TASMANIAN ELECTRIC VEHICLE VISION

PART ONE: CHARGING INFRASTRUCTURE

AUGUST 2019

TASMANIAN ELECTRIC VEHICLE VISION – CHARGING INFRASTRUCTURE

INTRODUCTION

As Tasmania's peak mobility body, RACT's vision for Tasmanian motorists is to have access to a range of transport options available that are efficient, environmentally friendly and safe – such as electric vehicles (EVs). This is why RACT is developing a series of four papers, of which this is the first, outlining RACT's position on electric vehicles and associated technology in Tasmania. The series relates to the following:

- Part 1: EV charging Infrastructure
- Part 2: EV adoption: cost, subsidies and incentives
- Part 3: EV education and awareness
- Part 4: Hydrogen fuel-cell vehicles

RACT understands that over the course of this vision document, charging stations will be installed at a number of locations that may or may not be outlined in this document.

ELECTRIC VEHICLES – BACKGROUND

Electric vehicles derive all or part of their power from the electric grid. They include battery electric vehicles and plug-in hybrid electric vehicles (PHEVs), which are powered electric and internal combustion engines. Battery electric vehicles are powered by connecting to a charging station, which provides electricity that is stored in batteries. They produce no tailpipe emissions. However, while PHEVs use batteries to power an electric motor that is also charged, they also use a petroleum-based or alternative fuel to power an internal combustion engine.

Electric vehicle trends

Research has shown electric vehicles could make up all new automobile sales in Australia by the mid-2040s, and reach cost parity with internal combustion engine cars in the early to mid-2020s (Arena, 2018). The range capacity of EVs is also expected to reach parity with internal combustion engines by 2024. Battery capacity is closely linked with technology advancements and the availability and price of lithium, which is reducing by 8-9% each year. (Energeia, 2018).

National fleet

Nationally, electric vehicle purchases are increasing but remain about 0.2% of Australia's passenger vehicle market, with 4,821 purchases between 2011-17 (Climate Works, 2018). This figure is expected to reach 35% by 2050, on par with the global market share, according to a 2018 Centre for International Economics report for the Australian Automobile Association.

Tasmanian fleet

Electric vehicle purchases are increasing slowly but remain about 0.02% of Tasmania's passenger vehicle fleet. The latest official data shows that between 2011-17, there were 61 EVs registered in Tasmania (Climate Works, 2018). Known barriers to electric vehicle uptake in Tasmania include a lack of public charging infrastructure causing range anxiety, specified range versus real-world range, purchase price, model preference and lack of consumer awareness.

Environmental benefits

Tasmania's grid is powered by more than 90% renewable energy. The Tasmanian Government is aiming to achieve 100% renewable energy by 2022 (Tasmanian Climate Change Office, 2019). Electric vehicles in Tasmania recorded just 140 grams of carbon dioxide per kilowatt hour when charged from the grid in 2016. This compared to Victoria (1080 grams), NSW/ACT (830), Queensland (790), Western Australia (700), Northern Territory (640) and South Australia (490) (Climate Works, 2018).

RACT members

RACT's 2019 member survey indicated that 51% of those surveyed would not purchase an electric vehicle in the next five years. However, 56% said they would do so if there was a financial incentive. The survey also revealed the most contributing reasons for not purchasing an electric vehicle related to purchase and running costs (72%) and a lack of charging infrastructure (64%). The environment was be the main reason to purchase an EV (81%).

Funding support for charging infrastructure

In 2019, the Tasmanian Government provided $525,000 worth of grant funding to seven organisations, assisting them to install fast DC charging stations at 12 Tasmanian locations. The government has also provided a further $77,000 in grants towards 22 slow AC charging stations, going to destinations and workplaces. At the time of writing, a scheme from TasNetworks also subsidised 50% of charger installation costs, up to $20,000.

Home charging

In Australia, it is estimated that 80-90% of EV charging will generally be undertaken by motorists at home or work, with more than 99% of daily trips under 50km – for a round trip of 100km (Arena, 2018). This is well within the range of new EVs with larger battery capacities.

