ELECTRIC VEHICLE COUNCIL

LOCAL GOVERNMENT RESOURCE PACK

Contents:

1. ELECTRIC VEHICLES AND LOCAL GOVERNMENT

The Electric Vehicle Council

The Electric Vehicle Council is the peak national body representing the electric vehicle industry in Australia. We work with the EV industry and governments to accelerate the uptake of electric vehicles in Australia.

Information for local governments

In 2019, the Electric Vehicle Council partnered with ClimateWorks and the Municipal Association of Victoria on the *Electric Vehicle Ready Local Government Fleets* report. The report identified that a lack of knowledge about electric vehicles, total cost of ownership, and charging infrastructure is limiting local governments' support for electric vehicles.

This Local Government Resource Pack is intended to provide local governments with an understanding of the policies and projects which support a transition to electric vehicles. Local Governments have the opportunity to accelerate electric vehicle uptake through initiatives such as:

- Installing electric vehicle charging infrastructure
- Future-proofing the built environment
- Transitioning council fleets
- Educating residents
- Setting and meeting sustainability targets

The pack includes case studies to demonstrate the successes local governments have already had with electric vehicle programs, to inspire and steer others on their journey.

The role of local government in accelerating electric vehicle uptake

Local governments play an integral role in steering the transition to electric vehicles in Australia. Driven by the need to reduce carbon emissions, electric vehicles are being integrated into local government fleets, charging infrastructure is being installed in public places, and projects and policies are being developed to encourage and accelerate the shift towards green transport.

When residents see local governments installing chargers in public places, driving electric vehicles, conducting information sessions, and updating building codes, it familiarises and normalises electric vehicles and their associated technologies. Providing tangible experiences for residents will create opportunities for them to sit in the driver's seat of the changing shape of transport.

For local governments, electric vehicles provide several direct benefits. Electric vehicles in fleets will save money on fleet operations and maintenance, charging infrastructure will provide an additional source of revenue, and future proofing buildings will alleviate the burden of retrofitting in future decades. Implementing electric vehicle policies and projects will demonstrate leadership in the fight to reduce carbon emissions and satisfy communities who have asked for action to protect the environment.

Where electric vehicle transition is coupled with renewable energy initiatives, local governments can make leaps in reducing carbon emissions and move to fleet operations that are more economical. Integrating electric vehicles into Climate Action Plans is an important way to drive uptake in local governments and communities.

Resource pack structure

1 **Introduction to electric vehicles**

2 **Local government EV policies and projects**

- Fleets
- Charging networks
- Charging strategies
- Development Control Plans and 'EV ready'
- Consumer information

3 **Additional resources**

This document is not an exhaustive representation of what is being achieved in local governments. We will update this document as more case studies are provided. To share your EV projects and policies please complete ***the case study template*** and send it to ***office@evc.org.au***

COVID-19

The impacts of COVID-19 are far reaching and felt across all parts of the community. More residents are living localised lives as they work from home. Now, residents are walking around their neighbourhoods, visiting local business and cafes, going to the playground, and driving to the dog park.

Local governments must use this opportunity for change, to build and invest in communities that run on green transport and energy. While the effects of COVID-19 will likely see many people working from home for the foreseeable future, life will return to normal with time, and it would be a great achievement to see future-proofed communities as people get back into their cars and resume the daily commute.

This is the right time to create change in communities, the right time to engage them, and the right time to lead them. The electrification of transport and investment in charging infrastructure, as well as green initiatives for renewable energy and battery storage, are all ways to propel local governments into the future world of clean technology, inspiring residents, businesses, and governments to act to reduce carbon emissions and protect the environment.

Charge Together Fleets

Education is critical to increasing electric vehicle uptake in local governments – Charge Together Fleets[1] is a **free program** to help fleet and sustainability managers transition to electric vehicles by providing the resources to help them make informed business decisions.

The Charge Together Fleets program includes:

ChargedUP!

A webinar series with EV experts and case studies of fleets with electric vehicles and charging infrastructure.

BetterFleet

A total cost of ownership calculator to help with EV and ICEV vehicle comparison. Includes a vehicle guide.

EVeducate

An education platform with information about electric vehicles, charging, business case development, fleet transition and sustainability.

Join the program here: *www.chargetogether.org*

[1] Charge Together Fleets is an Electric Vehicle Council Program, sponsored by Evenergi.

2. INTRODUCTION TO ELECTRIC VEHICLES

What is an electric vehicle?

An electric vehicle is a vehicle that is partially or completely powered by electricity, with power stored in a rechargeable battery. Electric vehicles can be cars, scooters, bikes, buses, garbage trucks, vans, and specialised equipment.

Battery electric vehicles (BEVs) run entirely on an electric drivetrain and are 100% powered by electricity stored in the vehicle's battery pack. They are recharged using power points or electric vehicle charging infrastructure.

Plug-in hybrid electric vehicles (PHEVs) have two powertrains: an electric motor and an internal combustion engine. PHEVs can be driven in different modes using their different drivetrains.

When a PHEV is driven using the electric mode, it is powered by electricity stored in the battery pack, and does not generate emissions. When using the internal combustion engine, the vehicle is powered by petrol or diesel. Generally, the electric motor is used for short-range distances, and the internal combustion engine for longer distances.

NOTE:

Some people also consider Hybrid Electric Vehicles (HEVs) electric vehicles. Though these are fuel efficient, HEVs run entirely on petrol and for the purpose of this document are not considered electric vehicles.

What electric vehicles are available in Australia?

As of November 2020, there are 28 electric vehicles available for purchase in Australia, with additional models expected over the next 12 months. The Charge Together Fleets Vehicle Guide provides up-to-date specification information on all fleet vehicles in Australia.

You can access the vehicle guide *here.*

28
ELECTRIC VEHICLES AVAILABLE FOR PURCHASE

How far can electric vehicles travel per charge?

The average range of passenger electric vehicles in Australia is approximately 400km (varying from 260km to 650km). However, many people underestimate the real driving range of electric vehicles, while overestimating their daily driving distances.

400km
AVERAGE RANGE OF PASSENGER ELECTRIC VEHICLES

In fact, 79% of people surveyed by the NRMA, RACV and RAA, for the Electric Vehicle Council, believe that the average range of an electric vehicle is less than 400km, resulting in range anxiety.

79%
BELIVE THAT THE AVERAGE RANGE IS LESS THAN 400 KM

Range anxiety, the fear that an electric vehicle will run out of range before a driver reaches their destination, is a major barrier to electric vehicle uptake. Therefore, it is important to understand your daily driving kilometre needs, to find an electric vehicle that is suitable for your daily operations.

You can find more information on vehicle range *here.*

How much do electric vehicles cost?

Electric vehicles do tend to cost more upfront, but it is important to compare fleet vehicles on their total-cost-of-ownership, rather than on their upfront cost.

The business case for electric vehicles becomes more favourable when you consider the savings from refuelling with electricity and reduced servicing and maintenance.

The free ***BetterFleet platform***, which is part of the Charge Together Fleets program, allows you to input your current fleet data and compare vehicles. The platform was designed by fleet and sustainability managers to help you make the business case for transition in less than 15 minutes.

MAKE	Hyundai	Hyundai	Nissan	Mitsubishi
MODEL	i30	IONIQ	Leaf	Outlander
TYPE	ICEV	BEV	BEV	PHEV
YEAR	2019	2019	2019	2019
VARIANT	Go (Petrol Manual)	Electric Elite	Leaf	PHEV ES
TERM	3 years	5 years	5 years	5 years
ANNUAL DISTANCE	12000 km	12000 km	12000 km	12000 km
PURCHASE COST	$19.990	$44.990	$49.990	$45.990
TCO/KM	$0.51	$0.64	$0.77	$0.8
RUNNING COST/KM	$0.22	$0.11	$0.15	$0.23
TAILPIPE CO2/KM	176 g	0 g	0 g	13 g
WTW CO2/KM	225 g	90 g	137 g	197 g
ELECTRIC RANGE	0 km	230 km	270 km	45 km

Figure 1: Example of BetterFleet analysis

How do I compare an internal combustion engine vehicle to an electric vehicle?

The considerations for comparing electric vehicles and internal combustion engine vehicles are the same. Fleet managers should consider fit-for-purpose requirements that address ***total cost of ownership***, upfront costs, safety ratings, utilisation, environmental concerns, and duty cycles.

It is important to make like-for-like comparisons for electric vehicles to provide a credible business case.

You can find more information on making like-for-like comparisons *here.*

How are electric vehicles charged?

BEVs and PHEVs can be refuelled using standard power points or specialised charging infrastructure.

There are different levels of electric vehicle charging infrastructure. The different levels provide charging at different rates and speeds.

What is the difference between AC and DC charging?

The electricity grid supplies power as alternating current (AC). However, electric vehicles charge their batteries using direct current (DC).

Therefore, an electric vehicle has an onboard charger to convert AC power to DC. When an electric vehicle is plugged into an AC charger, the onboard charger limits the rate of charging. This means that AC charging takes a while to refuel a vehicle.

DC chargers, however, convert electricity from AC to DC before it reaches the vehicle. This means that when an electric vehicle is plugged in to a DC charger it can charge at faster rates, because it is not using its onboard charger.

