Australian Electric Vehicle Association Inc.
www.aeva.asn.au

ELECTRIC VEHICLE NEWS

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Issue 237: October - December 2019

The National EV Expo edition

Inside:

Specials:

Regulars:

Corporate members pages

*Please note: this is an **OPT-IN** free listing offer to all current corporate members.*
To be listed – email the details of your business (as listed below) to: EVNews@bigpond.com
Details needed: business name, state, logo if desired, brief business description – 10 words/2 lines maximum, contact details. See listings for examples:

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Web: www.hobartbmw.com.au

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Web: www.utas.edu.au/sustainability

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Web: www.micycles.com.au

Ogden Power (Alice Springs, NT)
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Email: rede@ogdenpower.com
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Betts Boat Electrics (Qld, nationwide)
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Corporate members pages

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Phone: 1800 059 170; Mob: 0409 154 775
Web: www.skillbuild.edu.au

Zero Emission Vehicles Australia (WA, nationwide)
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Web: www.zeva.com.au

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Phone: (08) 9434 3333
Web: www.electrotech.com.au

ACE EV Group (Qld)
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Web: www.ace-ev.com.au

RetroEV (Port Adelaide, SA)
Phone: (08) 7226 9282
Mobile: 0437 485 216
Email: energy@retroev.pro

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Email: info@m-tech.com.au
Web: www.m-tech.com.au

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Phone: AUS 1300 70 11 99; NZ 0800 11 11 51
Email: contactus@evolutionaustralia.com.au
Web: https://www.evolutionaustralia.com.au

mpev.com.au (Victoria, nationwide)
Mornington Peninsula Electric Vehicles
Custom classic ev conversions
Phone: 61 3 5988 6808
Email: info@mpev.com.au
Web: mpev.com.au

EVNews is the quarterly national newsletter of the Australian Electric Vehicle Association. (AEVA)

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Contents

Who is AEVA?

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. Members come from a wide range of backgrounds, but all share a common interest in Electric Vehicles (EVs) and electric vehicle technology.

The AEVA is structured as a federation of state-based branches, overseen by a National Executive.

The purpose of the AEVA is to provide a forum for social and technical communication in the EV field, create greater awareness of EVs and encourage their use, to foster further research and development in EV technology, and to be an official source of information on EVs in Australia.

There are branches in all states and territories except the NT, which is covered by the SA branch. Branch contact details are listed at the end of this newsletter and the 'Around the Branches' section gives details of what's going on in your part of the country.

AEVA media contacts

As a national body, we have members in each state and territory who are keen to field any questions for radio, television and print media.

TAS: Clive Attwater (AEVA acting President) - 0439 941 934

NSW: Greg Partridge - 0411 052 582

ACT: Peter Gorton - 0419 601 579

VIC: Bryce Gaton - 0428 537 053

SA: Sally Knight – 0420 898 628

NT (Alice Springs): Hunter Murray - (08) 89523411
NT (Darwin): Richard Smith – 0401 110 198

WA: Chris Jones - 0418 908 002

QLD: Leslie Smith - 0401 250 624

From the editor

Bryce Gaton, national AEVA newsletter editor & Victorian AEVA branch secretary

Welcome to edition 237 of EVNews! As ever, we have an exciting collection of EVNews and personal EV experiences from Australia and around the world. Market Update (p. 10) reviews the most recent happenings in the EV world (plus offering some thoughts on why Australia is so far behind in EV adoption). Following on from that, given the expanding range of EVs now in Australia to buy, it seemed a good time to revise and expand that article from 12 months or more ago – so an updated version of the 'What, Why, When Guide to Australian EV Buying' can be found on P.16. Chris Jones' Two Wheels Good' section also returns for this edition to cover the latest news in the EV motorcycle sphere, including the e-moto race series. (p. 21) And for the technically minded, the 'Under the Covers' section this edition tackles the confusing world of vehicle test cycles to explain why you see such wildly different range claims for the same vehicles in different markets. (p.35)

For a perspective on where we in Australia are at in the EV adoption cycle compared to more mature EV markets – there are also articles on the sales figures in the California vehicle market (P.32), as well as a review of the rise and now fall of the service station in the UK. (p. 23).