Tourism

Tasmania received 1.1 million visitors to Tasmania in 2018 (Tourism Tasmania, 2019). Of this total, 609,400 visitors used a rental vehicle, while 417,100 used their own or a friend/relative's vehicle. Furthermore, TT-Line reported nearly 90% of passengers travelled with a vehicle on board its Spirit of Tasmania vessels in 2017-18. TT-line is also planning to launch two new vessels by 2021, which will carry 2000 passengers between Devonport and Melbourne. This is an increase of 40% on the current vessels, with additional capacity for 70% more cars.

CHARGING INFRASTRUCTURE

Tasmania has 37 dedicated public charging sites as of August 2019, with approximately 800 sites nationally. Many of these sites include multiple charging stations, some of which have different plug types. RACT believes this lack of charging infrastructure contributes to range anxiety for drivers in Tasmania and acts as a barrier to EV adoption

Just two of these sites include DC fast charging stations (50kW), one in Launceston and one at Kempton. Both the Launceston and Kempton sites include a fast charger with two plug types, with the Launceston site also fitted with a slow charger.

Charging formats and plug types

Tasmania is yet to have a standardised plug type for EV charging, which inhibits uniformity during station rollout and public use. This is the case across Australia, with the Federal Chamber of Automotive Industries (FCAI) recommending Type 2 plugs for AC charging and either CHAdeMO or CCS for DC charging by 2020. The Federal Government is also considering plug types in its national EV strategy. Types of charging include:

1) Slow AC charging:
    - Traditionally used for overnight charging at destinations or at home/work.
    - Includes J1772 and SAE J1772 (Type 1) plug types, which are single-phase, as well as IEC 62196 and Mennekes (Type 2) plug types, which are three-phase.
    - Type 1: a 16 amp single-phase charger (3.7kW) would take approximately 9-30 hours to fully charge a vehicle depending on its battery capacity. A 32 amp charger (7.7kW) takes approximately 5-15 hours for fully charge an EV, depending on its capacity.
    - Type 2: a 16 amp three-phase charger (11kW) takes approximately 4-10 hours to charge a vehicle, while 32 amp chargers (22kW) take between 2-8 hours.
    - Type 1 plug types are the standard in Japan and China. Type 2 plug types are the standard in Europe and the USA. Australia uses a combination of both, but Type 2 is becoming the national standard.

2) Fast DC charging:
    - These chargers are often used in high population and visitation locations with large amounts of through traffic.
    - Includes Charge de Move (CHAdeMO) and Combined Charging System (CCS) plugs.

- Fast DC chargers are rated between 50-100kW and would fully charge a vehicle in approximately 30-90 minutes, depending on battery capacity.
- CHAdeMO plugs power Nissan, Mazda, Mitsubishi, Peugeot, Subaru, Tesla (with adapter), Kia, Honda, Toyota and Citroen EVs.
- CCS, which is an enhanced version of Type 2, powers Volkswagen, BMW, Ford and Hyundai EVs.

3) Ultra-fast DC charging:
    - These chargers are also used in high population and visitation locations with large amounts of through traffic.
    - Includes CHAdeMO and CCS plugs.
    - Ultra-fast chargers are rated between 150-350kW. The 350kW chargers can deliver up to 400km of range in 15 minutes, or 200km in eight minutes.

RACT'S ELECTRIC VEHICLE FOOTPRINT

In May 2019, Australian charging network organisation Chargefox, in which RACT is an investor, announced it would be installing a 350kW ultra-rapid charging site at Campbell Town by the end of the year. The charging station consists of four plugs (CHAdeMO and CCS), with two ultra-fast and two fast. It is capable of delivering 400km of range in 15 minutes through 100% renewable energy to capable EVs.

RACT has Tesla charging stations at its Destinations properties, including Freycinet Lodge, Cradle Mountain Hotel and Strahan Village. It also recently installed an AC charger at RACT House in Hobart, and Launceston AutoServe. This site is home to RACT's fully-electric Hyundai Ioniq, which is used to conduct road safety education programs across Tasmania's North and North West.

