

# Electric Vehicle Fast Charger Support Scheme

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## 1.0 Introduction

**Electric vehicles are becoming more common on Tasmanian roads, and as their number increases, so will the benefits to the community.**

Electric vehicles offer a number of advantages over conventional petrol or diesel engines. They are cheaper to run, quieter and smoother to drive, and have zero emissions when powered from Tasmania's renewable electricity sources. Powering cars from locally-generated electricity instead of imported petrol also has economic benefits for Tasmania.

Some countries have already announced their intention to totally transition to electric-only vehicles by the middle of this century, so this form of vehicle power is certainly not a fad.

As the electric vehicle population grows, so will their availability on the second-hand market, making it easier for people to enjoy the benefits of EV ownership.

Because all Tasmanians will benefit from increased use of electric vehicles, TasNetworks supports electric vehicle use.

New electric vehicles are still comparatively expensive but one of the most significant barriers to their purchase in Tasmania is the absence of DC fast charging stations that allow more convenient and efficient longer distance travel. There are presently no DC fast chargers for electric vehicles in Tasmania.

The rules that govern electricity networks effectively prevent TasNetworks from installing electric vehicle chargers for public use. However, TasNetworks is able to offer assistance to others wishing to install public electric vehicle fast chargers.

We have developed the **Electric Vehicle Fast Charger Support Scheme** which is designed to assist customers wishing to install DC fast chargers for public use. The intention is to encourage the installation of fast chargers, and thereby assist the Tasmanian community to move to greater electric vehicle usage.

This document describes the Electric Vehicle Fast Charger Support Scheme in detail. It is primarily intended for customers looking to install electric vehicle fast chargers.

## 2.0 The scheme at a glance

The Electric Vehicle Fast Charger Support Scheme (or “the Scheme” for short) will comprise two components:

1. TasNetworks sharing its technical expertise on electric vehicle fast chargers and what is involved in connecting these at your property.
2. Providing a rebate on our charges to increase your power supply capacity for the purposes of powering an electric vehicle fast charger. There are a number of conditions which must be met to be eligible for this rebate, which are described later in this document. In particular, the chargers must be for public use, and geographic criteria apply.

The Scheme applies only to fast DC electric vehicle chargers, not the slower AC chargers installed at some residential and business properties. (The types of chargers are explained below in “Electric vehicle chargers”.)

The Scheme has a total funding allocation of \$250,000 over 5 years.

## 3.0 Electric vehicle chargers

This section provides general information about all types of electric vehicle chargers, including those not covered by the Fast Charger Support Scheme.

### 3.1 Connecting Electric Vehicle Chargers

Whether they are for public or private use, all electric vehicle chargers of any type must follow the same rules for connection as any other electrical equipment:

- The charger is owned by you as an electricity customer, not by TasNetworks
- The charger must be connected into your switchboard by a licensed electrical contractor
- The power supply must be metered
- You must have an account with an electricity retailer in order to pay for the electricity used.

If desired, the electric vehicle charger may be on a separate meter (and possibly a separate electricity account) from other equipment at your site. This would enable you to enter into an agreement with a separate entity, who could own and manage the electric vehicle charger.

## 3.2 Types of Electric Vehicle Chargers

Electric vehicle chargers are available from a number of vendors within Australia. There are basically three categories of electric vehicle chargers in use in Australia, which are briefly described in the table below. These types of chargers are defined in the International Electrotechnical Commission (IEC) standard 61851.

### Mode 2

This is the simplest and cheapest form of electric vehicle charging. Using a cable with an integral adaptor (called the electric vehicle supply equipment or “EVSE”) the electric vehicle can be plugged into a power point.

Mode 2 charging is the slowest of the three modes, but it can provide sufficient overnight recharge to meet most peoples’ daily commuting needs. All new electric vehicles are sold with an EVSE cable, making Mode 2 charging a cheap and convenient option.

**Cost:** typically a few hundred dollars for an electrical contractor to install a power point. (If a suitable power point is not already present.)



**Technical details:** AC charging; single or three phase supply (depending on type of car and EVSE); charge rate varies with EVSE, typically 2.3kW or 3.5kW single phase, up 22kW three phase.

### Mode 3 (also known as AC Charge or Destination Charge)

This is a permanently wired charger, which provides a slow to medium rate of charge. A vehicle needs to be plugged into the charger for some hours to fully recharge from empty.