Also in this edition are several more owner's experiences articles: on page 38 are some musings on life and EV charging when living in an apartment by AEVA and TOCA member, Dick Friend. This is followed by a conversion story by Brian Drummond about his EV Barina. (Which by the way is also listed for sale in the expanded 'For Sale' section of this edition).

By the way, if you are looking for a cheap entry into the world of the 'EV Grin', now is an excellent time to look at a second-hand OEM or conversion EV. Given the expanded range of new EVs for sale, our For Sale section has many more than usual older OEM EVs and conversions listed! – see page 52.

On a personal note: 2020 will see me into my third year of editing EVNews – and it will also be my last. (It is I think the right time for me to set it free to grow beyond what I alone can do). As part of this, a plan is being put together to develop the currently single person editor role into a formal group. Over the next 12 months that group will work on growing EVNews even further, and subsequently take it over following the 2020 AGM. If you are interested in any of the following roles – feel free to contact me to discuss the roles and what they could entail:

- For Sale listings coordinator: gathers listings and creates pages for the sale/wanted pages
- Corporate advertising coordinator: gathers ad copy and creates pages for the 'corporate members page' listings, paid ads and free for-sale listings;
- 'Chief herder of cats' (better known as the Branch News section editor): gathers and edits the quarterly Branch News items and their photos;
- Writer/s and or coordinator for an electric bicycles column;
- Proof reader panel members for checking the editions prior to distribution. (Exists from 2018, but will need some new members as others depart).

As always: if you want to contribute to this newsletter with experiences, articles (include photos please), product reviews, App suggestions or anything else – feel free to email me at EVNews@bigpond.com

Yours in EV'ing!
Bryce (Also Victorian AEVA Branch Secretary)

From the President

Clive Attwater: Acting national AEVA President and Tasmania treasurer

By the time you get this newsletter the annual AEVA event in Sydney will be just a couple of weeks away. The Sydney event planning team have been hard at work organising sponsors, exhibitors, speakers and lots of cars and e-bikes for people to try and drive. Full details of the event are included in this newsletter.

I am looking forward to another great AEVA event that presents our electric future to the community and provides our yearly opportunity to meet up with AEVA members and supporters from across the country. And of course, we conduct the formalities of the AGM and plan for the coming year.

As we approach our AGM and national gathering it is timely to review our direction for the years ahead. To help inform that discussion, we will be circulating a survey to AEVA members and those on our mailing list to find out the things that you value most and would like to see AEVA focus on in the coming year or two. The survey also touches on the longer term – what do we see as AEVA's future after EVs become widely adopted in the community?

Please look out for the survey and please respond. It should take less than 10 minutes to complete.

We have had requests for submissions from various government agencies in recent weeks.

- The Council of Australian Governments (COAG) has proposed mandatory Demand Response Management (DRM) equipment on a range of appliances including EV chargers and canvassed feedback on the proposal. For the complete background, see: http://energyrating.gov.au/consultation/consultation-smart-demand-response-capabilities-selected-appliances
- The National Transport Commission released the 13th Australian Road Rules Amendment Package for consultation, including a section on rules and signage for EV parking and charging. Full background at https://www.ntc.gov.au/current-projects/australian-road-rules-maintenance/
- The Transport Infrastructure Council ran a wide ranging and comprehensive survey seeking input on the uptake of Zero and Low Emission Vehicles.

AEVA's responses to these three can be seen here: https://www.aeva.asn.au/content/aevas-recent-submissions-inquiries

Several more state government policy inquiries are in the works, so if you have the time, experience and inclination to help us with our submissions, please get in touch with me or Chris Jones secretary@aeva.asn.au

Hoping to see you in Sydney,

Clive Attwater, Acting AEVA National President.

