SMARTER FLEETS

ELECTRIC VEHICLE SELECTION

Learnings from the *Smarter Fleets Program – Electric Vehicles in Local Government*

The process for choosing an electric vehicle for your fleet is very similar to choosing an internal combustion engine vehicle (ICE), with a few minor but important differences.

ECONOMIC CONSIDERATIONS

While the upfront cost of purchasing an electric vehicle is higher than an ICE vehicle, electric vehicles have significantly lower running costs. For this reason, comparisons should be made on a whole-of-life basis.

The distribution of funding between capital and operational budgets may need to be reconsidered, along with the length of time that vehicles remain in the fleet before replacement. See the *Policy Considerations for Electric Vehicles* Fact Sheet in this series for more information.

Compared to internal combustion engine vehicles:

- **Purchase prices** are currently higher for electric vehicles.
- **Depreciation** costs, which are strongly linked to purchase prices, are also currently higher for electric vehicles. Resale values for electric vehicles remain uncertain, although they are currently retaining their value well, as they have a longer expected lifetime.
- **Insurance and registration** costs are practically the same for electric vehicles.
- **Fuel/electricity** costs can be significantly lower for electric vehicles. For example, when charging using off-peak electricity tariffs, the cost of charging can be 50 per cent less than the cost of petrol and diesel for highway use, and 75 per cent less for urban use.
- **Economy** of an electric vehicle improves with further distance travelled and longer hold time.
- **Maintenance** costs are lower for electric vehicles, given they have significantly fewer moving parts and associated longer lifetimes.

Electric vehicles are already less expensive on a whole-of-life basis in some scenarios; for example for vehicles that travel high annual distances. As purchase costs continue to fall, electric vehicles will become less expensive for use in a broader range of scenarios.

Identifying the most appropriate vehicles

In the short-term, existing fleet vehicles that are best suited to replacement with electric vehicles are vehicles that:

- **travel greater distances per year**, as the savings from low running costs offset the higher purchase cost. For now, there are practical limitations to using electric vehicles for long trips until a fast charging network is established in Tasmania. This network is expected to be in place by 2021;
- **have a high proportion of urban use**, as electric vehicles have no idling losses, and recover energy in stop-start driving using regenerative braking;
- **are not used for private-use**, at least in the short term, as these vehicles attract fringe benefits tax, which is generally greater for electric vehicles due to the current higher purchase cost.

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Comparison tool

The ChargeTogether Fleets Program includes a range of tools to assist Australian fleets to transition to electric vehicles. It includes information, webinars, message forums and a platform *BetterFleet*[1], which allows you to calculate total cost of ownership for electric vehicles.

You can use the *BetterFleet* platform to compare the total cost of ownership for specific electric vehicle models against internal combustion engine models. The platform allows you to create a project and run reports which can help you to develop a business case to support the integration of electric vehicles into your organisation's fleet.

FIT FOR PURPOSE

The relevant considerations when determining whether an electric vehicle is fit for purpose include (but may not be limited to):

- Safety (ANCAP) rating and safety features such as active safety technology
- Drivetrain type: 2WD, 4WD, AWD
- Occupant capacity
- Load carrying capacity
- Towing capacity
- Occupant comfort
- Ride height
- Ground clearance
- Wading depth
- Fuel type (for internal combustion engine vehicles only)
- Range (for electric vehicles only)
- Charging time (for electric vehicles only)

Range and charging time

Range (how far a vehicle can travel on a full charge) is the most significant consideration that differs between electric vehicles and internal combustion engine vehicles. Charging rate (how quickly a battery can be charged) can also be an important consideration in some circumstances.

Overnight charging ensures the full range is available each day, so charging time is only an issue if a vehicle is required to travel farther than its range in a single day. Vehicles used for multiple trips each day can have their range extended by topping-up while parked back at base.

Electric vehicle models released in 2019 have real-world ranges from 200 km to 400 km. In July 2019, the Tasmanian Government announced funding to support the installation of 14 fast chargers in 12 locations around the State. A small number of commercial fast chargers have also been announced, which should be in operation by the end of 2020. Once installed, the charger locations will have a maximum spacing of about 150 km, meaning that electric vehicle drivers are able to travel around Tasmania. These developments make range less of a concern than before.