More information is ***available here.***

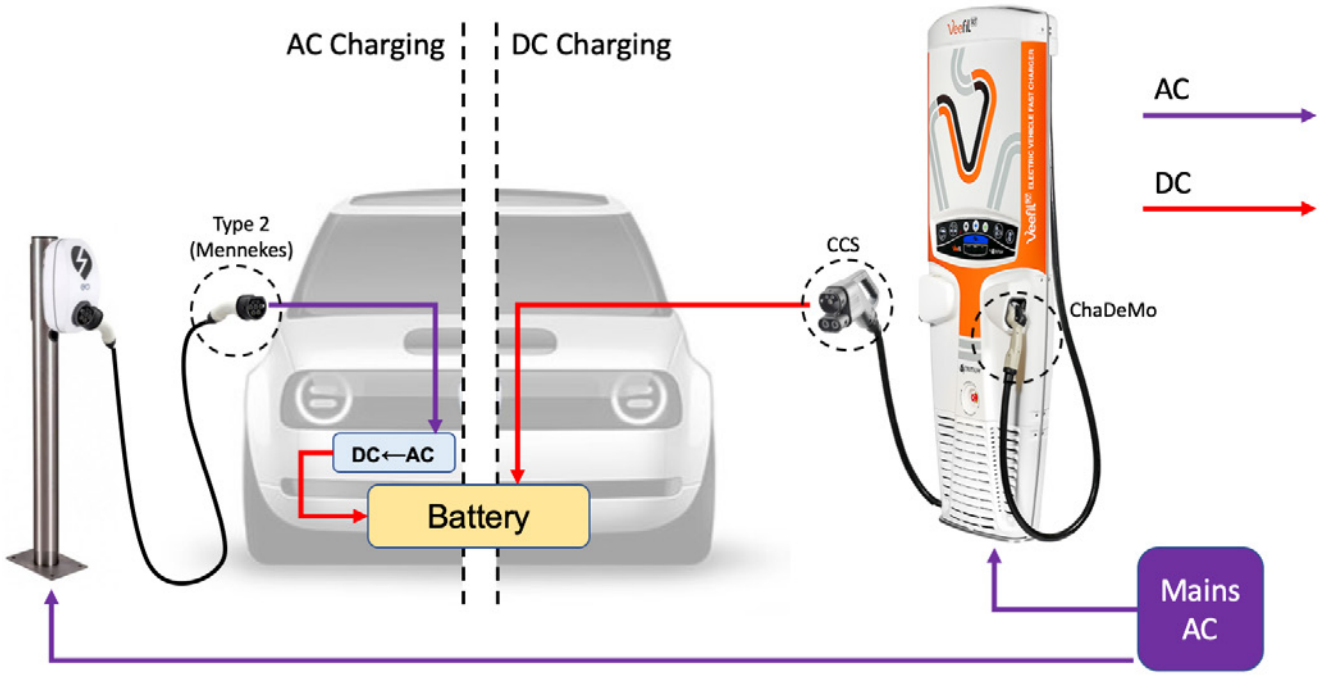


Figure 2: AC and DC Charging taken from *https://fleets.chargetogether.org/article/all-about-chargers/*

What are the different charging levels?

This table provides a summary of the different charging levels:

LEVEL	LEVEL 1	LEVEL 2		LEVEL 3		
TYPE	Type 1: Household power point and adapter	Type 2: Wall charger	Type 2: Wall charger	Type 3: Fast charger	Type 3: Fast charger	Ultra-rapid charger
WHERE	Anywhere there is a normal power point	Homes, hotels, workplaces	Shopping centres, public car parks, on-street parking	Intercity petrol, petrol stations	Faster capacity charging for intercity travel and petrol stations	Highways and long-distance travel routes
kW (up to)	2.3 kW	7.4 kW	22 kW	50 kW	120 kW	350 kW
TIME to add 100 km of range*	8.7 hrs	2.7 hrs	55 mins	24 mins	10 mins	5 mins

*based on a vehicle energy efficiency of 20 kWh/100 km

Electric vehicle charging technology is currently capable of offering 350 kW speeds, though most current electric vehicle batteries are not able to charge at this speed. Battery technology, however, is constantly evolving and is expected to be able to accommodate 350 kW charging speeds in the near future.

Do electric vehicles have different plugs?

It is true that electric vehicles from different manufacturers may have different plugs. However, the EV industry has addressed this issue in Australia by standardising the range of plugs that should be used on vehicles available in Australia.

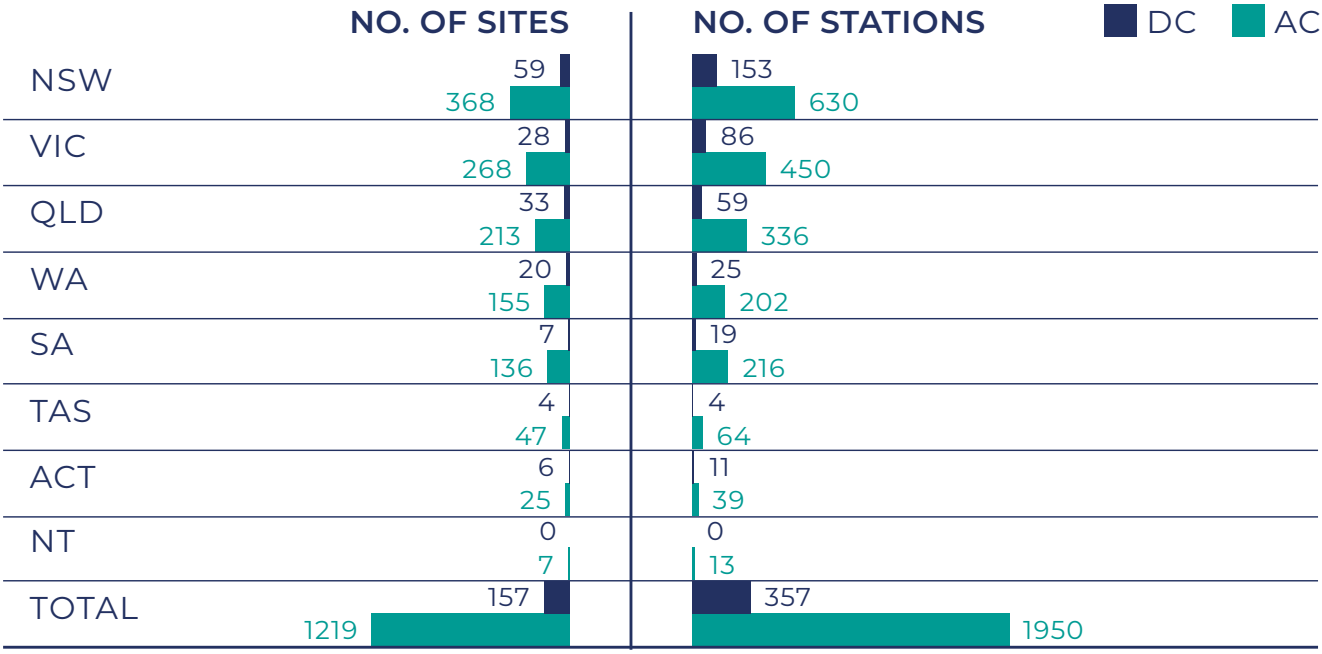
The Federal Chamber of Automotive Industries (FCAI) endorses the Type 2 (Mennekes) plug for AC charging and both the CCS and ChaDeMo for DC charging and all passenger electric vehicles available in Australia are compliant with this endorsement.

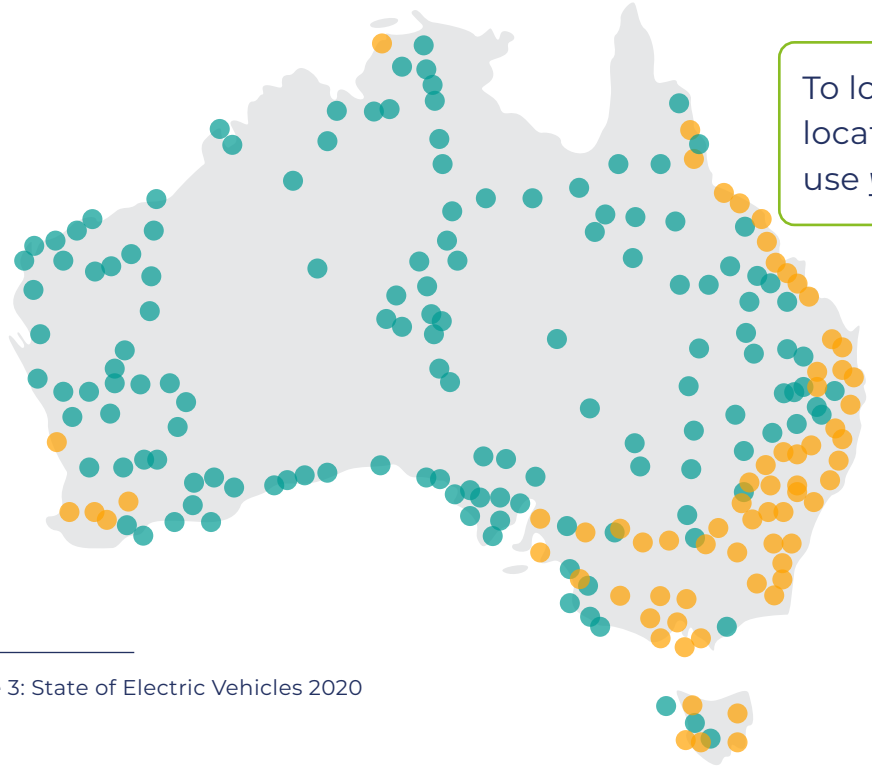
Otherwise, with older vehicles that are not compliant with this standard, you will be still be able to charge your car using charging stations with plug adaptors. Most cars already come with the cables and plugs required to charge your car or otherwise will be readily available for purchase. Consider the process no different than what you might need for your headphones.

How can I find public charger locations?

There is a growing network of public charging locations across Australia, with investment increasing annually. Currently, there are 357 DC chargers and 1,950 AC chargers in Australia, located in shopping centres, in regional areas, along highways, at tourist destinations, and in urban centres.

Below is the state breakdown of the number of public charging sites and number of charging stations in Australia.





To locate charging locations across Australia, use ***www.plugshare.com***

Figure 3: State of Electric Vehicles 2020

Do electric vehicles really produce fewer emissions than internal combustion engine vehicles?

Transport emissions account for 19% of Australia's emissions, and that number is set to grow. Vehicle emissions are measured in two ways:

Tank-to-wheel
exhaust emissions only

Well-to-wheel
fuel lifecycle emissions (including emissions for the production and distribution of vehicles)

Internal combustion engine vehicles produce tank-to-wheel emissions in addition to well-to-wheel emissions. However, battery electric vehicles do not have tank-to-wheel emissions, though they do 'produce' emissions when you consider how they were made and distributed.

As such, electric vehicles produce significantly fewer emissions than internal combustion engine vehicles on average - even when charged directly off the electricity grid. If you power electric vehicles using renewable energy, they produce zero.

The Federal Government recognises the benefit of electrifying Australia's fleet in Australia's Emissions Projections 2019:

> 'With the average emissions intensity of grid electricity projected to decline, the emissions associated with the use of new electric vehicles per kilometre travelled is projected to improve by 33 per cent over the period 2020 to 2030.'

