

## Introduction and Summary

Government should provide the minimum support required to establish a statewide fast charge network that allows unrestricted circulation of EVs with a 200 km+ range but does not entrench dependence on government support for expansion or long term operation and maintenance.

To ensure no monopolies develop, rather than a subsidy to EV users, there should be consideration to setting a floor price for any sites that are assisted to develop with state government funds.

Sites should not be designed or built just for today's demand and technology but should be designed to be expanded and upgraded with more and higher power charging equipment in the future, to ensure the maximum benefit from spending public funds.

Government supported sites should set benchmarks in the areas of:

- Full interoperability of access methods between sites, even if under different ownership
- Very high levels of reliability
- Clear, consistent statewide signage
- Lighting and amenity
- Clear, fair and practical site agreements between host sites and charger operators

The development of a fast charge network should emphasise being built **right**, not **fast**.

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

The Australian Electric Vehicle Association (AEVA) has been active in encouraging providers of destination chargers around the state. There are now over 90 sites where EVs can charge at attractions, accommodation, public parking (usually local government), restaurants and cafes, etc. More are being added at a rate of about 2-3 per month. This is before EVs become widespread.

The cost to install some capacity to charge EVs (which may be as simple as a 15A power point) is generally low and not seen as a major barrier by those we speak to. Even dedicated EV chargers can generally be installed for less than \$5,000, sometimes much less.

With the arrival of a public fast charge system and greater range and number of EVs on the road, we believe that a proliferation of destination chargers will occur with no requirement for incentives.

Fast chargers are much more expensive, and relatively few investors would be prepared or able to fund them where there is little or no revenue available in the short-term future. However, relatively few sites (we would say five) will require public support to establish a minimum viable network of chargers. For these reasons it is strongly recommended that Tasmanian Government support should focus on DC fast chargers.

### 2. **What factors should be considered in determining what type of charger should be installed where?**

An initial network of fast chargers should be spaced to permit EVs with a minimum (real) range of about 200 km to move around the state unrestricted by range limitations. Destination chargers will likely be offered at destinations along the routes these serve by site owners, without incentives.

The specifications for individual sites may vary according to context but should be a **minimum** of 25kW DC **and** 22kW AC (three phase) to each parking bay served even in low use/seasonal areas to justify public support. Higher powered chargers (**minimum** 50kW DC; and up to 43 kW AC if cars with this capacity are imported to Australia) would be preferred at most sites. Sites in high traffic/major urban areas would be higher powered still, but this would occur in response to anticipated market demand and should not require public funds to provide this.

More important than the charger (that can be changed in the future if required) is the site infrastructure and power supply. This should be sized and installed in such a way that it is capable of being upgraded readily later to meet both faster charging and multiple charging bays at a low cost, with adequately sized cable ducts and space allowed for transformers, batteries, rectifiers, etc.

### **3. 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?**

As noted in the discussion, high population/high traffic areas are more likely to “attract private investment in charging infrastructure because they will be commercially viable sooner”. We anticipate these areas may be commercially viable in 5-7 years and that patient investors would be prepared to invest on that basis. EHT proposes to invest in these sites without requiring a state government subsidy.

The east and west coasts of the state are both highly seasonal and carry relatively lower traffic volumes and may not be commercially viable for a decade or perhaps two. We strongly urge the Tasmanian Government to prioritise these areas for any subsidy.

### **4. Which amenities are important to have nearby electric vehicle charging stations to facilitate a positive and convenient user-experience?**

The essential amenities are those named in the document: toilets, food/drinks, shelter, good lighting and visibility to the surrounding area. We would add surveillance cameras to provide reassurance to users and deter vandals. Ideally amenities would be available 24-hours but some regional areas would not support 24 hour food and beverage.

Nice-to-have amenities in tourist-oriented areas would be nearby local sights, attractions, parks, children’s play equipment or views, particularly if only lower powered (25kW) chargers are offered, but none of these are considered essential. Chargers need not be co-located on the same or immediately adjacent parcel as food, toilets, etc but these should generally be within 100m.

### **5. What type of operation and maintenance issues should be considered to ensure a positive and convenient user experience?**

A very high level of reliability is essential, particularly in the early years when there are likely to be fewer charging locations to fall back on should a charger be out of service. We would consider a reliability target of 99.9% available time (9 hours down time per year) as a desirable target in main areas, with 99.8% acceptable in less accessible locations. Low failure rates, fast repairs and good customer service can be achieved by:

- a. Selection of reliable equipment

- b. Regular inspection and maintenance
- c. Maintaining on call service providers with spare parts in stock locally
- d. Redundancy within equipment (modular power supply, multiple SIM cards/network providers) and multiple units/options on a site (AC + DC)
- e. Fall back options (15A uncontrolled power points on the site if dedicated chargers are out of service)
- f. Directions to nearby alternatives where they exist.
- g. Emergency response and assistance through 24 hour support line with offer of free accommodation, meals, towing etc in the event that a charge cannot be provided.