With sufficient fast charging stations, an electric vehicle with a real-world range of 200 km will be able to conveniently reach most parts of Tasmania. For example:

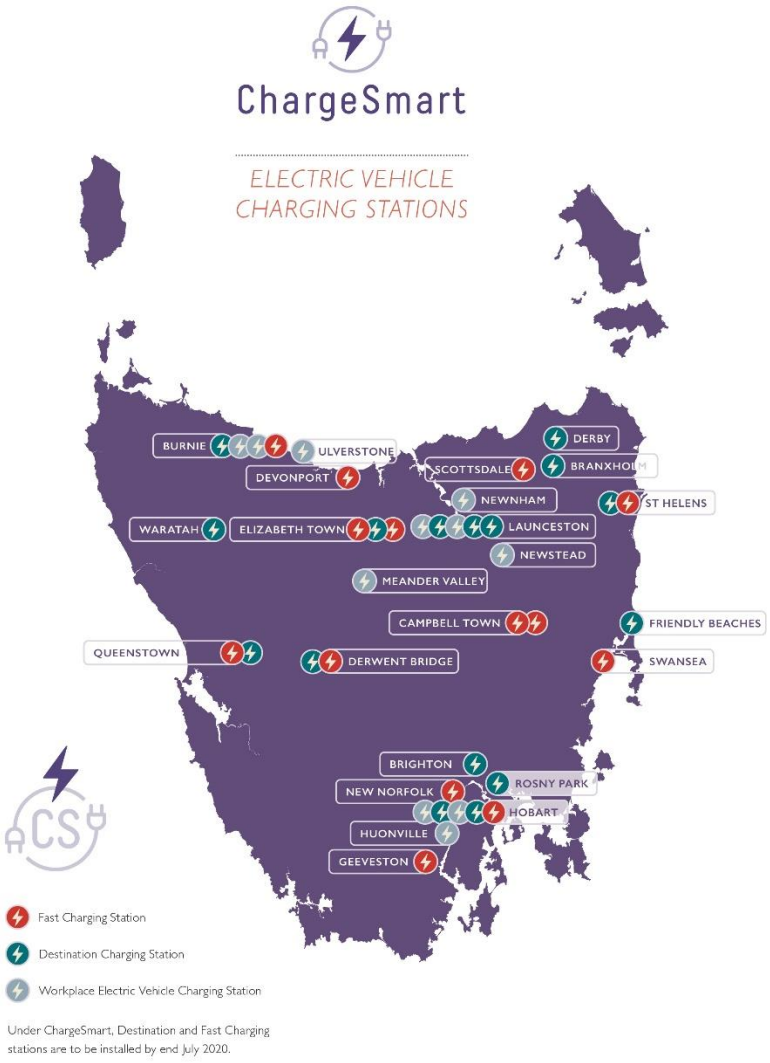
1. **Launceston to Hobart** (200 km) would involve a 5-10 minute top-up at a fast charging station along the way. A model with a slightly longer range could make the trip comfortably without stopping.
2. **Devonport to Hobart** (280 km) would involve a stop at a fast charging station for 30 minutes. Integrating this with a refreshment break would see the trip take no longer than in an internal combustion engine vehicle. A model with a 250 km range would need to stop for only 15 minutes.
3. **Smithton to Hobart** (410 km) would require two stops at fast charging stations for around 30 minutes each. A vehicle with a 400 km range would need to stop only once for a 10-15 minute charge.

If the electric vehicle was to return on the same day, models with 200 km range would require more and/or longer stops. Models with longer ranges would be better suited if such trips were to be made regularly.

[1] https://fleets.chargetogether.org/car-operating-cost-calculator/

Charging times depend on both the charger and the vehicle. A 50 kW charger can provide about 125 km of range in 30 minutes of charging. A 100 kW charger can deliver 250 km range in 30 minutes of charging, noting only a few of the electric vehicles models that are currently available are able to sustain this rate of charge. However this will rapidly change in the coming years.

Generally, vehicles with longer ranges are able to charge more quickly, and are therefore better suited when long trips are made regularly.



This document was prepared by Sustainable Living Tasmania to summarise the general information provided to councils during the Smarter Fleets Program – Electric Vehicles in Local Government.

The Smarter Fleets Program supported 10 Tasmanian councils to prepare to introduce electric vehicles into their fleets. The Program provided tailored information and analysis of the participating councils' existing fleets to calculate the environmental benefits and cost reductions that electric vehicles can offer.

The Program ran from July 2018 to June 2019 as a partnership between the Tasmanian Government and Sustainable Living Tasmania and was funded by the Tasmanian Government. This information is correct as at October 2019, but is general in nature so it may not be relevant to your fleet.