According to ***Dr Jake Whitehead*** from the University of Queensland:

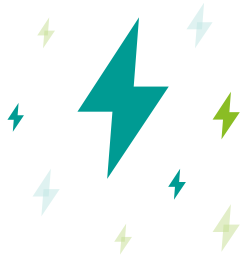
> 'The typical Australian petrol vehicle generated 355 grams of CO_2-equivalent per kilometre in real-world fuel life cycle emissions. By comparison, a typical electric vehicle charged using the average Australian electricity grid mix generated about 40% fewer emissions, at 213 grams of CO_2-equivalent per kilometre.'

More information can be found in this accompanying paper ***'Where are we heading with electric vehicles'.***

What are Australians' attitudes to electric vehicles?

56%

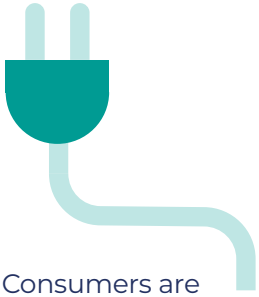
of survey consumers would now **consider** purchasing an **electric vehicle as their next car**



Environmental benefits are **regarded** as the main public benefit of transitioning to electric vehicles, but fuel security and public health benefits are also highly regarded.

Consumers want to see **governments provide public charging infrastructure,** subsidies for home charging installation, and subsidies to reduce vehicle purchase costs.

Consumers are **encouraged** by electric vehicles' **lower environmental footprints, lower running and maintenance costs,** and relative performance.



Consumers are **concerned** about the lack of accessibility to **charging equipment, purchase cost,** and **uncertainty** over driving range.

almost 50%

of consumers say they would power their electric vehicle using **renewable energy.**

almost 80%

of consumers **underestimate** electric vehicle range.

almost 2/3

of consumers say that the **COVID-19 pandemic** means governments should continue **prioritising electric vehicle policies** at the same level or make them an even higher priority.

More information on consumer attitudes is available in ***the State of Electric Vehicles 2020.***

What is the 'chicken and egg' dilemma?

The chicken and egg dilemma refers to the question of 'which comes first' for the EV industry – charging infrastructure or electric vehicles? A lack of demand creates uncertainty for investors and governments, who are unwilling to invest in infrastructure that may not be utilised until electric vehicle uptake increases. However, a lack of charging infrastructure restricts uptake as drivers are concerned about the inability to conveniently charge their car and range anxiety.

Investment in highly visible electric vehicle charging infrastructure is a way to familiarise potential EV drivers with EV technology and demonstrate the future of the automotive sector.

There is a role for councils to play in providing residents with highly visible charging infrastructure to alleviate concerns about recharging and range anxiety, while providing equitable access to charging infrastructure for renters and residents in multi-residential developments.

What is 'ICEing'?

Electric vehicles require special parking bays so that charging infrastructure is accessible and identifiable. When an Internal Combustion Engine Vehicle (ICE) parks in an electric vehicle charging bay, this is referred to as ICEing. To discourage ICE drivers from parking in electric vehicle charging bays, ICEing may result in a fine.

3. LOCAL GOVERNMENT POLICIES AND PROJECTS

Many local governments in Australia have successfully planned and implemented electric vehicle policies and projects across different areas of council. In doing so, these local governments have overcome the challenges of being first movers and serve as inspiration and experts for other local governments.

The policies and projects in local governments are varied and achieve different objectives. We have chosen examples from several types of electric vehicle projects and policies to demonstrate what is possible at a local government level.

Local Government Fleets

Transport continues to be a significant contributor of carbon emissions for all levels of governments. Transitioning local government fleets to electric vehicles is one way to reduce these levels, promote zero emissions transport in their communities, and feed used electric vehicles into the second-hand market.

Feedback from local government fleet and sustainability managers has highlighted the following as critical for getting support for electric vehicles in fleets:

- Local governments have the most success when the fleet/sustainability team has had **top-down/executive support.**
- The best way to convince councillors and staff about the benefit of electric vehicles is to **take them for a test drive** – demonstrating their performance will help assuage concerns that they are not up to the task of normal council operations.
- **Staff education** is an important part of the electric vehicle transition process – educating staff on how to charge an electric vehicle is equally as important as how to drive an electric vehicle.

Furthermore, it is important to make like-for-like vehicle comparisons so that the electric vehicle business case stacks up. Integrating electric vehicles requires new knowledge for fleet managers – the Charge Together Fleets program is designed to help fleet and sustainability managers learn about EVs and then build the business case using the BetterFleet tool.

Currently, not all local government vehicles can be replaced by electric vehicles – with some fit-for-purpose requirements necessitating models that are not currently available in the Australian market. However, there are plenty of applications where electric vehicles are a suitable replacement vehicle in local government fleets. A good first application of electric vehicles is pool vehicles for staff members.

Many local governments are already purchasing electric vehicles despite not having electric vehicles in their fleet policy, demonstrating there is no need to wait to begin the transition.

Local governments that are further along the journey are integrating electric vehicles into their fleet policy, ensuring the preferential procurement of electric vehicles in their fleets.

EV Fleet Examples

Many local governments across Australia have adopted electric vehicles into their fleets. These include:

State	Council(s)
New South Wales	City of Sydney, City of Ryde Council, Northern Beaches Council, Canterbury Bankstown Council, Wagga Council, Lismore City Council, Willoughby City Council, Penrith City Council, City of Newcastle
Queensland	Rockhampton Council, Brisbane City Council, City of Gold Coast, Bundaberg Regional Council.
South Australia	Kangaroo Island Council
Tasmania	Huon Valley Council, City of Hobart.
Victoria	City of Greater Shepparton, Hobsons Bay Council, Moreland City Council, City of Melbourne, City of Casey, Whitehorse City Council, Stonnington City Council, Brimbank Council, City of Stonnington.
Western Australia	City of Cockburn, City of Fremantle, City of Belmont, City of Wanneroo, City of Bayswater, City of Canning, City of Mandurah, City of Swan, City of Kalgoorlie

Updating fleet policy is a way to ensure electric vehicles are preferenced and compared appropriately against their internal combustion engine counterparts.

Heavy vehicles

The electrification of specialised and heavy vehicles is also a focus for local governments, with many trialling or using electric garbage trucks and specialised equipment, such as a cherry picker.

In the case of garbage trucks, the service and vehicles are provided by a contracted refuse operator. Local governments can help lead the transition to electric vehicles by requiring their waste operators' trial or run electric garbage trucks as part of the tender process.

Heavy Electric Vehicle Examples

City of Port Adelaide Enfield, City of Casey, Yarra City Council, City of Freemantle, City of Hobson's Bay, Blacktown City Council.

CASE STUDIES:

- Moreland City Council Fleet Policy
- City of Canterbury Bankstown Council 'Charging Ahead' Policy

CASE STUDY:

Moreland City Council – Light Vehicle Policy

Moreland City Council updated their ***Light Vehicle Policy*** to promote the uptake of electric vehicles in their fleet through a Zero Emissions Vehicle (ZEV) first priority.

The stated objectives of the ZEV policy are to:

1. ensure the transport requirements of Council operations are met in the most efficient, transparent, and equitable manner with the lowest possible environmental footprint.
2. respond to ever increasing evidence and global concern of the impact of vehicle emissions on human and environmental health. To continue Council's commitment to addressing climate change and reducing local airborne emission through the purchase and operation of low emission vehicles for the light vehicle fleet, with a view to transitioning to zero emissions vehicles consistent with corporate and community 'zero carbon' commitments.

The inspiration for the policy came after Council identified that the Light Vehicle Policy had not been updated in 11 years despite guidelines requiring its review every two years. As this needed to be updated, and there was a desire for a zero-emissions council fleet, a policy update that prioritised zero emissions vehicles was considered a way to futureproof procurement for Council.

The Policy Writing Process

STEP 1

In 2013, Council identified the potential for a zero emissions fleet.

Council engaged a consultant to undertake a ***feasibility study*** to assess the viability of electric vehicles in their fleet.

The study concluded that electric vehicles could operate in their fleet; EVs would deliver a positive benefit cost ratio over the ownership lifecycle even with the higher upfront purchase price.

STEP 2

Council then decided to review light vehicle fleet operations and fleet policy. A steering committee was established which included representatives from the following departments:

- **HR:** to provide data on who is entitled to a commuter vehicle or had salary sacrifice packages that included vehicles
- **Fleet managers:** to provide information on existing fleet:
  - Types of vehicles
  - Duty cycles
  - Usage
  - Fit for purpose requirements
  - Utilisation
- **Environmentally Sustainable Development:** to provide data on Council fleet emissions profile
- **Information technology:** to provide technical advice on fleet data management software
- Manager Roads, Fleet and Waste; Fleet coordinator; Organisational Development; Strategic Transport and Compliance; Finance Operations; any other department that might have an EV fleet vehicle in the future.

STEP 3

In 2016-17 Council engaged a consultant to undertake a vehicle policy review study. The review found that:

- The emissions intensity of the Council fleet was disproportionately high when compared with similar fleets in other local governments.
- The light vehicle fleet had a disproportionately high number of light commercial vehicles - likely due to FBT reasons but impacting heavily on emissions profile.
- Fleet policy included a preference for Australian-made vehicles (a legacy for all levels of government in Australia), despite this industry no longer existing.
- The Fleet Department did not have adequate resources to update the fleet policy.
- The Mayoral vehicle was governed by its own policy but should be folded into the organisation's policy.

The review recommended that:

- Council mandate adherence to fleet policy as it was identified that existing fleet policy was not being adhered to.
- Council set up a fleet review committee to review and approve all purchases of light vehicles (up to 3.5T GVM) to ensure adherence to the fleet policy.
- Council review the need for disproportionately high numbers of light commercial vehicles in the light vehicle fleet
- Council adopt a new light vehicle policy strengthening environmental targets.

STEP 4

The findings and recommendations of the review were presented to Council executives. Council agreed to create a new light vehicle policy. The Sustainable Built Environment team were given the policy development project.

STEP 5

The Sustainable Built Environment team put the call out for sample fleet policies in Australia. However, they determined that the policies received were not comprehensive enough, out of date, or not likely being followed.