RACT ELECTRIC VEHICLE CHARGING VISION

RACT's Electric Vehicle Policy states the organisation will:

- Urge all levels of government and the private sector to invest in charging stations that would facilitate an electric vehicle highway across urban and regional areas to reduce range anxiety.
- Strongly encourage the continued rollout of paid charging facilities at local or Tasmanian Government owned assets, new buildings, car parks and on-street parking sites.
- Support partnerships between government and private enterprise to develop standardised charging plugs, enabling consistency for EV owners into the future.

In addition to the above, this paper details specific short, medium and long term actions RACT believes are required to achieve a comprehensive charging network over 10 years.

State coverage

RACT believes fast/ ultra-fast DC chargers should be installed along highways and in smaller towns. In the short term, they should be no further than 150km apart. However, in the future EVs will also have longer ranges compared to the 100-300km range of current vehicles. Therefore, distances between chargers in the medium to long term are not as critical.

While the installation of well-dispersed chargers is important now, RACT suggests Tasmania must also plan to install multiple chargers in specific locations, known as "hubs", in the medium to long term.

Furthermore, RACT believes that fast chargers should be installed in larger urban areas with high traffic volumes and a catchment of at least 20,000, or in key regional centres with large volumes of through-traffic. RACT believes it takes 500 to 1000 EVs to sustain each fast charger without a subsidy.

Impacts on the network

RACT understands that dispersed chargers are not likely to add as heavy loads to a network compared to grouping chargers in a 'hub'. However, hubs reduce queues, are easier to find and allow for longer charging sessions compared to more partial charging sessions observed at dispersed sites. The cost of charging hubs may be initially higher due to transformer upgrades, but sites will be more reliable due to back-ups when one is out of service. Hubs should initially include pairs of chargers, with the intention to install additional stations as demand increases.

Furthermore, in order to balance loads from the electricity grid, battery storage at charging sites can draw power during cheaper off-peak periods, or use solar power, and store the

energy. This can then be released to the charging station and used during on-peak periods. In theory, when two EVs arrive to a charging site (a hub), one charger can use power from the battery and the other from the grid to reduce network loads (McKinsey, 2018).

Infrastructure standards

RACT believes there should be a standardisation of plug types to enable consistency, with current chargers a mix of different varieties available in Australia and Tasmania. Standards should align with the FCAI's recommendation of Type 2 plugs for AC charging and either CHAdeMO or CCS for DC charging.

Reasons to invest

RACT encourages funding from the public and private sector to develop a comprehensive charging network. According to the Climate Group (2018), there are many benefits of investing in charging stations:

- By installing paid EV chargers for staff and customers, government and businesses can reduce their emissions and air pollution, create a green brand, develop EV fleets and attract staff.
- Slow AC charging would be best where people are staying for an extended period (hotels/workplaces), while ultra-fast/fast DC charging is best for short stays, such as restaurants, cafes or shops. Shops, cafes and restaurants can generate revenue through customer purchases while they wait for their vehicle to charge, while hotels are also able to install destination (AC) charging, attracting additional guests.

NETWORK ROLLOUT TIMELINE

RACT is encouraging a staged approach to the establishment of a Tasmanian charging network over a 10 year period. RACT has identified the priority locations for AC and DC charging to enable a network to help reduce range anxiety and facilitate EV uptake.

RACT's priorities for the first 3 years, as set out below, dictate that an initial DC charging spine must include 10 chargers at locations no further than 150km apart. This will adequately service the EVs across the state by minimising range anxiety. A further 20 AC chargers should also be installed at destinations currently lacking in infrastructure.

In later years, both DC and AC charging infrastructure must be increased to facilitate a more comprehensive network. The development of charging hubs will also be crucial as these reduce queues, are easier to find and allow for longer charging periods compared to dispersed sites.

Short term (0-3 years)

- Installation of 11 fast/ultra-fast DC chargers at high priority locations as part of a charging "spine".
- Distances between chargers should be no more than 150km.
- Cater for destination charging by increasing slow AC charging network by 20 stations.