From the Secretary

Dr Chris Jones; AEVA national secretary and WA Branch vice chair

As we approach AGM and EV Expo time, the secretary inbox is seeing plenty of traffic. Lots of organising goes on behind the scenes when it comes to pulling off an EV Expo, so spare a thought for Michael Day and the crew in Sydney! All members of the AEVA should have received an electronic survey form by now. In order to ensure we run our organisation to the best wishes of its membership, we will use the results from this survey to guide what the AEVA does and seeks to achieve in the future. It won't be long before everyone drive or rides an EV, so what role does the AEVA have in an EV-normal world?

The AGM can be a stressful time given the short window of opportunity to meet in person, so it is imperative that everything be in order ahead of the meeting. If you have been asked for a branch report, please make sure I have a copy of it by October 4th. Generally, a proposal worthy of discussion or a vote at an AGM must first be raised at a branch meeting – sort of like a filter to ensure the wishes of a larger group are represented. However, issues may also be raised within the national council as well.

Who are the national council? According to our constitution, the national council consists of members who were elected at a state branch AGM to represent the will of their branch at national gatherings. All states and territories may have up to 3 national council members. Often these people are also committee members of a branch (such as chair, secretary or treasurer). So in total, up to 21 people will attend a national council meeting, either on Skype or in person. As the AEVA exists as a federation of state branches, we also have a national executive, consisting of a President, Vice President, National Secretary and National Treasurer. Each year these roles are up for election, so if you feel you would like to make a contribution to the association, please let us know! The President has a few roles, particularly chairing AGMs and any national council meetings, but also to be a public face for the association – write Op-Eds for newspapers and generally steer the association in a positive way. We are thankful for Greg Partridge's efforts as President for the last two years, and are grateful to Clive Attwater for stepping into the role as acting president after Greg bowed out for personal reasons.

And finally: if you have any questions relating to the running of AEVA events, public liability insurance, introductions or just where to find some information on EVs and charging, please send me a message on secretary@aeva.asn.au

Chris Jones, AEVA Secretary.

Product Review

GIGER EVSE. EV Charger Up To 22kW

From: EVolution (AEVA corporate member)

Early adopters of EVs are used to an accumulated collection of EVSEs, leads and adaptors to use when a fixed EVSE is not available. Whilst meeting the needs of whatever socket outlet is presented to us, that collection can also take up valuable boot room. A new product, called the ***GIGER***, can almost reduce that collection to one. Effectively a 'jerry can in a bag', it can be used (with suitable adaptors) in anything from a 10A power point up to a 32A 3 phase socket. Adjustable from 1.4 to 22kW (depending on maximum vehicle AC charge rate), it is capable of supplying emergency charging from almost any electrical outlet found in Australia.

Price: $1395 (plus adaptor costs).

For further details, see:
https://www.evolutionaustralia.com.au/

EV Website links

New listings for this edition in red:

Australian:

TheDriven https://thedriven.io/
Drive Zero https://www.drivezero.com.au/
EVTalk http://evtalk.com.au/
My Electric Car: https://myelectriccar.com.au/

International:

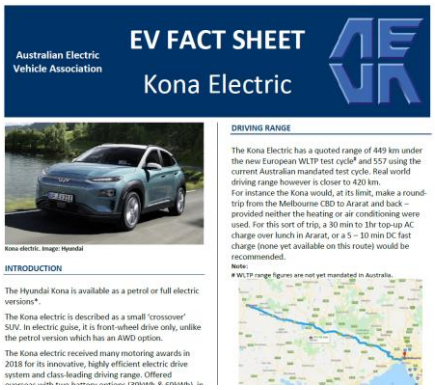
Plugin cars http://www.plugincars.com
NZ Gov. EV info site https://www.electricvehicles.govt.nz/
Green Car Reports https://www.greencarreports.com/
Inside EVs https://insideevs.com
Cleantechnica https://cleantechnica.com/
Electrek https://electrek.co/
EVObsession http://evobsession.com/
Charged EVs *http://chargedevs.com*
Plug In America *pluginamerica.org*