STEP 6

Council decided to use their existing 2005 fleet policy as the basis, making additions for a ZEV first procurement policy. The updated policy is based on the idea that a zero-emissions procurement priority is needed to ensure emissions reductions of the Council fleet. A zero emissions vehicle will always emit zero emissions, while the emissions intensity of low emissions or hybrid electric vehicles depends on the efficiency of the driver.

HIGHLIGHTS FROM THE POLICY INCLUDE:

- **Zero emissions procurement priority:** If there is an entry zero emissions vehicle that fulfils the first stages of purchase (fit for purpose and safety); then the ZEV must be purchased regardless of price.
- **Secondary vehicle procurement standard:** where a zero-emission vehicle cannot be procured then the fallback vehicle must meet the secondary standard of maximum emissions (adopted of 100gCO2/km) per Green Vehicle Guide.
- **Cost calculation:** includes downstream environmental impact of vehicles chosen which will be considered to ensure the best use of Council funds (no longer the sole responsibility of the fleet manager).
- **Approved vehicle list:** any variation from the framework or approved vehicle list requires a business case and exemption via the Fleet Review Committee.
- **Staff training:** a ZEV must only be driven by staff that have signed a declaration form acknowledging some understanding of ZEVs.
- **Purchasing and resale values:** Zero emissions vehicles and plug in hybrid electric vehicles may be retained longer (6-8 years) than internal combustion engine vehicles (5 years or 100,000km) to improve whole of life costs.
- **Mayoral Vehicle:** the mayor's vehicle will be governed by the same policy, where they are encouraged to choose a zero-emissions vehicle as a first priority.
- **Environmental performance:** No diesel-powered passenger vehicles to be considered.

NOTE:

Council included a list of vehicles that would meet fit for purpose requirements and the emissions standards in the draft policy.

STEP 7

The Sustainable Built Environment team submitted the draft policy to the CEO and Council executives.

STEP 8

The draft policy was adopted by the Council CEO and executives.

STEP 9

The policy was sent to Councillors for their information.

STEP 10

Council provided driver education and engaged staff on:

- How to drive and refuel a ZEV
- What zero emissions vehicles mean for staff and staff operations

NOTES:

The steering committee described in step 2 would ideally be chaired by a fleet manager or overarching operations manager. Additionally, this was conduit to get other departments buy-in.

The Sustainable Built Environment team is responsible for helping the fleet team with any zero emissions vehicle related enquiries.

Consider the use of telematics and data to measure efficiency of a vehicle (as a result of the driver).

In vehicle operations, many staff required the use of a vehicle after hours and were given utes and or light commercial vehicles to avoid Fringe Benefits Tax (FBT). It was recommended to move these staff to the light commercial Zero Emission vans to reduce running costs and emissions whilst maintaining FBT compliance.

There is scepticism about what makes a vehicle efficient, it is important both fleet and sustainability teams understand efficiency and have the language to talk about emissions reductions.

Encourage the Mayor to use a zero emissions vehicle – so as to lead by example for staff.

The Green Vehicle Guide reports the optimum carbon emissions per km for a vehicle. It is unlikely that a normal driver would drive to this efficiency; therefore, emissions intensity is likely higher than the official figure and this should be considered when purchasing internal combustion engine and hybrid electric vehicles.

The draft policy was progressive from an environmental targets perspective and included more than the SBE team believed would be approved.

The following barriers were identified through this process:

- Fear of change and the unknown
- Salary sacrifice packages
- Legacy packages
- New departmental partnership between fleet and sustainability team.
- Difficulty in moving staff from large to smaller vehicles.

Future EV projects

Council will analyse the usage of the level two chargers. If usage is found to be low, Council will offer car share companies the parking bays with EV charging infrastructure.

The Strategic Planning Department has also engaged consultants for DCP updates for residential and commercial new developments and EV ready provisions.

CASE STUDY:

City of Canterbury Bankstown Council – "Charging Ahead"

The *Charging Ahead* project aims to integrate electric vehicles into Canterbury Bankstown Council. Through the transition to electric vehicles, installation of charging infrastructure, data to support electric vehicles, and the procurement of an electric garbage truck, the project aims to reduce operating fleet costs and emissions. Additionally, the project will encourage residents to consider electric vehicles by allowing them to 'test drive' an EV.

An interest in EV technology from Council's Sustainability Team and the residents' Environmental Sustainability Committee, coupled with Council's dedication to a clean and green future, inspired the project.

The project was a collaborative effort between the fleet and sustainability teams – both working towards a common goal of emission reductions. Ongoing interdepartmental communication and strategy is managed through a Project Control Group which meets at various times and with various members depending on what stage of "charging ahead" is being addressed.

The project development process

STEP 1

In the mid 2010's, Council wrote a ***discussion paper*** on the inclusion of EVs in Council Fleet.

STEP 2

As a result of the discussion paper, the sustainability team were tasked with making the business case for electrification. They did this by using Council fleet data including:

- Maintenance expenditure
- L/$ use
- Fleet operations

STEP 3

The sustainability team then presented the EV business case to the Executive Leadership Team (ELT).

STEP 4

ELT approved the procurement of EVs.

STEP 5

As part of the EV integration, the sustainability team consulted with the Fleet, Risk, Buildings, Communications, Corporate Development, and I.T teams

STEP 6

ELT specified that the public should be able to identify EVs when they are being used. The Project Control Group (PCG) then decided on a "wrap" arrangement as this was successful for Council's garbage trucks.

STEP 7

Once ELT approved the purchase of EVs, test driving of various electric vehicle models commenced.

- The fleet manager liaised with various teams about the different vehicle models
- The vehicle model was selected through an evaluation process that considered value for money, fit for purpose requirements, range (km), safety, quality, & maintenance schedules.
- The vehicles are for general fleet use such as staff travelling to various sites during work hours.

STEP 8

In 2018, the vehicle model was chosen, and five vehicles were ordered.

STEP 9

PCG met and discussed internal promotions to begin educating staff and residents on electric vehicles

- The Corporate Development Team developed a multi-stage campaign which informed staff of the new vehicles, how to access them, and the benefits of electric vehicles.
- The Sustainable Future Unit brainstormed the design and wording of the wraps for the vehicles- creating the name of the ongoing campaign “charging ahead”. The branding means anytime staff are driving the cars they are advertising Council.
- The public were informed about the purchase of electric vehicles through a media release when cars were purchased and wrapped.

STEP 10

A Request for Quotation process for charging infrastructure was undertaken once the vehicle model had been selected. The Works and Project Team chose an external electrical contractor to provide a turnkey charging solution.

- A new distribution board, cabling and chargers were installed.
- One Type 2 charger per car was installed at each site where a vehicle would normally be parked on Council property.
- Access to a data platform allows various teams to monitor usage and status of the chargers.
- The chargers are powered as part of Council’s main admin building electricity account. 20% of this power is guaranteed from a renewable source.

STEP 11

The vehicles are parked in various car parks in the Canterbury Bankstown Council area with signage on the ground and on poles next to spaces which indicate EV parking only.

- The Fleet Team manages the maintenance of all the vehicles.
- In the first 12 months of operation, no money was spent on the maintenance of the vehicles.
- Electric vehicles are available to all staff who do not have a leaseback vehicle and have a work-related reason to travel during business hours

STEP 12

The Fleet Manager will continue to replace older vehicles with electric vehicles where possible.

NOTES:

In hindsight, more education could be given to help staff with plugging in electric vehicle chargers.

Staff were initially a little hesitant about the vehicles but after 1-2 drives they became positive and commented on the improved performance and driving experience.

Test drives were a good way to build cooperation and enthusiasm between fleet managers, fleet, and sustainability teams.

The upfront cost of the vehicles was a big barrier – otherwise, Council was generally very accepting and enthusiastic about leading in this area.

Canterbury Bankstown Council currently has 11 Hyundai Ioniqs and 2 Teslas (used by the ELT).

Other EV projects

- EV chargers on lampposts in public spaces.
- EV pool vehicles for the community on weekends.

Electric Vehicle Charging Networks

Range anxiety continues to be a major barrier to electric vehicle uptake. By installing charging infrastructure in public places, local governments provide residents with refuelling options at convenient locations while simultaneously familiarising passers-by with the technology.

Chargers should be located at highly visible and frequented destinations and easily accessible. Additionally, local governments should consider how the location of charging infrastructure can be optimised to provide access for residents living in apartment blocks or in rented accommodation.

Choosing sites that already have the electrical capacity to support an electric vehicle charger can help local governments reduce costs. Chargers can be leveraged for data collection to provide insight into utilisation for future installations. Charging can be provided for free or at a cost. Imposing a cost on charging will allow local governments to recover costs through the potential for an additional revenue stream.

When planning to install chargers, local governments should consider them as units in networks and strategies, rather than standalone units. Investing time beyond phase one deployment will reduce future workload and resourcing. Local businesses should be consulted to investigate how the chargers can boost tourism and shopping of the local area, and the opportunity to install on public and private land – increasing site location options.

Charging networks are a good way to attract drivers of electric vehicles to areas they may not otherwise frequent. Therefore, understanding the driving habits of EV drivers, as well as local residents, is important to installing the chargers at optimum locations. Consider reaching out to EV community organisations for feedback.

CASE STUDIES:

The Waverley, Woollahra, and Randwick Tri-Council Public EV Charging Network.

CASE STUDY:

Waverley, Woollahra, Randwick Tri-Council Public EV charging network

The 'Enabling the Uptake of EVs' project aims to make the Eastern Suburbs 'EV-ready' and support the transition to zero emissions vehicle transport by addressing two main barriers to EV uptake: access to charging infrastructure and range anxiety.

The journey started with the Eastern Suburbs Low Carbon Future Plan. The Plan set out the commitments and actions needed to reduce the communities' impact on climate change and limit warming to less than 1.5 degrees. Encouraging the uptake of electric vehicles in the community was identified as one of the key actions on the low carbon future pathway.

In 2016, the Tri-Council team identified the 'chicken and egg' issue. The team additionally identified that it was governments' role to step in and facilitate.

The team determined that local governments could take more risk, plant the seed for electrification, and encourage investment from the private sector and established EV industry.