Typical uses for these chargers are: street-side or carpark public charging; at accommodation premises; at businesses wishing to provide customers an extra service to differentiate from competitors; in private garages (either business or residential) seeking an increased charge rate or aesthetic improvement over Mode 2 charging.

In a public charging situation, Mode 3 chargers provide only a convenient top-up (as opposed to full recharge), unless the vehicle is plugged in for a substantial time.

**Cost:** up to a few thousand dollars, depending on charger model and its features. Low-cost models retail for less than \$1000.

**Technical details:** AC charging; single or three phase supply (depending on type of car and cable used); charge rate dependent on vehicle, typically up to 7kW single phase or 22kW three phase.



### Mode 4 (also known as DC Rapid Charge or DC Fast Charge)

This is a permanently wired charger which provides a high rate of charge. The recharge time varies depending on the charger and type of vehicle, but is typically from 30 to 90 minutes. Mode 4 chargers (which will be referred to as DC Fast Chargers for the remainder of this document) are almost exclusively used for public charging services, either in population centres (where there are large numbers of potential users) or for highway recharging to allow inter-city travel in an electric vehicle.

Even the fastest car + charger combination requires in the order of 30 minutes to recharge, so DC fast charging facilities should be located where there is something the vehicle occupants can do whilst charging is in progress. Overseas, public fast chargers are typically located at town centres, tourist attractions or food and beverage outlets.



Charger is located in the ACT. This image has been used with permission.

DC fast chargers transfer large amounts of power into a vehicle. Drivers are normally charged a fee for DC fast charger use to recover the electricity cost and other costs of providing the charging service.

**Cost:** The total cost of a DC fast charger varies, but is usually between \$30,000 and \$35,000. Installation costs are extra. More information on the cost of DC fast chargers is provided below.

**Technical details:** The charger takes a three-phase 400V AC supply and converts this to DC. Possible charge rates vary depending on the charger; most are currently 50kW; models up to 150kW are available; models exceeding 300kW are being developed. The high power requirements mean the power supply to the charging site needs to be evaluated by TasNetworks and in many cases will need to be upgraded. The site's switchboard may also need to be upgraded.

**Note:** "Mode 1" charging allows an electric vehicle to be plugged directly into a standard powerpoint. No production vehicles sold in Australia support Mode 1 charging.

## 4.0 DC Fast Chargers - the missing infrastructure

At September 2017, there were no DC fast chargers (Mode 4 chargers) in Tasmania. DC fast chargers are needed to allow practical state-wide usage of electric vehicles in Tasmania.

For example, most electric vehicle owners based in Hobart needing to make a return day-trip to Launceston would be unable to undertake the journey because the vehicle could not make the entire journey on a single charge. A fast charging station located in the Launceston CBD would allow the car to be recharged and then make the return journey.

Similarly, holiday makers would not contemplate a touring holiday within Tasmania unless they were certain they could conveniently recharge en-route.

Although there are increasing numbers of Mode 3 chargers appearing in public locations, these require some hours to recharge the vehicle and therefore are not practical to recharge sufficiently for inter-city trips. Mode 2 and Mode 3 chargers allow everyday local travel; DC fast chargers are required for inter-city travel.

## 5.0 DC fast chargers - typical costs

### 5.1 Installation cost

DC fast charger installation costs comprise three main components:

1. The cost of the chargers: this typically ranges from \$30,000 to \$35,000 depending on the type of charger.
2. The on-site installation costs: the costs for the work required on your premises to install the charger and connect it to a switchboard. These costs are typically for electrical work, but other contractors may be required as well. For example, civil contractors may be required to excavate trenches for cables. Due to the high power consumption of DC fast chargers, your site's electrical switchboard may need to be upgraded. Costs for electrical installation will vary widely between sites. In the best case (where a switchboard with sufficient capacity already exists, and the charger can be located close to the switchboard) the installation may cost some thousands of dollars. In cases where trenching is needed, a switchboard upgrade is needed, or long cable runs are involved, the installation may cost tens of thousands of dollars.
3. Cost for power supply upgrade: the high electricity usage of the charger will often mean that TasNetworks would need to upgrade the power supply to your site. This means replacing the existing service wires with bigger ones and possibly upgrading the local part of the electricity network that supplies the power. These costs will depend on the particular site where the charger is to be located: if there is surplus network capacity then little or no work is required; if the local electricity network is already near full capacity then upgrade work will be needed. Costs vary substantially between sites and could range from a few thousand dollars to many tens of thousands of dollars.