Medium term (4-7 years)

- Increase fast/ultra-fast charging network.
- Start to develop fast/ultra-fast charging hubs through pairs of chargers at key sites.
- Install multiple slow chargers at key destinations as part of comprehensive hubs.

Long term (8-10 years)

- Install multiple fast/ultra-fast chargers in key areas to meet demand as part of comprehensive hubs.

The below indicates where in Tasmania RACT believes charging capability is required, when it is needed and an appropriate charging type. Population data has been sourced from the Australian Bureau of Statistics and the Department of Treasury. Visitation data has been sourced from Tourism Tasmania's 2018 Tasmanian Visitor Survey.

RACT Electric Vehicle Charging Vision

FAST/ULTRA-FAST DC CHARGING

Short Term	Medium Term	Long Term
Hobart Sorell Swansea Kempton Campbell Town Launceston Elizabeth Town Devonport Burnie Queenstown Tarraleah	<u>South</u> Rosny Park Glenorchy Kingston Huonville Kettering <u>East</u> Port Arthur St Helens <u>North</u> Prospect, Riverside, Legana <u>North West</u> Deloraine Smithton Tullah <u>Derwent Valley/Central Highlands</u> New Norfolk Bothwell **Start to develop fast charging hubs:** Hobart Sorell Kempton Campbell Town Launceston Devonport Burnie	**Consolidate fast charging hubs:** Hobart Sorell Kempton Campbell Town Launceston Devonport Burnie

FAST/ULTRA-FAST DC CHARGING – SHORT TERM

Hobart

While the City of Hobart plans to have a 60kW DC charger operating in the Dunn Street carpark by mid-2020, there is a need for an additional fast or ultra-fast charger in the short term. This is due to Hobart experiencing rapid growth in population and tourism. The city's population is predicted to grow from approximately 50,000 to 61,000 by 2037, with 948,600 visits and 3.5 million night time stays recorded in 2018.

Sorell

Sorell received 238,600 visits and 84,797 night time stays in 2018. There are around 14,000 in the local government area, with an expected increase to 20,000 by 2037. Sorell is the gateway to both the southern beaches, Tasman Peninsula, as well as the East Coast. It is 74km from Port Arthur, 55km from Orford and 111km from Swansea. Therefore, a fast or ultra-fast charger in the short term would be essential.

Swansea

Swansea is a major stopping point for people travelling on the East Coast to the Freycinet Peninsula or further north to Bicheno, St Helens and Bay of Fires. It is 135km from Hobart, 111km north of Sorell, 35km west of the Freycinet National Park, 50km south of Bicheno and 123km south of St Helens. Swansea also received 182,900 visits and 104,400 night time stays in 2018. Due to its distance from Sorell and the North East Coast as well as its high visitation, Swansea requires a fast or ultra-fast charger in the short term.

Kempton

As a key township north of Hobart on the Midlands Highway, Kempton is one of the last stopping points for people coming from Launceston to Hobart, similar to Campbell Town for northern-bound drivers. Therefore, a fast or ultra-fast charger would be essential for Kempton in the short term.

Campbell Town

Campbell Town is a key stopping point for people driving from Hobart to Launceston or the North West Coast, with 138,000 visits in 2018. As a result, the town is a crucial element in Tasmanian's future EV charging network due to the distance between Hobart and Launceston (200km), Hobart and Devonport (281km) and Hobart and Burnie (326km). It is therefore vital for a fast or ultra-fast charger to be installed here in the short term.

Launceston

Launceston is the main centre in Tasmania's North and is another vital location for chargers. This is because there is a 200km distance between Hobart and Launceston. The distance to

Devonport is also 100km and 146km to Burnie. The Launceston municipality is home to more than 65,000 people but is expected to reach 80,000 by 2037. There were 560,400 visits and 1.4 million night time stays in the city during 2018. While Launceston is home to Tasmania's only fast charger, there is a need for another fast or ultra-fast charger in the short term.