The hypothesis was made that putting public chargers in areas with high visibility would facilitate the community to consider an EV in their next car purchase, by reducing the anxiety around convenience and accessibility to charging. This is particularly important for the Eastern Suburbs of Sydney, where 64% of residents live in apartment buildings, and therefore either do not have off street parking/garages, or need to rely on Strata upgrade parking facilities in blocks.

The Tri-Council Public EV charging network project was driven by the Tri-Council Environment Team.

The project development process

STEP 1

Tri-Councils identified electric vehicles as a way to reduce community impact on climate change.

STEP 2

Tri-Councils conducted a community survey (406 respondents) to better understand attitudes, barriers and enablers to EV uptake.
The survey found that:

- 70% of respondents said that installing public chargers would make them more likely to buy an EV
- Range anxiety was one of the top 3 barriers preventing purchase.

STEP 3

Tri-Councils held phone interviews with Sydney EV drivers to better understand driving and charging behaviours, to inform type of charging and desired locations.

STEP 4

Tri-Councils participated in Climate-KIC's 24-hour Climathon (by EnergyLab and UTS). Participants pitched possible solutions to the problem of "How to get micro-communities to adopt electric vehicle use".

STEP 5

Tri-Councils engaged a master's student from the University of Sydney to conduct research into electric vehicles including their benefits, barriers, and learnings from overseas trials of EV charging.

STEP 6

Tri-Councils engaged in (ongoing) knowledge sharing with other local governments undertaking EV initiatives to gather insights and lessons including the City of Adelaide, the ACT and Moreland City Council.

STEP 7

Tri-Councils held face-to-face workshops with charging service providers, car manufacturers, and dealerships.

STEP 8

Tri-Councils held an Industry Forum, with the NSW Department of Planning and NSW Roads and Maritime Services (RMS) to determine the planning restrictions and requirements for installing an EV Charger.
This forum identified two barriers: no signage existed for EV parking only; and there were no planning approvals processes to install an EV charger.

STEP 9

Tri-Councils then engaged in an internal decision-making process to determine charger locations. Using multi criteria analysis, a shortlist of 7 sites were chosen from 11 that were included in the Expression of Interest (EOI – see step 10)
Considerations in site selection included:

Consideration	Relevance
Economic development	Support from local business, effect on local business
Existing Tri-Councils assets	Where to tap into existing buildings/facilities and assets
Electricity capacity	How to get electricity supply to the sites
Parking/traffic	What are the parking and traffic conditions available at Tri-Councils' facilities/centres; where are available parking spots (on-street/off-street); what is the traffic flow etc.

STEP 10

Tri-Councils put out an EOI to charging infrastructure providers and 4 were shortlisted for a subsequent tender. Questions in the EOI included:

1. What are the potential ownership models?
2. Can Tri-Councils get these chargers at low or no cost?
3. What is the total lifecycle cost including installation, monitoring and software?
4. What are the local requirements?
5. How would Tri-Councils charge for the service?

STEP 11

Tri-Councils held internal consultations across the three Councils to get sign off on a tender process. Consultations included Asset and Facilities managers, Traffic Committees, Parking Patrol Officers, Customer Service Staff, and Transport Officers. Questions asked included:

- How much should we charge for charging a vehicle?
- What are the parking restrictions?
- How will parking patrol officers enforce RMS signage?
- What are the fines for 'ICEing'?

STEP 12

After internal sign-off, Tri-Councils went out to full tender.

- The winning company was required to complete a detailed plan and design for the charger installation including construction, upgrade to electrical infrastructure, charger installation and repairs, monitoring, software, and service level agreements.
- The Tri-Councils Project Management team & Infrastructure and Assets team were responsible for reinstatement and signage on the charging stations.
- The Tri-Councils Project Management team remained the project managers for the duration of the project. This included things such as road/public safety and traffic management.

STEP 13

Tri-Councils engaged the Council Communications and Customer Service teams to prepare for community feedback (positive and negative).

STEP 14

Tri-Councils continue to monitor the usage of the charging stations and evaluate user experience to assess the pilot and inform future installation considerations.

NOTES:

There was a trade-off internally to get an EV parking spot next to chargers. Therefore, despite having two connectors, the chargers could only take up one parking spot.

The Tri-Councils invested in smart software to allow for monitoring of utilisation and electricity usage, and for remote maintenance capabilities.

The Tri-Councils conducted electricity investigations to determine which electricity distribution boards already had capacity. This is because it is cheaper to connect to existing distribution boards' electricity supply.

Otherwise, you have to establish new electricity supply and a new connection - which can increase the installation cost by a factor of three.

There is a need to consider strategic future planning, where this phase of installation is one of many in a long-term plan.

In the future, the RMS may need to bring out new signage to support local government installations e.g. EV only for 1 hour.

Council should have considered DC chargers over 22kW AC Chargers, however:

- DC chargers have a larger footprint and are of a scale which did not complement the streetscape
- DC chargers were more expensive
- Councils wanted destination chargers

Future actions

- The Tri-Council team will undertake further community engagement to assess the change in public perceptions, barriers, and behaviours.
- Depending on utilisation, Tri-Councils will consider installing more charging stations – with a focus on Level 3 fast chargers and high-density residential areas.

Additional examples

- ***City of Adelaide*** - The City of Adelaide has a total of 42 electric vehicle charging stations located across the city and North Adelaide.

CASE STUDY:

Central Victorian Greenhouse Alliance: Charging the Regions

The ***Charging the Regions*** project is an initiative of the Central Victorian Greenhouse Alliance (CVGA), which aims to address the issue of regional connectivity by rolling out a network of local government owned fast chargers across regional Victoria.

Originally, the project was a collaboration between the CVGA, the Goulburn Broken Greenhouse Alliance, 55 local governments, the Victorian Government and the Electric Vehicle Council. This first phase of the project helped councils understand the role of local government in provision of public EV charging infrastructure.

The project identified significant gaps in regional connectivity across rural and regional shires, particularly those off major highway routes. The project also emphasised the opportunities for councils to consider the broader economic development and tourism benefits that come from providing EV charging infrastructure in key strategic locations.

Recognising that the private sector was not yet stepping into fill the gaps in the network, more and more councils saw their role in providing that initial 'backbone' infrastructure, in the same way that councils provide public toilets and park benches.

The CVGA is now working with 12 local governments across regional Victoria to roll out a network of DC fast chargers across approximately 20 different sites. Each site will have at least 1 x 25kW or 50kW DC chargers, with the majority of the network being 50kW chargers. Funded through a combination of Victorian Government stimulus funding and also from councils' own budgets, the network will be fully operational by May 2021.

The project development process

STEP 1

The Victorian Greenhouse Alliances (CVGA and GBGA) ran a number of council EV forums.

- The idea of a regional charging tourism network was formed with councils.

STEP 2

The CVGA and the GBGA considered applying for ARENA funding for chargers. However, after further consultation it was decided that many questions needed answering first - including the role of local government in this space.

STEP 3

The CVGA and the GBGA put together an EOI for councils across Victoria to:

- join the “Charging the Regions” first phase project
- to develop a set of reports and tools for councils to better understand public EV charging

STEP 4

The CVGA acted as lead for the project and study

- received $60,000 funding from 55 councils
- later received $40,000 additional funds from the Victorian Government.

STEP 5

CVGA engaged a consultant to:

- the develop reports and tools
- run a number of capacity building workshops with councils.

An ongoing working group was set up of officers across the 55 councils to share information and resources.

STEP 6

Once the Charging the Regions first phase project was completed, the CVGA put out an EOI for councils interested in progressing to implementation.

- CVGA received $664,000 from the Victorian Government to roll out a network of chargers in 6 councils in north west Victoria.
- An additional 6 councils joined on to the project.

STEP 7

CVGA went to public tender and awarded the contract to supply and maintain the EV charging hardware and software.

STEP 8

CVGA worked with partner councils to identify the right sites. This included looking for council owned land in strategic locations that had adequate power supply (in many cases this needed upgrading).

STEP 9

Charging infrastructure is currently being installed across the region, with the full network being commissioned by May 2021.

STEP 10

Each charging station will be owned by each individual council and will receive the revenue from the chargers to offset the energy use and some of the ongoing costs.
Councils agreed to:

- brand the network consistently across the region including signage and line markings
- adopt the same charging rates.

STEP 11

Additional councils are now seeking to join in the project.

NOTES:

A number of council officers still struggled to make the case internally for why local government should be playing a role in the provision of public charging infrastructure. Increasingly however, more and more councils are wanting to have chargers in their shires/communities.

Choosing sites can sometimes be based on a mix of variables such as access to amenities, strategic location, distance to other chargers, existing council land use etc. However a lot of the time the choice of town/site also came down to politics (i.e. some councillors wanted them more than others)

The number one challenge for the network in regional Victoria is finding sites with existing adequate power supply. In many cases sites needed either a new point of supply or upgrades to existing supply to cope with the 50kW DC chargers.

The network has demonstrated the value of regional collaboration between councils. This includes significant economies of scale, ensuring strategic locations of chargers and benefits from shared project management, and consistent branding/signage etc.

Future actions

- The CVGA will be able to monitor the usage of the stations over time across the whole network and understand the increase in EV uptake and visitation across the region.
- The data from the project will be valuable to other councils to give an indication of the breakdown of costs of establishing fast charging infrastructure, as well as the ongoing running costs and revenue.
- Additional councils are considering joining the project to extend the network to other parts of regional Victoria.

Photo: Eve Lamb - Castlemaine Mail

Electric Vehicle Charging Infrastructure Strategies

Local governments play an important role in the planning and infrastructure development of their local government area. The need and speed at which electric vehicle charging infrastructure is installed will grow as electric vehicle uptake increases.

Having established EV charging strategies in place to guide investors and providers will simplify the application and approvals process for installing EV chargers on public land.

Consultation with residents and local businesses is intrinsic to developing cohesive charging infrastructure strategies, as well as ensuring equitable access of infrastructure to community members in convenient locations.

Local governments should be prepared to educate the community in the consultation process on what electric vehicle chargers can do to promote carbon reduction and increase revenue.