## 5.2 Operating costs

TasNetworks has no direct experience operating DC fast chargers. Based on our discussions with suppliers, we understand the major components of DC fast charger operating costs are:

- The cost of electricity, as levied by the electricity retailer
- The billing system costs, which are levied by the billing service provider.

We advise you to contact charger suppliers to obtain detailed information of the operating costs.

## 5.3 Electricity consumption for DC fast chargers

A DC fast charger may be the highest energy-consuming device on your site, so it's important to understand the impact on your power bill. Depending on what electricity tariff you are on, the cost of electricity used during a charging session could vary substantially.

For most tariff arrangements, the electricity used for a half-hour charge would cost less than \$20, which could be passed on to drivers. For some tariffs, however, it could be several hundred dollars if the charging occurred during peak time.

We urge you to understand the possible electricity cost implications and how the cost of electricity could be recovered from users, before proceeding to install a DC fast charger. We can provide an indication of the electricity costs to charge a vehicle, based on your current tariff.

## 6.0 Details of the Fast Charger Support Scheme

The scheme comprises two components:

1. Technical advice
2. Connection costs rebate

### 6.1 Technical advice component

Electric vehicle DC fast chargers are a relatively new technology, unfamiliar to most Tasmanian electrical contractors and consulting engineers.

TasNetworks has acquired some understanding of this technology that we will share with customers under the Technical Advice component of the Scheme. In particular, we are able to provide advice regarding (i) the technical characteristics of DC fast chargers and (ii) power supply upgrade options to allow the connection of a DC fast charger.

The choice of charger, its power consumption and connection arrangement can have a significant bearing on the connection costs. In places such as public car parks where there is a choice of locations for the charger, the charger location can also have a significant impact on the connection cost. Under the Technical Advice component of the Scheme, our engineers and designers will work with you to understand the options for installing a DC fast charger at your particular site.

Because DC Fast Chargers are connected to your switchboard, you will still need to engage an electrical contractor, and possibly a design engineer, to deal with the detailed design and installation. Our advice under the Scheme does not replace the need to engage these professionals. Our advice is to assist you (or these professionals acting on your behalf) to understand options with DC fast charger technology.

There are some areas in which we are not able to provide advice. Examples include:

- The likely uptake of electric vehicles into the future
- The technical characteristics of future electric vehicles
- Whether investing in a DC fast charger is a financially sound decision
- How your customers should be billed for their use of the DC fast charger
- Recommending equipment suppliers.

You will need to seek alternative information sources to make decisions on such issues. TasNetworks has compiled a list of suppliers of fast charging equipment that's available on request.

We will not charge you for advice provided under the Scheme. We will keep track of our costs in providing this advice, which will be deducted from the Scheme's overall funding pool.

Should one scheme participant use what we consider to be a disproportionate share of the technical advice (due, for example, to many iterations of charger capacity or connection options), we reserve the right to charge our standard design fees, after informing the participant.

## 6.2 Connection Cost Rebate component

As previously noted, one of the larger cost items associated with installing a DC fast charger can be the required power supply upgrade. This is the work we need to do on our network to provide the additional power to your site to supply a DC fast charger.

These upgrade works are undertaken by us but are paid for by you. (There is an exception, for Basic Connections – see box). Costs could range from a few thousand dollars in the best case, to \$100,000+ if a new transformer and underground cable installation were required. These costs will vary from one site to another depending on existing spare network capacity, whether the network is overhead (i.e. wires on poles) or underground, and the size and condition of the existing wires which connect your switchboard to the network. (These wires are the responsibility of TasNetworks since they are on the network side of your electricity connection point.)

In some cases, a network upgrade may also serve other purposes (for example, it might provide spare network capacity which we forecast will be needed in the future). In this instance, we only charge you for the portion of the upgrade works required to provide the power supply upgrade you request. We refer to the amount you pay as the “Customer Contribution” to the network upgrade. (You will be responsible for the cost of the network upgrade if it is solely for the purpose of providing you with an increased power supply capacity.)

The Scheme’s Connection Cost Rebate component will refund a portion of the Customer Contribution to network upgrades which are for the purpose of a DC fast charger installation. This will reduce the total cost of a DC fast charger installation. Various conditions relating to this component of the scheme (primarily geographic criteria) will ensure that chargers are installed for maximum community benefit.