Elizabeth Town

Elizabeth Town is a key through-town on the Bass Highway between the North West Coast and Launceston. It is 151km from Launceston to Burnie, with Elizabeth Town serving as a key thoroughfare for vehicles travelling along this route. Therefore a fast or ultra-fast charger in the short term would be essential to cater for this traffic movement.

Devonport

The North West Coast is currently devoid of a fast charger. A return trip between Devonport and Launceston (200km) is problematic for EV owners. Population wise, there are 25,000 people living in the Devonport municipality, which is expected to rise to 30,000 by 2037. There were 302,400 visits and a 369,000 night time stays in Devonport in 2018 and the city is a port for the Spirit of Tasmania vessels, which carry passengers and cars between Tasmania and Victoria. As a key North West centre, a fast or ultra-fast charger is vital in Devonport in the short term.

Burnie

Similarly to Devonport, Burnie is lacking a fast charger. A return trip between Burnie and Launceston (292km) is also challenging. Burnie is also the last major centre before more regional North West towns, West Coast towns and one gateway to Cradle Mountain. There are approximately 20,000 residents in the Burnie municipality, which is expected to increase to 22,000 by 2037. There were also 195,700 night time stays and a massive 169,000 visits in 2018. As a result, a fast or ultra-fast charger in the short term is vital.

Queenstown

Queenstown is the last main centre before West Coast hotspot Strahan. Queenstown is 260km from Hobart, 196km from Devonport and 152km from Burnie, with a further 42km to Strahan. Queenstown received 135,800 visits and 67,465 night time stays in 2018. However, given its nature as a thoroughfare for people travelling to Strahan, Queenstown would be a suitable location for a fast or ultra-fast charger in the short term. There is also a slow AC charger at Tullah to service the area between West and North West.

Tarraleah

Tarraleah is a hydro town in the Central Highlands. Tarraleah is 126km from Hobart, 91km from New Norfolk and 120km from Deloraine. The village would serve as a stopping point for motorists travelling to and from the West Coast (Strahan and Queenstown) from Hobart, the

Central Highland lakes (Liawenee) or North West region (Deloraine, Devonport and Burnie). Coupled with the fact it is a hydro town, Tarraleah would be suitable for a fast or ultra-fast charger in the short term.

FAST/ULTRA-FAST (DC) CHARGING – MEDIUM TERM

South

Rosny Park

The Clarence municipality is home to approximately 55,000 people but is expected to grow to almost 70,000 by 2037. Therefore, there is a need for a fast or ultra-fast charger at its main hub of Rosny Park in the medium term. Rosny Park is a key thoroughfare for traffic travelling from or towards the Hobart CBD, as well as people heading towards the South Arm area.

Glenorchy

The Glenorchy municipality is home to approximately 47,000 people and is expected to grow to around 55,000 by 2037. There is a need for a fast or ultra-fast charger in the medium term in either the Glenorchy or Moonah hubs. These areas may serve as one key thoroughfare for people travelling towards other northern suburbs or out to the Brooker Highway.

Kingston

The Kingborough municipality is a rapidly growing municipal area, with approximately 36,000 residents. However, it is expected to grow to 55,000 by 2037. Its main hub, Kingston, is a key thoroughfare to the southern regional towns, including the Huon Valley. There is a need for a fast or ultra-fast charger in the medium term.

Huonville

Tourism interest in the Huon Valley is growing rapidly. There were 158,000 visits to the region's gateway, and capital, Huonville in 2018. More than 16,000 people live in the Huon Valley but this is expected to grow to 23,000 by 2037. Therefore, Huonville would be a suitable location for a fast or ultra-fast charger in the medium term.

Kettering

As the gateway to Bruny Island, Kettering welcomed 128,300 visits in 2018. The ferry service to Bruny Island makes the town a key stopping point for tourists and locals waiting to make the crossing. Despite its proximity to Huonville, Kettering's popularity would make it a suitable town to install a fast or ultra-fast charger in the medium term near the ferry terminal.