CASE STUDIES:

- Lake Macquarie Electric Vehicle Charging Strategy
- Hornsby Council Electric Vehicle Charging Stations on Public Land Policy

CASE STUDY:

Lake Macquarie City Council's Electric Vehicle Charging Strategy

The ***Lake Macquarie City Council: Electric Vehicle Charging Strategy*** provides a framework for consistent deployment of charging infrastructure across the city by the private sector, residents, and Council.

The Strategy has been prepared to ensure strategic alignment with existing Council policies. The project was driven by the Environmental Systems team, with strong collaboration from Fleet Management.

The Lake Macquarie Greenhouse Gas Policy and the Environmental Sustainability Strategy and Action Plan guided EV integration into Council fleet and further investigation into the role of electric vehicles in Council more broadly.

The project development process

STEP 1

Council identified that they had a role to play in supporting the uptake of electric vehicles in their communities.

STEP 2

Council recognised the opportunity to develop the EV Charging Strategy due to pre-existing policies and strategies including:

- Lake Macquarie Greenhouse Gas Policy
- Imagine Lake Mac 2050 and Beyond
- Lake Macquarie City Community Strategic Plan 2017-2027
- Lake Macquarie Parking Strategy 2018
- Environmental Sustainability Strategy and Action Plan

STEP 3

Council put a call out for tenders for consultants to provide advice on strategy development for technical advice and assistance with stakeholder engagement. Consultants were asked to:

- Review and provide strategic advice on recommended strategy principles and focus areas including charging locations and types, smart grid and smart energy management, and development of partnerships (refer to Appendix 1 for an overview).
- Provide technical input on infrastructure requirements for EV chargers, to support the development of guidance information for Council facilities, and information to be inserted into Council's relevant Development Control Guideline(s). This guidance should include:
  - recommended charger types for different types of development.
  - detailed electrical infrastructure requirements for different development types (e.g. provision of electrical distribution boards, conduit/cable trays, points for future connection of EV chargers if not being deployed during initial development); and
  - information on energy management considerations for different development types.

Please see appendix for more detail on tender specification.

STEP 4

Council engaged the Institute of Sustainable Futures at UTS to:

- explore how EVs affect energy storage and energy management
- provide technical information
- conduct desktop research on electric vehicle trends in Europe and the United States

STEP 5

Council worked with UTS to develop two consultation strategies – one for internal stakeholders and one for external stakeholders. This process included:

- A vision workshop with key stakeholders to identify the strategy principles and focus areas
- Discussions to identify technical constraints including planning and development controls and land-use to inform potential locations within Council
- Consultation with neighbouring local governments and industry bodies to inform supporting technical advice

- Determining potential business and financial models
- Conducting community forums on the strategy via workshops and drop-in sessions

STEP 6

Council implemented the internal strategy. The internal consultation process included teams from: Plant and Fleet, Integrated Planning, Development, Assessment and Certification, Finance, Tourism, Assets, Communications, City Design, and City Projects to conduct cross-departmental workshops on:

- planning assessment
- impact on tourism
- communications strategy

STEP 7

UTS synthesised all the information captured for Council. Using the information generated through stakeholder consultation and review of overseas literature Council determined principles for their charging network:

- Access for all
- Fit for purpose
- Support the transport hierarchy
- Leverage economic opportunities
- Smart infrastructure
- Regional consistency through collaboration

STEP 8

Council selected five strategies to achieve their vision:

- Develop regional and cross-sector partnerships
- Plan transport for liveable communities
- Deploy Lake Macquarie Council charging infrastructure
- Facilitate deployment of non-council infrastructure
- Encourage smart energy and smart grid management

The selection of the five strategies was primarily based on alignment with principles, operational constraints, feasibility, and expert advice. The strategies are supported by achievable actions for implementation over the next three years.

NOTES:

Electric vehicles form part of Council fleet. This required investing time in relationship building and resource development for fleet and sustainability teams to work on electric vehicles together. Once the fleet manager was supportive of EVs, they could sit in the client's seat for the charging infrastructure, rather than as the driving force for charger deployment.

There is a need to consider building ownership distribution when deploying charging infrastructure at different Council and non-council locations.

Future actions

Council will establish milestones and a resourcing strategy based on the action plan in their Strategy document. Council will additionally track progress through their Environmental Sustainability Strategy and Action Plan, and report to the community through their annual report. Evaluation will be tracked against the principles outlined above. Council is additionally preparing an EV charging action plan for completion in 2022.

APPENDIX

Extract from Tender specification – Scope of Works

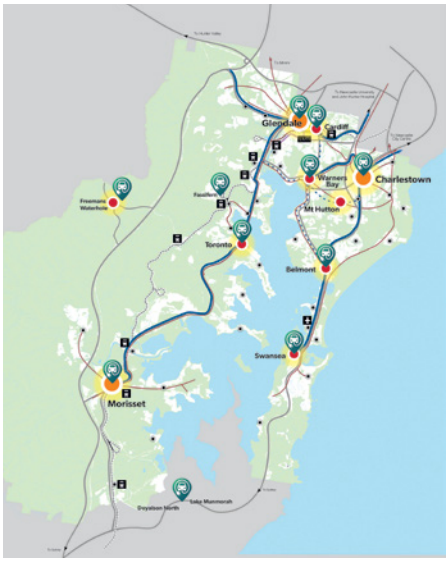
The successful contractor is required to provide technical review and advice on strategy principles and focus areas and recommended actions and support targeted stakeholder engagement activities relating to the Electric Vehicle Charging Strategy. The contractor will work closely with Council's Project Manager to deliver the following tasks:

1. Review and provide strategic advice on recommended strategy principles and focus areas including charging locations and types, smart grid and smart energy management, and development of partnerships (refer to Appendix 1 for an overview).
2. Provide technical input on infrastructure requirements for EV chargers, to support the development of guidance information for Council facilities, and information to be inserted into Council's relevant Development Control Guideline(s). This guidance should include:
   - recommended charger types for different types of development.
   - detailed electrical infrastructure requirements for different development types (e.g. provision of electrical distribution boards, conduit/cable trays, points for future connection of EV chargers if not being deployed during initial development); and
   - information on energy management considerations for different development types.

APPENDIX

External Stakeholders

Local Governments	Newcastle, Port Stephens, Maitland, Central Coast Councils; Cessnock, Hunter Councils, Other LGAs with EV experience (eg: Adelaide)
Motor Associations	NRMA, MTA – Motor Traders' Association, Australian Electric Vehicles Association
Developers	Commercial and residential
Transport and infrastructure providers	Transport for NSW, Keolis Downer, RMS
Charging providers	Various stakeholders
University	Tom Farrell Institute – UON (Hunter Valley Electric Vehicle Festival)
Utilities	Ausgrid, Jemena, Telstra
Police	Lake Macquarie Area Command
Businesses	GPT, Stockland, Catavolt Motorcycles, Electric Vehicles Newcastle, Chambers of Commerce/Lake Mac Business, Hunter Water, Australia Post, Charter Hall, Bykko
Lake Mac Community	Residents, workers and visitors to Lake Macquarie (second stage engagement only)



CASE STUDY:

Hornsby Council Electric Vehicle Charging Stations on Public Land Policy

The purpose of the Policy is 'to provide criteria for the provision, installation, management, maintenance and removal of Electric Vehicle (EV) charging stations on public land in the Hornsby Shire Local Government Area (LGA).'

There were two internal projects that instigated the policy development: Car Parking Management Study and Net Zero by 2050 plan. Additionally, Council had been approached by a number of charging infrastructure providers interested in charger installation due to the proximity of Hornsby to the M7 and M2.

The policy writing process

Council will establish milestones and a resourcing strategy based on the action plan in their Strategy document. Council will additionally track progress through their Environmental Sustainability Strategy and Action Plan, and report to the community through their annual report. Evaluation will be tracked against the principles outlined above. Council is additionally preparing an EV charging action plan for completion in 2022.

STEP 1

Council considered the Car Parking Management Study, the Net Zero Emissions by 2050 Plan, the local government area and investment interest, and the need for new transport modes and determined a need to develop an EV public charging policy.

STEP 2

Council researched work by other local governments to determine any policy or actions that already exist including Shoalhaven Council policy (through Cities Power Partnership), Charge Together Fleets, and Evenergi.

STEP 3

Council then used the Shoalhaven Policy as a basis to write the Hornsby Council draft policy including policy guidelines in relation to:

- Fair and equitable selection of providers
- Site selection criteria
- EV charging station design considerations
- Parking configuration
- Charging technology
- Leasing arrangement
- Terms of lease/license
- Public/private partnership
- Installation, maintenance, and removal
- Application of ESD principles

STEP 4

The draft was then sent internally to Property Management (council land leasing licensing), Transport Planner (car park management study – including transport flow), Traffic Management, Compliance (rangers), Sustainability and Strategy, and the Risk and Insurance Manager. Council also consulted with Waverley and Willoughby Councils on the signage/parking bays and place management.

STEP 5

The above groups sent the draft policy with comments back to the Sustainability team who incorporated them into the draft Policy. The Sustainability Team and Transport Planner then met with each individual group to get buy in to the final version.

STEP 6

Council sent the policy to stakeholders in the EV industry.

STEP 7

Council incorporated comments from the EV industry into an updated draft policy which was then put out for public exhibition.

STEP 8

A summary of comments from the public exhibition was then sent to Council.

STEP 9

The draft policy was incorporated by Council.

Other comments

- The EV industry indicated that consistent policy in LGA is helpful as it sets the framework and expectations for future installations.
- Council received 14 public submissions, most of them positive, but there were some negative/neutral.

Additional examples

Adelaide Hills Charging Strategy

Shoalhaven City Council Electric Vehicle Charging Stations on Public Land Policy

Tweed Shire Council- Northern Rivers Electric Vehicle Strategy

Making the built environment 'EV ready'

As a result of technology development and concerns about climate change, transport, urban planning, and building development will evolve over the next decades. Therefore, futureproofing development and infrastructure is important in preparing communities for change. In the electric vehicle space, this includes developing buildings so that residents and businesses can charge their cars.

Given that over 80% of electric vehicle charging is done at home, and that local governments are responsible for approving building development, there is an opportunity for local governments to promote EV ready buildings by updating Development Control Plans to allow for simple and affordable installation of electric vehicle charging infrastructure in the future.

Making a building 'EV ready' requires planners and builders to install the electrical cabling, distribution boards, and circuitry to support electric vehicle charging, at the time of development.