### Basic vs. Negotiated Connections

We broadly classify all new connections to our network as either “Basic” or “Negotiated”. Basic connections are standard connection arrangements we provide for a standard price.

Basic connections can only be provided under certain conditions, two of which are the existing electricity network must pass adjacent to the property boundary, and the connection capacity must be less than 100A per phase. Most residential connections, and many small business connections, are Basic connections.

A Negotiated connection is any connection which is not Basic. We evaluate the cost of a Negotiated connection on a site-by-site basis. Due to the high current consumption of DC fast chargers, sites which contain a DC fast charger will generally require a Negotiated connection.

The Connection Cost Rebate is as follows:

- The rebate will be assessed on a per-site basis. Should you be looking to install DC fast chargers on more than one site, eligibility for the rebate at each site will be assessed independently
- The rebate amount is 50% of the Customer Contribution to the network upgrade cost required, with a maximum rebate of \$20,000 per site
- The Connection Cost Rebate is not available for Basic Connections.
- In order to encourage a state-wide spread of DC fast chargers, geographic rebate limits apply. These are discussed in more detail below
- We will pay the rebate once the charger is available for public use and has been verified by TasNetworks to meet all eligibility criteria.



### 6.3 Total Funding Available Under the Scheme

The Scheme has a total funding allocation of \$250,000. It will conclude on 30 June 2022 or earlier if the funds are exhausted. The \$250,000 funding pool covers both the Technical Advice component and the Connection Cost Rebate component. All payments under the Connection Cost Rebate component must be either paid to customers or approved for payment prior to 30 June 2022.

### 6.4 Conditions for rebate

This section sets out the eligibility conditions for the Connection Cost Rebate:

- The charger must be available for public use
- The charger must be direct current (DC) Mode 4 as defined in IEC 61851. When installed and in its normal operating configuration, the charger must be capable of supplying a vehicle with a charge rate of at least 50kW.
- The charger must have both "CHAdeMo" and "Combined Charging System Combo 2" (CCS2) plugs, although it is not necessary for the charger to supply power to both plugs simultaneously. These two plug types provide compatibility with almost all currently available battery-electric vehicles.\*
- The charger must be able to recharge a vehicle even if communications facilities required for driver billing (e.g. mobile phone network or fixed-line internet service) are temporarily unavailable.
- The site must be listed on the (free) website [www.plugshare.com](http://www.plugshare.com). The listing must include:
  - the site's address;
  - opening hours;
  - a description of the charging facilities available, including number and types of plugs, and the charge rate (in kW) available;
  - applicable fees;
  - method(s) by which drivers pay for charging.The information above is the minimum we require. You may list additional information if you desire.
- The chargers must meet the geographic staging requirements as follows.

\* Tesla vehicles have a bespoke connector but can use CHAdeMo chargers with an adaptor.

### 6.5 Geographic staging requirements

We want the Fast Charger Support Scheme to benefit the greatest possible portion of the Tasmanian community. We would ultimately like to see state-wide deployment of DC fast chargers, but we realise the funding available under this Scheme is not sufficient to support full state coverage.

The Connection Cost Rebate part of the Scheme therefore targets areas which serve the greatest number of drivers first. Once firm plans are established for chargers to be installed in these areas, we will make the Connection Cost Rebate available for sites in other parts of Tasmania.

The areas for which the Connection Cost Rebate is initially available are:

- Hobart, Launceston, Devonport and Burnie central business districts: the Connection Cost Rebate is available for one site in each city. The Hobart, Launceston and Devonport sites must be located within one kilometre of the city's pedestrian mall. The Burnie site must be located within one kilometre of the Burnie City Council building (80 Wilson Street);
- Midland Highway: the Connection Cost Rebate is available for two sites, one located between Perth and Ross (inclusive), the other located between Tunbridge and Brighton (inclusive).

We acknowledge these funding limits create a "first mover advantage" e.g. If a customer chooses to install a DC fast charger in the Launceston CBD, we will not provide the Connection Cost Rebate to a second Launceston CBD site.

We will ensure all applicants are aware if we have received another application within the same geographic area. We will implement a queue within each area to ensure that a customer who proceeds with installing a charger (on the understanding that they are first) is not gazumped by a subsequent fast-moving applicant. This is explained under the application process details.