East

Port Arthur

Port Arthur and the Tasman Peninsula (including Eaglehawk Neck) received 263,400 visits and 247,100 night time stays in 2018. The region is home to the Tasman National Park, walks and historic sites. As a result of this visitation rate, and the fact Port Arthur is 74km from Sorell and 101km from Hobart, a fast or ultra-fast charger in the medium term is crucial.

St Helens

St Helens is yet another East Coast tourism icon and gateway to Bay of Fires and Binalong Bay. St Helens received 175,900 visits and 157,600 night time stays in 2018. As it is 123km north of Swansea, St Helens requires a fast or ultra-fast charger in the medium term.

North

Riverside, Legana and Prospect

In addition to Launceston, it would be beneficial to have fast chargers installed at nearby suburbs Prospect, Riverside and Legana to increase coverage. Riverside and Legana are in the West Tamar Council area, which is home to about 23,000 people. Prospect, including Prospect Vale, is south on Launceston. It is home to only 7000 people but it is also a thoroughfare for people travelling from the North West into Launceston. Fast or ultra-fast chargers at these locations would be required in the medium term to meet demand.

North West

Deloraine

Deloraine is a key township for motorists travelling along the Bass Highway to the North West Coast or to Launceston/Hobart, It is also the largest township north of the Central Highland lakes and one of the main stopping points, before tourist hotspot Cradle Mountain. There were also 165,000 visits to Deloraine in 2018.Therefore a fast or ultra-fast charger in the medium term would be essential.

Smithton

Smithton may not be a popular tourist destination like other North West towns, but its remoteness and distance from Devonport (131km) and Burnie (85km) and proximity to the North West wilderness makes it a vital stopping point. While there may have been just 55,000 visits to Smithton in 2018, this is no reason for this township to go without EV charging. Considering these reasons, a fast or ultra-fast charger in the medium term would be vital.

Tullah

Tullah is a small town on the Murchison Highway between the North West Coast and the West Coast. It is 112km from Burnie and 89km from Strahan. There were also approximately 65,000 visits to Tullah in 2018. Therefore a fast or ultra-fast charger in the medium term would be essential.

Derwent Valley/Central Highlands

New Norfolk

The gateway to and capital of the Derwent Valley is New Norfolk. The Derwent Valley's population may only be set to increase from 10,000 to 11,000 by 2037. However, New Norfolk welcomed 138,700 visitors in 2018 and nearby locations like Mount Field received even larger visitation numbers. It is also the gateway to the West Coast and one of the routes to reach Tasmania's Central Highland lakes. New Norfolk is 92km from Tarraleah and 225km from Queenstown meaning, a fast or ultra-fast charger here in the medium term is essential.

Bothwell

Bothwell is the capital of the Central Highlands and is the last major township between the Central Plateau's lakes and Deloraine, which is 128km away. Therefore, a fast or ultra-fast charger in the medium term would be most desirable. It would also assist those drivers coming from the Derwent Valley to the highlands and North West.

FAST/ULTRA-FAST (DC) CHARGING HUBS - MEDIUM AND LONG TERM

Hobart

As Tasmania's capital city, Hobart would serve as a key location for fast charging hubs, particularly when considering population growth and visitation. The development of a fast or ultra-fast charging hub will be needed to cater for increased demand. This would include a pair of chargers in the medium term and a comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

Sorell

Sorell is the gateway to the Tasman Peninsula and East Coast. The popularity of these areas for locals and visitors warrants the development of a fast or ultra-fast charging hub to cater for increased demand. This would include a pair of chargers in the medium term and a comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

Kempton

Kempton is a key stopping point on the Midlands Highway between the North and South of Tasmania. The development of a fast or ultra-fast charging hub will be needed to cater for increased demand. This would include a pair of chargers in the medium term and a comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

Campbell Town

Campbell Town is the major thoroughfare for motorists travelling between Tasmania's South, North and North West. As electric vehicle demand increases, so will fast charging. Therefore the development a fast or ultra-fast charging hub will be needed to cater for this demand. This would include a pair of chargers in the medium term and comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