In doing so, residents can easily install charging infrastructure without having to upgrade the electricity to the building and avoid costly retrofitting. In the case of multi-unit dwellings, it permits residents to install chargers without having to go through strata or body corporate as the capacity is built into the infrastructure already.

Working with residents that live in buildings with strata or body corporate, to allow them to install infrastructure, is an additional path local government could take to reducing the challenge of living in apartments.

CASE STUDIES:

City of Yarra Council - Best Practice Standards for EV readiness in new developments

CASE STUDY:

Yarra City Council - Best practice standards for EV readiness in new developments

Yarra City Council's best practice standards are intended to provide guidance on how to make new developments with car parks 'EV ready'. By aligning new developments to EV ready best practice, Yarra City Council promotes access to charger installation for new builds and simplifies the process for residents and business to procure electric vehicles.

Council's Strategic Transport Team is recommending a permit condition for any new development with car park areas to be 'EV ready' as part of the development planning permit process.

The project process

STEP 1

In 2019, Council conducted a report highlighting the issues and opportunities to support the uptake of electric vehicles in their municipality. The report identified the need for electrical infrastructure to enable EV charging infrastructure installation in future developments.

STEP 2

Council determined to provide guidance for any new development through a permit condition that included:

- information on the necessary circuitry for every car space
- kW capacity to allow for charging for vehicles
- cable trays for charger installation
- distribution board connection
- load management system.

STEP 3

Council reached out to an existing connection at NHP to discuss the research and recommendations they had for EV readiness.

See document EVC & AI Group: EV ready recommendations

STEP 4

NHP provided a presentation and background documents explaining:

- the essential underlying electrical infrastructure that should be installed within a car park area to be 'EV ready'.
- load management systems and the importance of minimising pressure on the electricity network and a building's electrical capacity through scheduling charging (see attached brochure).

STEP 5

Council prepared a draft permit condition for multi-residential and non-residential development (see appendix).

STEP 6

Council shared the proposed standard with their Environmental Sustainable Development advisor to obtain feedback.

- It was identified that the transport section of the Best Practice Sustainability Scorecards (BESS) is due to be updated in 2020 and this could be an opportunity to create a fact sheet specifically on electric vehicles, in lieu of a developing a new planning scheme policy (which would be a lengthier process) and as an interim measure until standards are incorporated into the planning scheme in the future.

STEP 7

Council determined to proceed with an EV fact sheet, rather than a planning scheme policy update due to timeframe constraints.

Draft EV ready fact sheet best practice requirements [2]

The document outlines:

- The benefits for making new developments EV ready
- The essential underlying electrical infrastructure required for EV ready.

[2] The document is in the final stages of review. It is not anticipated there will be any major changes to its contents.

It additionally highlights evolving technology and opportunities in relation to EVs for new developments so that developers consider how buildings will need to adapt over their lifespan, including:

- Vehicle to building and vehicle to grid technology
- Other innovative ways buildings could support EV charging

  e.g. public charging within commercial buildings after hours

NOTES:

The best practice standards are not mandatory under the planning scheme, however achieving these standards will assist applicants in demonstrating best practice in environmentally sustainable design performance.

More information about the BESS tool can be found at these links:

- ***Built Environment Sustainability Scorecard***
- Yarra City Council - ***Medium developments – sustainable design assessment (SDA)***
- Yarra City Council - ***Sustainable Design Planning Tools***

Future actions

The next steps in finalising the best practice standards include:

- Obtaining feedback from Council's statutory planners
- Circulating to the Council Alliance for a Sustainable Built Environment (CASBE) for review / comment
- Finalising any changes
- Preparing a new BESS fact sheet

Documents to support EV Ready development

Draft EV ready fact sheet best practice requirements

NHP – Sharing the load

Electric Vehicle Council & AI Group: EV ready recommendations

ChargedUP! Webinar: NHP & City of Yarra EV Ready

APPENDIX

YARRA CITY COUNCIL BEST PRACTICE STANDARDS

MULTI RESIDENTIAL:

To allow for easy future provision of electric vehicle integration throughout the car parking areas, all car parking areas within a development should be set up to be ‘electric vehicle ready’.

Provision of the below infrastructure will enable individual tenants to easily install a single charging unit and individual circuit wiring to the distribution board for their designated parking space.

NON-RESIDENTIAL:

To allow for easy future provision for ‘electric vehicle integration’ in non-residential developments, at least 20% of car parking bays within the development should be set up to be ‘electric vehicle ready’.

APPENDIX

The following should be installed for this purpose:

- One or more distribution boards within each car parking basement level, with capacity for the future installation of 2 pole Residual Current Circuit Breakers with Overcurrent Protection (RCBOs) sufficient to supply 1 x 7kW (32amps) electric vehicle charger for each parking space.
- A scalable load management system, to ensure electric vehicles are only charged when the building electrical load is below the nominated peak demand. Building electrical peak demand calculations can therefore be undertaken using the assessment methodology (AS/NZS3000:2018, clause 2.2.2.b.i), thus not increasing building electrical peak demand requirements beyond business as usual.
- Wiring from the main switchboard to the distribution boards, and cable tray to hold future individual outgoing circuits to electric vehicle chargers; and
- Electric vehicle bays located in highly visible, priority locations, to ensure tenants are aware, encouraged and have an incentive to shift to an EV. Bays are marked as 'EV Ready' even where no chargers are yet installed to communicate to users that they are able to relatively easily transition to an EV.

APPENDIX

The capacity for non-residential development differs from multi-residential, given vehicles are typically parked at a workplace between 8am and 6pm, which is when a building is generally using its existing electrical supply, it is unlikely that there will be as much spare electrical capacity as there is at a residential building overnight.

We considered a number of factors to determine a percentage of car spaces that should be 'EV ready', including:

- Typical load profile of non-residential buildings,
- Projections of electric vehicle owners without access to charging at home in Yarra (it is estimated that approximately 30% of vehicles in Yarra do not have off-street parking)
- Current international best practice, including a European Union Directive for all new non-residential buildings to provide pre-wiring for a charging point for at least 20% of parking bays[2]

This does not mean that 20% of bays must be fitted with chargers, but that the underlying wiring infrastructure is in place to allow future owners and tenants to easily install a charger without a high burden of installing underlying infrastructure.

Additional examples

City of Sydney Council

Woollahra Council

Consumer information

Educating residents and businesses on electric vehicles and electric vehicle charging infrastructure is an important part of encouraging electric vehicle uptake. Local governments can provide visibility and awareness driving confidence and exposure for residents to consider electric vehicles as their next car purchase.

Projects run by local governments signal the future for community development - directly benefiting the local community and education should always form part of the consultation and implementation process.

Information provision for residents and businesses on electric vehicles bridges the gap between independent research and provides guidance from a trusted source. Until electric vehicles become mainstream in Australia, community may lack experience and confidence in purchasing them. Local governments that facilitate exposure to electric vehicles will have a positive impact on electric vehicle uptake, demonstrating the future direction of transport for the constituents. Education is an important role that local governments can play in the transition to electric vehicles.

EVC resources

EVC – Information for residents Powerpoint

CASE STUDIES:

City of Ryde Council's Electric Vehicle Charging Infrastructure information sheet for residents and businesses.

CASE STUDY:

City of Ryde Council – EV Charging Information Sheet

The ***Electric Vehicle Charging Information Sheet*** was designed to inform the Ryde community about electric vehicle charging technology and key considerations for the installation of EV chargers by residents and businesses.

The inspiration for the project came from Council's continuous search for ways to reduce the City's greenhouse gas emissions, and to assist the Ryde community to transition to low and zero emissions vehicles.

Process

STEP 1

According to the City of Ryde's 2028 Community Strategic Plan released in 2018, the Ryde community asked Council to demonstrate environmental and sustainability leadership.

STEP 2

In November 2019, a Notice of Motion moved by two Councillors was passed asking for Council to produce an EV Information Sheet to educate the community on electric vehicle charging and to state Council's support for increased EV charging across the City.

STEP 3

In December 2019, Council ran a survey with residents and businesses on electric vehicle technology seeking to assist the community to transition to lower emission electric vehicles and reduce the City's greenhouse gas emissions.

- The survey was shared with the community via a variety of channels including but not limited to targeted social media and Council's newsletter
- The survey was open for 3 weeks
- The survey had about 10 key questions
- Almost 300 people provided feedback to Council

STEP 4

As a result of the survey and the Notice of Motion, the Environment team began desktop research to produce an information document for the community

- Council sought feedback from other local governments such as Northern Beaches Council, North Sydney Council, and Randwick Council
- The initial document ended up being 14 pages long and was edited to 3 pages.
- The challenge was the need to use language that is easy for a variety of people in the community – from 7 to 70 years old and for English as a second language speakers.
- The document should be limited in technical language for easy communication.
- The document includes lots of links to various websites for further research.
- The City of Ryde collaborated with the external parties listed on the Information Sheet to finalise the document's content.

STEP 5

The document was finalised and sent to the internal graphics design team

- Council determined to optimise the resources available
- Required a lot of back and forth regarding graphics as the document needed to be visually stimulating

STEP 6

Council distributed the document:

- Sent the document to residents
- Created a dedicated page for EV charging on Council's ***website***
- Promoted via social media such as this ***Facebook post***
- Promoted on Council's monthly e-newsletter Smarter, Cleaner, Greener that keeps residents up to date with the latest in sustainable living in the City of Ryde
- Hosted the document on ***their website***.

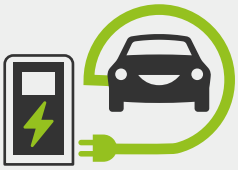
NOTES:

The document was supplemented by a community webinar hosted on 5th August 2020 with a focus on EV technology.

The document will be reviewed on an annual basis to ensure it remains relevant to the Ryde community.

ELECTRIC VEHICLE CHARGING

WHAT YOU NEED TO KNOW



QUICK FACTS

By **2040** it is expected that **61%** of all passenger vehicle sales in Australia will be electric.

Electric vehicles (EVs) **create less air and noise pollution**, and can be run completely carbon neutral when powered by renewable energy.