All these services should be provided to ensure a positive and convenient user experience. Strategies to provide a high level of reliability should be a condition of funding.

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

Ideally a variety of payment options would be available, providing a degree of redundancy and flexibility. In general:

- a. **Fleet users** will prefer a monthly account with a dedicated access method (app or swipe card) rather than a credit card that could be used for other purposes. This provides a collated summary of charging activity for their fleet and allows analysis of use. It should have the potential to interface with charging units at home or fleet base giving them a total picture rather than just the use of public chargers.
- b. **Regular private users** may also prefer an app or swipe card for easy record keeping. Apps may also provide useful information about charger locations, availability, specifications and provide a charge history and analysis of charge behaviour that may be useful for assessing battery condition and other things.
- c. **Infrequent casual users** and **fly-in tourists** may prefer the ease of use of credit cards. However, not all chargers **can** be credit card enabled, and providing credit card access may limit the availability of some otherwise desirable charge equipment.

A key consideration for both tourists arriving from interstate in EVs and Tasmanians driving around different parts of the state is not to have to deal with multiple apps or swipe cards. This does not mean that all chargers need to be on a single system, but that at least the access methods are set up to be inter-operable. Already there are several access systems in the other states of Australia that have not maintained full interoperability. We should seek to improve on this and ensure that the Tasmanian system does provide for interoperability within the state and with as many other systems in the country as possible. A high level of interoperability should be a condition of providing public funds.

## 7. Should charging stations offer an online booking system?

Online booking systems add to complexity and ideally should not be needed. Online booking may result in a charger being blocked when a booked user is late, degrading user experience for others.

Most charge sessions are likely to be short: 10-15 minutes, so wait times ought never be excessive. Having multiple chargers at busy sites means that waiting time is likely to be much less than this on average.

It is better to invest in adequate capacity than to maintain a booking system. While queues should not be frequent or excessive, we would note that a system that never has any queues would be unrealistic – petrol stations also have queues in peak periods.

**8. What are the expectations of users with regards to reliability and availability of installed charging stations and how could these expectations be met?**

Broadly, expectations should be for levels of service and reliability similar to petrol stations. While early adopters will accept some inconvenience, and this may become the norm to some extent until a charge network becomes widespread and established, lower levels of reliability and availability than petrol would slow the rate of uptake of EVs in the long term. However, it will take some years for enough charge locations and capacity to be rolled out to ensure this level of service.

**9. How important is providing multiple chargers at each site to cover for availability and possible equipment failure?**

See comments under 5 and 7. Initially we need to have enough and sufficiently closely spaced **sites** to enable unrestricted movement of EVs around the state. While multiple chargers at a site are desirable, this should not be at the expense of providing full geographic coverage. As the number of EVs increases, capacity should first be added to these initial sites ensuring redundancy and reliability and minimising queuing rather than establishing additional sites.

Adding chargers to the initial sites should also cost less than establishing new sites, making it easier to keep pace with growing demand and making this more commercially sustainable.

As demand continues to grow and the first sites expand to 6-8 chargers per site, then additional sites would be established to provide a denser network in areas with enough demand. Beyond the initial 'sparse' network, additional capacity – both sites and chargers per site – should be in response to demand and would be largely if not entirely commercially driven if a commercial pricing framework is being used.

**10. What funding delivery model would work best to stimulate potential suppliers to install electric vehicle charging infrastructure in Tasmania and why?**

Our view is that funding should be applied where most needed, and that many sites in high traffic areas should not need government funding to become established.

As noted in question 3, while sites in the major cities and along the Midland Highway may be commercially viable within 5-7 years, sites on the east and west coasts will take much longer and some may always be commercially marginal. For these sites to attract investors and operators, a substantial subsidy will be required covering both the initial capital cost and some contribution to the first few year's operating expenses.

Fixed costs for a 50kW DC fast charger are estimated to be about \$6,000-\$8,000 per year even with no users. In some overseas jurisdictions with relatively high EV penetration rates, funding of 120%-140% of the capital costs has been provided to attract operators to otherwise unserved regions.

A viable approach may be to ask for tenders/expressions of interest/offers to serve regional areas, with some minimum performance standards set for respondents. The initial payment would be for the full capital costs with operating losses reimbursed with either annual or

end-of-agreement lump sum payment to some agreed maximum as long as specified performance requirements are met.