Launceston

Tasmania's northern capital, Launceston is a key urban centre that, like Hobart, is experiencing population growth. It is also a key gateway for people exploring the North and North West. As a result the development of a fast or ultra-fast charging hub to cater for increased demand would be needed. This would include a pair of chargers in the medium term and comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

Devonport

Devonport is the first major centre on the North West and a key tourism gateway. Therefore, the development of fast or ultra-fast charging hubs to cater for increased demand will be necessary. This would include a pair of chargers in the medium term and comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

Burnie

Similarly to Devonport, Burnie is a key gateway to both the far North West and West coasts. Therefore, the development of a fast or ultra-fast charging hub to cater for increased demand will be necessary. This would also include a pair of chargers in the medium term and comprehensive hub of multiple chargers in the long term. The number of chargers would be subject to demand.

SLOW (AC) CHARGING

Short term	Medium term
Increase slow chargers	**Slow charging hubs**
South	Hobart
Hobart	Port Arthur
Bruny Island	Freycinet Peninsula
	Launceston
East	Devonport
Port Arthur	Burnie
Orford	Cradle Mountain
Swansea	Strahan
Bicheno	
Freycinet Peninsula	
St Helens	
North	
Launceston	
Bridport	
Derby	
North West	
Cradle Mountain	
Devonport	
Burnie	
Stanley	
West	
Strahan	
Derwent Valley/Central Highlands	
Mount Field	
Lake St Clair	
Liawenee	
South West	
Strathgordon	

Key locations already with non-Tesla slow charging as of June 2019:

South	North	North West/West Coast
Hobart	Launceston	Deloraine
Mount Field	Westbury	Tullah
Bruny Island		Strahan
Huonville		Sheffield
		Latrobe

SLOW (AC) CHARGING AND CREATION OF HUBS – SHORT AND MEDIUM TERM

While fast charging infrastructure is a key priority for Tasmania, RACT believes that there is a need to increase slow AC, or destination, charging infrastructure across the state.

South

Hobart

Hobart is home to just four public slow chargers. However, as Tasmania's capital city, it is in need of additional slow chargers as well as slow charging hubs to cater for the significant number of people living and staying in Hobart.

Bruny Island

Bruny Island, which is 75km from Hobart, had 156,900 visits in 2018 and 142,100 night time stays. It is 66km between Dennes Point in the North and Bruny Island Lighthouse in the South. The island already has one slow charger but due to its popularity for overnight visits, there is a need to install additional chargers in the short term.

East

Port Arthur

Port Arthur is a major drawcard on the Tasman Peninsula, attracting a thousands of visitors and overnight stays. As a result, it would be suitable for a slow charger in the short term and a slow charging hub in the medium term. Port Arthur is home to a Tesla charger only, with another at nearby Eaglehawk Neck.

Orford

Orford is the first township that open up onto the East Coast. Orford is 55km north from Sorell and also 56km south of Swansea. Orford would make an ideal location to recharge a vehicle while setting off on Tasmania's Great Eastern Drive route. Orford also recorded 103,000 visits in 2018 and would be suitable for a slow charger in the short term.

Swansea
Swansea is a popular overnight destination that would benefit from a slow charger, considering it has a significant number of night time stays not dissimilar from Bicheno and St Helens. This slow charger should be installed in the short term.

Freycinet Peninsula
The Freycinet National Park received 310,000 visits in 2017-18. This location is a popular overnight stopping point for visitors with a number of hotels. Nearby Coles Bay also received 211,300 visits and in 2018. As it is a coastal area, it would ideal for slow charging. As a result, a slow charger would be ideal in this area in the short term and a slow charging hub in the medium term. Freycinet is home to two Tesla chargers only.

Bicheno
Bicheno is 18km north of the Freycinet National Park and 74km south of St Helens. It is a popular location for East Coast holidaymakers to stay when exploring St Helens and the Freycinet Peninsula. Bicheno received 202,400 visits and 158,500 night time stays in 2018 and is therefore another location that requires a slow charger in the short term.