Video sites:

Fully Charged http://www.fullychargedshow.co.uk/
Autogefuehl https://www.youtube.com/user/autogefuehl

Appy hour

Reminder: AEVA EV Fact Sheets



The AEVA website hosts ***EV Fact Sheets*** on each of the full battery electric vehicles (BEVs) on the Australian market – plus a table listing all the BEVs and PHEVs (Plug-in Electric Vehicles) available (or coming soon) to Australia.

The BEV fact sheets are written to a standard two page format, thereby allowing a simple comparison of the main features of each BEV on the market. Standard items covered are brief model history, range, charging speeds and basic specifications like vehicle dimensions, weights and cargo volumes.

A must for anyone beginning their research on a new BEV to buy (or just out of curiosity to clarify the features of a particular BEV!).

The BEV sheets are updated on any major changes to a model, whilst the PHEV/BEV sheet is updated monthly.

You will find them at:
http://www.aeva.asn.au/wiki/knowledge-base

Reminder: AEVA YouTube Channel

Yes folks, we now have our own dedicated YouTube channel! You will find it at:
https://www.youtube.com/channel/UCnXUeRiI052r6piTRh46Qdw/videos

Market Update: Q3 2019

By Bryce Gaton

"EVs: why is Australia STILL waiting, when the rest of the world isn't?"

Overseas, the EV car market is hotting up, with auto manufacturers no longer being able to afford the luxury of making announcements to pacify the public clamour for them, and then sit on their hands whilst selling high profit (and highly polluting) SUVs and diesel 4WD utes – lest their competitors beat them to the market to colonise it with their EVs: as is now beginning to happen. However this is not so much the case here in Australia, where we are still used to the continual promise of imminent EV model arrival (such as the Kia e-Niro, Kia Soul EV, MG ZS, 63kWh Nissan Leaf e+, etc) then waiting, and waiting and ……..

Whilst it might not be imminent here, worldwide in the last 6 – 12 months most of the world's major auto manufacturers have announced timelines for at least partial electrification of their range – even holdouts like Toyota and Ford have suddenly jumped onto the EV bandwagon, lest they create their own 'Kodak moments[1]'.

The biggest mover is VW (thanks to their potential 'near-death' experience over the Dieselgate scandal) who has now set their compass irrevocably towards the full BEV path, committing many tens of billions of dollars to reinvent themselves as a major manufacturer of all-electric BEVs (Battery Electric Vehicles) across all their marques[2]. The first VW BEV model based on their new MEB EV platform (the ID.3) is now in pre-production with vehicles quietly rolling off the production line to test the production systems and the build quality. When it hits the market in mid-2020, it will also be in numbers (unlike most other EVs currently on the market) as VW has heavily invested in EV manufacture and battery supply contracts.

VW ID.3 Source: VW media

The next models in the ID series will be the ID Crozz (2020), ID Vizzion (2022) and ID Buzz (2022 or 23). Meanwhile, the other VW marques are also jockeying for places on the BEV bandwagon. Porsche formally revealed the Taycan in September and Audi has just released the e-tron with more BEV models to come soon. Even Bentley has plans for a BEV by 2025 and will hybridise all its models by 2023.

VW further fed the EV vibe when it released early this year a prototype dune buggy harking back to the original 60's version. Named the 'ID Buggy' it is based on the MEB platform. Although not destined for production (unlike the ID Buzz van based on the combi van), it attracts massive attention wherever it goes, including at the recent Monterey Car Week in California.

VW ID Buggy. Source: VW media

Overall, by 2025 the VW group plans to have around 30 all-electric models on the market and to sell 22 million BEVs over the next 10 years.