The EV industry is further developing the 'Vehicle to Grid (V2G)' technology that allows EVs to feed power back into the grid at times of high demand. Some models are already capable of **feeding electricity.**

The average motorist drives only 37 kilometres per day. Electric vehicles can easily accommodate this daily range with some models offering a range of 400km + on a single charge.

Data has shown that **85% of all EV charging is done at home**, and rarely from 0 – 100%. Also charging times are falling quickly as technology advances.

WHAT IS AN EV CHARGER?

An EV charger or EVSE (Electric Vehicle Supply Equipment) is any smart device that dispenses electric charge to the vehicle.

It may be wall-mounted or free-standing, and includes one or more cords with special connectors that plug into the vehicle.

WHAT IS THE DIFFERENCE BETWEEN AC AND DC CHARGING?

The electricity grid delivers **AC (alternating current)** but EVs charge their batteries with **DC (direct current).** An electric vehicle has an on-board charger to convert AC power to DC.

DC chargers deliver power directly to the battery of EVs at a much higher rate, but have a more complex design and cost more. Most home and destination chargers are AC.

For further information – including some good images – on how power is delivered to EVs please click here.

City of Ryde

CONSIDERATIONS FOR EV CHARGER INSTALLATION

LEGEND
- Commercial considerations
- Residental considerations

Research the market by contacting some EV charging suppliers.
To view a list of suppliers click here.

Make sure the supplier provides you with a detailed quote containing equipment functions, correct usage, maintenance and warranty policies applied to hardware and installation.

Learn the charging requirements of your EV and follow the OEM's instructions at all times.

Find a location for the EV charger which is as close as possible to the parking location (this will drive cabling distance).

Chargers require electrical supply via ceiling or subterranean conduits. Check number of free slots on distribution boards and existing cable trays in carpark areas (for apartment blocks).

Arrange an inspection of your property and get a full assessment of important details such as the capacity limitations of the existing distribution board.

Mount: Chargers must be positioned at a convenient height and can be wall or pedestal mounted.

Understand electricity tariffs for charging in different times of the day; take advantage of cheaper off-peak electricity rates.

Check with your electricity supplier if they offer Green Power or consider the installation of a solar PV system at your property to offset the electricity required to charge your EV.

We encourage you to engage a qualified electrician (EVSE trained) to install the EV charging equipment in order to comply with all regulations in Australia. Most EVSE providers also offer installation.

PLUG TYPES FOR AC CHARGING

All electric cars come fitted with a charging plug. While most vehicles in Australia prior to 2019 used a Type 1 plug, **all new EVs from the 1 January 2020 will be Type 2** (also known as Mennekes).

Do you have a Type 1 vehicle?
Do not worry, there are adapters available that allow your vehicle to charge from any station with a Type 2 Connector. It is as simple as adapting your phone.

TYPE 2 PLUG

DIFFERENT USERS

RESIDENCES

BUSINESSES

NEW DEVELOPMENTS & RETROFIT PROJECTS

Charging stations at multi-residential, mixed use and commercial developments in Ryde: The City of Ryde encourages all future development applicants to consider future proofing their developments by provisioning EV charging infrastructure in the design of developments, as well as appropriate signage and dedicated charging spaces. Upfront installation will save on costs related to future additional electrical connections.

Can I install an EV charging station in apartment blocks? Yes you can. EV charging solutions are available for everyone, including apartment dwellers with or without a dedicated parking space and can easily be facilitated by separate meters. Contact an EV charging provider for further information tailored to your situation.

Additional examples

Woollahra Council – Community EV presentation

Moreland City Council – EV Fact Sheet

City of Ryde - EV Charging information sheet

4. ADDITIONAL RESOURCES

Australian

Organisation	Description
ACT Government	In April 2018, the ACT Government launched its ***Transition to Zero Emissions Vehicles Action Plan 2018–2021.*** The action plan includes commitments to a zero emissions Government passenger vehicle fleet, new charging infrastructure, and incentives for consumers to purchase zero emissions vehicles.
Australian Renewable Energy Agency and the Clean Energy Finance Corporation	The ***Australian Electric Vehicle Market Study*** commissioned by ARENA in partnership with the Clean Energy Finance Corporation, was prepared by Energeia to provide a strategic review of electric vehicle charging infrastructure and a market review of electric vehicle sales, stock and infrastructure.
Australian Electric Vehicle Association	The ***Australian Electric Vehicle Association Inc. (AEVA)*** is a volunteer run, not-for-profit organisation dedicated to the cause of switching Australia's transport networks to electric drive as quickly as possible. They are early adopters of electric vehicle technology making them a valuable resource for councils and residents.
Beyond Zero Emissions	BZE produce independent and innovative research solutions demonstrating that a zero emissions Australia is achievable and affordable now. Their resources include a ***Climate Review of Australian Local Government 2018***.
Breakthrough	The National Centre for Climate Restoration (Breakthrough) is an independent think tank that develops critical thought leadership to influence the climate debate and policy making. ***They have various publications*** about Australian local governments and the environment.
Central NSW Joint Organisation	***The EV Charging Toolkit*** is designed to facilitate the roll-out of charging infrastructure, by providing information about charging hardware and installation, processes to follow when installing a charger and contact details for planning permission. The toolkit was produced by Central NSW Joint Organisation and Evenergi.
Charge Together Fleets	***The Charge Together Fleets*** program is managed by the Electric Vehicle Council with resources to help local governments and corporates transition their fleets to electric vehicles. It includes a knowledge base, total cost of ownership calculator and a webinar series.
Cities Power Partnership	***Cities Power Partnership*** is a network of local governments in Australia tackling Climate Change – giving councils the tools, connections, and momentum to tackle climate change.

Organisation	Description
ClimateWorks	ClimateWorks Australia was founded in 2009 to help bridge the gap between climate research and action. Recognising this need, The Myer Foundation and Monash University partnered to create a new, independent not for profit, working within the Monash Sustainable Development Institute (MSDI). In 2019, they published the ***EV Ready Local Government Fleets report.***
Climate Council	The Climate Council is Australia's leading climate change communications organisation. They provide authoritative, expert advice to the Australian public on climate change and solutions based on the most up-to-date science available. They have many resources on electric vehicles, including ***Transport Emissions: driving down pollution in cities.***
Department of Premier and Cabinet Tasmania	The Smarter Fleets Program supported Tasmanian councils to prepare to introduce electric vehicles into their fleets. The Program provided tailored information and analysis of the participating councils' fleets to calculate the environmental benefits and cost reductions that electric vehicles can offer. ***The learnings are available here.***
Electric Vehicle Council	The Electric Vehicle Council is the peak national body representing the Electric Vehicle industry in Australia. The EVC produces ***reports, releases, and resources*** for the EV industry in Australia. The annual ***State of Electric Vehicles report*** provides analysis and insight in to the EV market in Australia.
Goulburn Broken Greenhouse Alliance	Goulburn Broken Greenhouse Alliance (GBGA) engaged Ndevr Environmental to deliver the ***Electric Vehicle (EV) Feasibility Study and Business Case***. This Report investigates the feasibility of introducing EVs into the 11 regional participating councils' fleets.
NSW Government	The NSW Government's ***Electric Vehicle Infrastructure and Model Availability Program*** will run competitive funding processes that will co-fund the deployment of fast electric vehicle charging infrastructure. It will also incentivise vehicle fleet owners, such as car rental companies, car share companies, and local councils to procure electric vehicles. The NSW Government will create amendments to the National Construction Code and NSW Building Sustainability Index (BASIX) to ensure new buildings are electric vehicle ready. In addition, Transport for NSW released the ***NSW Electric and Hybrid Electric Vehicle Plan*** in early 2019.
Northern Alliance for Greenhouse Action	***The Regional Low Emissions Fleet Assessment report*** outlines the findings of the tailored fleet assessments to assist five NAGA councils to transition to low emission fleets. The project was carried out with funding from the Collaborative Councils Sustainability Fund and delivered by Ndevr Environmental.
The Driven	***The Driven*** is Australia's premier website for news and analysis about electric vehicles in Australia- and the transition to zero emissions transport.
Queensland Government	In 2017, the Queensland Government released the ***The Future is Electric: Queensland's Electric Vehicle Strategy*** to help Queensland shift to a cleaner, greener electric vehicle fleet.
Senate Select Committee on Electric Vehicles	In 2019, the Senate Select Committee released the results of the ***Senate Select Committee on Electric Vehicles***, making 17 recommendations to support the electric vehicle industry in Australia.
Victorian Government	The Victorian Government's Department of Environment, Land Water and Planning has information on ***zero emissions vehicles available online.***

International

Organisation	Description
Energy Saving Trust UK	Energy Saving Trust's ***best practice guides for installing electric vehicle charging infrastructure*** are full of impartial, pragmatic advice and informative case studies, a useful reference resource for local authority officers who are developing and managing public charging infrastructure networks.
Global Fleet	***Global News site*** providing information about fleets across the globe.
International Council on Clean Transportation	***The ICCT's electric vehicle program*** aims to understand and describe what policies and incentives are most effective in the early growth stages for the global electric vehicle market. They analyse trends in electric-vehicle technologies and in vehicle markets; evaluate how regulation, tax incentives, non-fiscal promotional policies, and infrastructure are helping to drive the electric vehicle market; and compare the different policy approaches across countries and cities around the world to better understand the emerging best practices to accelerate the transition to electric drive.
International Energy Agency	The International Energy Agency works with countries around the world to shape energy policies for a secure and sustainable future. Each year they provide an in-depth analysis of the global EV industry, through the ***Global EV Outlook***.
Local Government Association of the United Kingdom	The Local Government Association provides guidance on how to development ***Electric Vehicle Strategies for Local Governments*** in the United Kingdom.
New Zealand Government	The ***Driving a Low Emissions Economy*** guide aims to help local authorities in New Zealand reduce emissions by making their communities more friendly to electric vehicles (EVs). It summarises the environmental, social, and economic case for EVs, provides advice on operational and long-term planning, and outlines practical steps councils can take to help New Zealand transition to a low emissions economy. It is produced by the Energy Efficiency and Conservation Authority (EECA) as part of the Government's information campaign to accelerate the uptake of EVs in New Zealand.
Transport & Environment	***Transport & Environment*** is Europe's leading clean transport campaign group. T&E's vision is a zero-emission mobility system that is affordable and has minimal impacts on our health, climate and environment.