At this stage we have not determined how funding will be allocated to remaining areas of Tasmania. It is possible that once firm plans for the CBD and Midlands Highway sites are established (and the remaining funding pool is known) we will reserve some of the remaining funding for the east coast, some for the west coast, and the remainder for anywhere in Tasmania.

## 7.0 Application process

This section explains the entire process for the Fast Charger Support Scheme.



The Fast Charger Support Scheme process starts with you, as a potential participant, contacting TasNetworks. We can answer many initial queries over the phone or via email, to assist you to understand what's involved in more detail and whether you are interested in proceeding further.



Early Engagement is our process for holding preliminary discussions with customers, potential customers or developers who will require a new or altered network connection. Early Engagement discussions can be about any network development, but the description below relates to Early Engagement in terms of the Fast Charger Support Scheme.

Early Engagement is the first formal stage of the Fast Charger Support Scheme. It comprises an initial face-to-face meeting between you and us, and is likely to be followed up with further meetings and email correspondence. In these discussions

- you will have the opportunity to outline your potential plans for fast charger installation, including the site(s) and any details that are known
- we can share our expertise about options for electric vehicle charging
- we can provide information about your existing power supply capacity, and what work is required to increase the power supply to support a fast charger(s).

It is through the Early Engagement process that we provide the Technical Advice component of the Fast Charger Support Scheme. Early Engagement requires a collaborative approach, where you and us openly share information. We treat all information you disclose in an Early Engagement meeting as commercial in confidence. Early Engagement discussions can cover multiple sites.

Although we cannot disclose details, we will advise if there are other customers within the same geographic area who either (i) are considering applying for the Fast Charger Support Scheme, or (ii) have progressed to the Connection Application stage and have thus reserved a place in the queue.

We do not charge a fee for Early Engagement meetings, however any cost estimates provided via the process are indicative only (i.e. not firm and final quotes) and subject to final confirmation in the Connection Offer stage.

At the end of the Early Engagement process,

- we have established a working relationship with you,
- you have an understanding of what is involved to progress the work further and its likely cost, and
- we are familiar with the project, so we can progress the design work more quickly if you choose to proceed.

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## Connection Application

The Connection Application is the standard, formal process by which a customer requests a change to their electricity supply. It involves forms and fees. If a customer requires changes to the electricity supplies at multiple sites, it is necessary to lodge a separate Connection Application for each site.


The Connection Application forms are often completed by an electrical contractor or consultant on your behalf. You are required to lodge a Connection Application Fee. We then proceed with detailed design of the required upgrade works. When the design is complete we provide you with a Connection Offer, which includes;

- a firm price and timing to complete the work;
- a new Connection Agreement for signing (if applicable);
- notification of the amount of the Connection Cost Rebate which will be available under the Fast Charger Support Scheme and the conditions of the rebate.

Initially, while there are geographic restrictions for the Connection Cost Rebate, we will consider you have reserved a place in the queue for the relevant geographic area when we receive your Application Fee.

This place in the queue is held for one year. Within this period, you must undertake the steps necessary to get the charger installed and all prerequisite conditions satisfied to be certain of receiving the Connection Cost Rebate.

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## Customer Accepts Connection Offer

If you elect to proceed with the connection works, you are required to accept our Connection Offer and pay the full Customer Contribution amount.



After receiving the Customer Contribution payment and acceptance of our Connection Offer, we will undertake the work to provide or upgrade your power supply capacity within the agreed timeframe.

We will notify you when our works are completed.

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It is your responsibility to organise the purchase and installation of the electric vehicle charger. The electrical work involved must be undertaken by a licensed electrical contractor.

The charger installation could occur concurrently with TasNetworks undertaking the power supply works, however it will not be possible to use the charger until the power supply works are complete.

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Once the charger is operating, you notify us. We then inspect the charger site to ensure all the conditions for the rebate are met.

It is your responsibility to ensure that the charger is operating and we have been notified prior to the geographic queue time limit expiring.

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Provided the charger meets all required conditions and geographic queue time limit has not expired, we pay you the Connection Cost Rebate.

## 8.0 Contact Information

For more information contact [electric.vehicles@tasnetworks.com.au](mailto:electric.vehicles@tasnetworks.com.au)  
Or call 1300 137 008 (Monday - Friday 9:00am to 5:00pm)

Media enquiries: 03 6271 6271