

Fees will hopefully be set at a rate which will support ongoing costs and maintenance.

It may take some time for stations in more remote areas to become economically sustainable. Having all charging stations state-wide managed by the same operator will allow cross-subsidisation to some degree, however if the less remote locations are managed separately it may require increased support with operational expenses.