The PSA group (Peugeot, Citroen, Opel and Vauxhall) have announced a series of EVs, with several based on a shared EV platform. These include the Vauxhall Corsa-e, the Peugeot e-208 and e-2008 SUV. Citroen plan from 2020 to have a full electric or plug-in hybrid version of every new model. This means that by 2025 there will be an electrified version of every car and van in the Citroen range. The Corsa-e in particular will elicit significant excitement with the building of a special series of cars – named the Corsa-e Rally – to support a new e-rally competition named the ADAC Opel e-Rally Cup. (As a successor to a previous ICE vehicle based version). The car and competition are designed to offer an entry point to rallying for young drivers from all around the world. Set to begin in mid-2020, fifteen of the Corsa-e Rally cars are to be built for the race series.

Corsa e-rally car. Pic: Vauxhall

Renault have also updated their ever-popular Zoe with a 53kWh battery and a series of other upgrades to keep up with the new benchmarks being set by the likes of Peugeot, Vauxhall and VW.

When it comes to EV holdouts, Ford have been a noticeable highlight with their steady dropping of all models except large, fuel guzzling (and highly profitable) SUVs and pickups. As such, it was looking like becoming the most flat-footed manufacturer for catching up when the EV momentum really hit its straps. However a lot can change in a few months: Ford early this year invested AU$740 million in the start-up EV pickup and SUV manufacturer Rivian, (along with AU$1 billion from Amazon) and has more recently done a deal with VW to share the MEB platform for building electric Fords. Whilst no actual model announcements yet, at least they have noticed that EVs are here to stay!

The other big hold-out against full BEV vehicles has been Toyota. Long a supporter of hybrid, plug-in hybrid and fuel-cell EV technologies over full battery electric EVs, Toyota have recently begun changing their tune to talk about introducing full BEVs into their line-up, starting 2020. No models or specifications have been released yet – but it is a sign of the times that Toyota are even talking full battery electric at all.

Even the rarefied atmosphere of the supercar market has taken on the EV to produce truly awesome performance stats in soon-for-production vehicles. Lotus recently announced the full electric Evija for production in 2020. With 2000 metric horsepower, 400km range and a top speed of 320km/hr – it will be a true electric 'hypercar' and currently holds the title of most powerful sports car intended

for production. Others include the new Tesla Roadster (also expected in 2020). Although Tesla are coy about its horsepower number, they claim it will do 0-100km/h in 2.1 seconds, 0-160km/h in 4.5 seconds and a 400km/h top end. Pininfarina have also announced plans to build 150 of an all-electric road car to rival the Roadster, called the 'Battista'. Stats so far released include 1417kW with a 120kWh battery good for 0-100km/h in 1.9 seconds and to 300km/h in less than 12 seconds. Even Lamborghini have plans for a hybrid (code named the LB48H) for release in 2021.

Pic: Lotus Evija. Source: Lotus media

Interestingly: I have barely mentioned Tesla at all, till now – even though it has been the market leader (if not driver) of the BEV revolution. Tesla however has not been resting on its laurels. Many pundits still put Tesla 10 years ahead of the rest in terms of technology and/or production capacity. In the short-term, Model 3 production capacity is expanding rapidly, with Tesla on target to sell 350,000 – 400,000 cars in 2019. New production facilities that will double Model 3 production capacity are to come on-line in China later this year, and a new production line for the Model Y (the crossover version of the Model 3) is to open next year in their US Fremont factory. So for 2020, we will see the already revealed Model Y cross-over and the second generation Roadster, as well as the first Tesla 'Semi-Trucks'. Beyond that, a pickup ('ute' to us here in Australia) is due to be unveiled in a few months' time (likely production 2021) and there is a rumoured mass-market Tesla BEV to come after that. Touted to be smaller and more basic than the Model 3, if it comes about it will be a direct competitor to the VW ID series as well as the coming offerings from Peugeot, Vauxhall and the like. Finally, some within-segment competition!