## **11. 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?**

There are a number of potential partner organisations/businesses that may have an interest in promoting an EV charging network that covers the entire state or particular locations:

- a. Hydro Tasmania, TasNetworks, Aurora – as a way of promoting EV sales and increasing their customer base
- b. Vehicle manufacturers and vendors – to promote EV sales or their own brand of EVs
- c. Regional tourism bodies – to enable low carbon tours around the state
- d. Local governments, to attract visitors to their area and support uptake of low carbon transport in their LGA
- e. Individual site hosts that may wish to attract business to their site (eg food and beverage sales while charging). This is most appropriate for fast food businesses if hosting fast chargers.
- f. Other organisations such as RACT, environmental groups and others that may wish to support low emission transport and enhance this aspect of their brand.

The extent of support that may be provided is for those organisations to assess on a commercial or other basis. It is likely to be site specific and vary by location as well as organisation. In some cases there may be a contribution with a benefit to the contributor – eg sponsorship by a car brand with a discount offered to their buyers when they charge.

There are precedents for all of these groups making contributions in Tasmania, interstate or overseas, with contributions ranging up to 100% (e.g. City of Launceston).

Site hosts essentially inherit any site improvements including power supply upgrades, cable conduits, signs etc, all of which tend to have relatively long lifetimes. If a site is well chosen and laid out, this will provide relatively enduring value to the site host even if the specific charge equipment and operator should change. This provides an argument that the site host should make some contribution to at least a portion of these site development costs.

Where a contribution is made by the site host, there is a case that some return may be provided for their initial contribution after all capital depreciation and operating costs have been met, should the site become commercially viable in the future.

## **12. Who should be responsible for ongoing costs and maintenance?**

It is important that anyone receiving support to install charging stations using public funds should be able to demonstrate a commitment and capacity to maintain and operate the equipment for an acceptable period to agreed standards. Ideally this should be at least long enough for the market to mature so other operators can enter the market and maintain continuity of coverage and service. However that may be 10-15 years in some locations and be an unrealistic requirement.

It may be more realistic to recognise that there are two aspects to a charging site:

- a. Power supply to the site has a long lifetime and low maintenance and operating costs. If the site is suitably chosen and well laid out, and the power supply

appropriately specified, this investment should remain and be available for any operator using the site for decades into the future, even if not the original operator.

- b. Charging equipment lifetime is estimated to be 7-10 years, though as little as 5 years in heavily used sites. This suggests that requiring a seven-year operating plan may be appropriate as a condition for grants supporting the charge equipment installation.

### **13. Should fees for charging at a station be based on commercial pricing or be subsidised to some extent?**

Fees should be commercial from the very beginning:

- a. Commercial fees would be similar in cost per km to petrol, based on a realistic level of use when there are enough EVs on the road to support them. Cost may fall somewhat in the long term if charging equipment costs come down and on-site solar is used with (cheaper-in-the-future) on-site batteries.
- b. Charging full commercial fees permits competitors to enter the market as demand grows and encourages/permits operators to expand to meet growing demand reducing or eliminating any further need for public funding. (If there was to be a subsidy to EV users, it should apply to all commercial charger operators in the state to maintain a level playing field and enable expansion.)
- c. Charging full commercial fees makes charging at home or fleet base more attractive (about ½ to ¼ the cost of public fast charging). This reduces demand on the public fast charge network and the number of chargers required to avoid queuing. Charging at home or at fleet base allows for slower charging and charging during off-peak periods or periods of solar excess supply, improving grid performance and potentially contributing to lower electricity costs. Public fast charging cannot do this.

### **14. What should the Tasmanian Government consider in raising community awareness of the statewide electric vehicle charging network?**

Organise publicity:

- a. Have a 'launch event' as each new charger opens.
- b. Have a bigger event as each 'route' is completed – Midlands Highway, East Coast, West Coast and finally when the whole state is covered.
- c. Work with groups such as AEVA, RACT, vehicle dealers, electricity suppliers, community groups and others to publicise through their member and customer networks and events such as try and drive days, car rallies, speaking at schools and other groups, etc., providing funding in selected cases.
- d. Support local governments to publicise chargers in their localities.
- e. Provide links on appropriate State Government web sites (tourism, energy, Climate Change, etc) with information on chargers, locations, etc.
- f. Provide an on-board introduction for EV tourists coming on the Spirit on the charge network and how to use it.

AEVA will ensure that sites are included on apps such as Plugshare.com as well as informing EV vendors about the network to enable them to reassure intending buyers that there is an adequate and reliable network for charging.

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