St Helens
St Helens has a high visitation and overnight stay rate. Given its distance from other East Coast hubs, and its proximity to Bay of Fires, a slow charger in the medium term is necessary to cater for people staying in this town.

North

Launceston
Launceston is home to just four public slow chargers, three of which are Tesla. Additional slow chargers as well as slow charging hubs are needed in Launceston to cater for the significant number of people living and staying in the northern capital.

Bridport
Bridport attracted 71,200 visits and 59,800 night time stays in 2018. The town is just 77km north east of Launceston and just south of Scottsdale, but is quite isolated from on the North Coast. As a key tourist destination with golfing at Barnbougle, Bridport would be an ideal location for slow charger in the short term.

Derby
A growing hotspot for mountain bikers thanks to the Blue Derby trails, Derby would be another ideal location for electric vehicle chargers. About 95km east of Launceston and 64km west of St Helens, Derby received 65,200 visits and 36,600 night time stays in 2018. It

would also be a good stopping point for people making the 160km trip from Launceston to St Helens. A slow charger in the short term is essential.

North West

Devonport and Burnie
Devonport and Burnie are the two highest urban centres on the North West Coast that people choose to stay overnight. However, there are no slow chargers in these two cities. Therefore, the installation of slow chargers in the short term and slow charging hubs in the medium term are vital to cater for visitation.

Cradle Mountain
Cradle Mountain is one of Tasmania's most iconic tourism drawcards, with a number of walks and sites on offer. As a result of this, there were 280,000 visits in 2017-2018, with 303,400 night time stays. Considering that Cradle Mountain is a remote destination, most visitors opt to stay the night. There are two Tesla slow chargers Cradle, meaning a standard charger is essential in the short term and a slow charging hub in the medium term.

Stanley
Stanley, home to the Nut, is another of Tasmania's tourism drawcards. As a result of this, there were 106,900 visits to Stanley, with 93,300 night time stays in 2018. Considering that Stanley, like Cradle Mountain, is a destination town with only one entry point, many visitors would also choose stay the night at this location. There are also no charging stations at Stanley. As such, it would be suitable for slow charger to be installed in the short term.

West

Strahan
Strahan is at the "edge of the world" on the West Coast. Due to its beauty, as well as natural wonders such as Gordon River and Ocean Beach, is a much loved tourism hotspot. Strahan received 142,700 visits and a massive 277,000 night time stays in 2018. Strahan is home to a Tesla slow charger, meaning it requires a standardised slow charger in the short term and a slow charging hub in the medium term to cater for such high visitation.

Derwent Valley/Central Highlands

Mount Field
Mount Field National Park boats the fourth highest national park visitation rate behind the Freycinet Peninsula, Cradle Mountain and the Tasman Peninsula, with 196,000 visitors in

2017-18. Mount Field is home to ski fields, walks and other attractions. It does already have one slow charger but given its high visitation, another would be required in the short term.

Lake St Clair

Lake St Clair, in the Central Highlands, is the starting point to the Overland Track as well as home to Pumphouse Point. This is a contributor to the 120,000 visitors the nearby Derwent Bridge received in 2018. Therefore a slow charger in the short term would assist people staying in the area, who may continue to explore the highlands and West Coast. The lake is 128km from New Norfolk and a further 85km to Queenstown.

Liawenee

Liawenee is the one of the small townships at Great Lake. Liawenee is 71km north of Bothwell and 57km south of Deloraine. Due to its nature as a shack and lake fishing town, where people would stay overnight at shacks or Thousand Lakes Lodge, a slow charger at Liawenee in the short term would be most suitable.

South West

Strathgordon

Strathgordon, in the South West National Park, is one of Tasmania's many hydro towns. It is quite remote but home to both the Gordon Dam, Lake Pedder and Lake Gordon, as well as the Pedder Wilderness Lodge. Maydena is the last town before Strathgordon, 72km away. Strathgordon is also 85km from Mount Field. This isolation is an issue, and considering Strathgordon is a dead end location, a slow charger would be most suitable in the short term.