And finally – what of these will we see in Australia? Without leadership from the federal level (and in particular the stricter fuel emission standards still gathering dust on ministerial desks that would save consumers many hundreds of dollars a year in lower fuel costs) there are few drivers for Australia's transport market to clean up its emissions act. Given the difficulties the auto industry is having meeting the demand for EVs in the rest of the world where emissions standards and zero-emission vehicle targets come with sticks for manufacturers and carrots for buyers – it is unlikely we will see an expansion of EV model offerings (or reasonably priced EVs) here any time soon as there will be no sticks, or carrots, happening here plus the poor emissions standards we currently have will encourage manufacturers to 'dump' the dirtier and fuel inefficient models they are no longer able to sell in more advanced markets.

The E-ferry Ellen. Source: Leclanche

By the way, it is not just in electric car support that Australia is lagging, as yet another marker in the move to cleaner sea transport has been set.

The world's currently largest all-electric ferry, the 'Ellen', made its first commercial trip on August 15 this year, connecting the ports of Søby and Fynshav (approximately 21km apart), in southern Denmark. The Ellen is capable of carrying approximately 30 vehicles and 200 passengers. Powered by a 4.3MWh battery system, it can do up to 41km on a single charge. Over the course of one year, the ferry will stop the release of 2,000 tons of carbon dioxide, 2.5 tons of particulates and 1.4 tons of sulphur dioxide. A perfect solution to many of Australia's ferry runs (Queenscliff to Sorrento in Victoria comes to mind – let alone the highly polluting Sydney ferry fleet) – so why are we waiting there too, when so many fuel and health damaging pollution savings are available?????

Sadly, the reasons for the slow EV uptake in Australia can be put down to three things.

1. No wielding of the legislative 'stick' to vehicle or fuel suppliers: we have the poorest fuel emissions and economy standards in the OECD (costing Australians directly in hundreds of dollars in higher fuel consumption, as well as indirectly through increased ill-health through the greater particulate emissions our dirty fuel causes, plus the added greenhouse emissions this unnecessarily high CO_2-e causes);
2. No offering of 'carrots' to consumers to buy EVs: overseas, many countries offer discounts on stamp duty and other taxes, tax incentives, access to bus and carpool lanes, cheaper parking and/or exemption from congestion charges etc, etc;
3. No direction setting at a central level: with the dearth of EV policies from the federal government, it has been left to the state and local government levels to roll out piecemeal EV policies. With every state and local government rowing more (or less) wholeheartedly in whatever direction takes their fancy, it makes it hard for manufacturers to supply vehicles (let alone other forms of electric transport) to what is really a single Australian market.

The consequences of this are twofold:

(a) EV manufacturers will continue to deliver what are still heavily supply constrained EV models to those markets with the greatest uptake and support, with Australia getting a limited number of a limited range of models and
(b) Manufacturers will continue to supply the oldest, dirtiest of fossil-fuelled vehicles to the Australian market as their other markets introduce ever increasing restrictions (plus outright bans) on their sale.

Notes:

1. Kodak moment: The Kodak film and camera company ran a major advertising campaign late in the life of the company to 'capture the Kodak moment' as a way of remembering special events with the use of a Kodak camera. Has now become a meme for the moment that a company realises it has lost market relevance by ignoring a major industry trend.
2. The VW car marques being: VW, Porsche, Audi, Bentley, Bugatti, Lamborghini, SEAT, and Škoda

Current Australian BEV & PHEV availability (here, or coming very soon)

By Bryce Gaton
Current to August 1st, 2019
For latest version: see http://www.aeva.asn.au/wiki/knowledge-base

EV model	EV type	BEV range[1] quoted/real world[2] km	Battery size: kWh	Tow rating? Unbraked/braked	Cost[3]	Available now or ETA[4]
Audi e-tron	BEV	400/328	95	X	TBC >$150k	Q2, 2020
Audi e-tron (entry level)	BEV	300/TBC	71	X	TBC	TBC
Nissan Leaf ZE1	BEV	285/240	40	X	$56,700	Y
Hyundai Kona electric	BEV	482/420	64	?	$64,750	Y
Hyundai Ioniq electric	BEV	280/200	28	X	$49,000	Y
Jaguar I-Pace	BEV	480/352	90	TBC (750kg)	$132,000	Y
Mercedes EQC	BEV	400 (TBC)	80	TBC	TBC >$150k	Q4, 2019
Tesla Model X Long Range	BEV	575/470	100	750/2250kg	$162,000	Y
Tesla Model X Performance	BEV	550/450	100	750/2250kg	$176,000	Y
Tesla Model S Long Range	BEV	660/530	100	X	$154,000	Y
Tesla Model S Performance	BEV	650/520	100	X	$167,000	Y
Tesla Model 3 (base)	BEV	460/350	50	750/910kg	$71,250	Y
Tesla Model 3 Long Range	BEV	620/500	75	750/910kg	$94,500	Y
Renault Zoe	BEV	400/300	41	X	$52,000	Y
Renault Kangoo ZE van	BEV	270/200	33	322kg max	$53,000	Y
BMWi3	BEV	335/246	42	X	$78,000	Y
BMWi3S	BEV	335/246	42	X	$80,000	Y
BMW i8	PHEV	37/22	7.6	X	$300,000	Y
BMW 330e	PHEV	37/23	7.6	X	$80,000	Y
BMW X5 xDrive40e	PHEV	31/21	9	750/2700	$140,000	Y
Hyundai Ioniq plug-in	PHEV	63/48	8.9	X	$49,600	Y
Mini Countryman	PHEV	40/TBC	7.6	X	$69,000	Y
Mitsubishi Outlander	PHEV	54/35	12	750/1500	$55,000	Y
Porsche Cayenne E-Hybrid	PHEV	36/18	10.8	750/3500	$155,000	Y
Porsche Cayenne S E-Hybrid	PHEV	40/TBC	14.1	TBC	TBC>$300k	Q4 2019
Porsche Panamera E-Hybrid	PHEV	51/25	14.1	X	$280,000	Y
Range Rover Si4 PHEV	PHEV	51/35	13.1	750/2500	$165,000	Y
Volvo XC90-T8	PHEV	43/22	9.2	750/2400	$136,000	Y

Notes:

1. Quoted ranges are from the Green Vehicle Guide: https://www.greenvehicleguide.gov.au wherever possible. Those not yet available in Australia use the NEDC ratings.
2. Real world ranges are US EPA ranges except for Renault, where manufacturer quoted real-world range used.
3. Approximate base model price based on currently available listings, inc on-road costs (ORCs).
4. ETA: Q=quarter. Q1=Jan-Mar; Q2=Apr-Jun; Q3=July-Sept; Q4=Oct-Dec

Chargefox expands DC fast-charge network

Map of first phase of Chargefox network. Image: Chargefox

With 5 DC fast charger stations already open, Chargefox has now announced target locations for the remaining 17 places of their 22 station first phase DC charging network. Once the first phase is fully constructed, it will connect Adelaide, Melbourne, Sydney and Brisbane, with additional sites in Western Australia and Tasmania. (Chargefox have previously announced that this first stage of 22 stations will be completed by the end of 2019).

Every site in the Chargefox network will have at least two parking bays equipped with 350kW capable Tritium and ABB chargers. Selected sites will also feature two additional Tritium 50kW chargers. At an average of 20kWh/100km, the 350kW chargers can deliver up to 450km of range in 15 minutes (for vehicles capable of 350kW charging), whilst the 50kW can deliver 60km in 15 minutes. It is also worth noting that every Chargefox station will be powered by 100% renewable energy.

By the way, all Chargefox stations are equipped with both CHAdeMO and CCS2 plug types, making them suitable for all current and future DC-capable EVs, including Tesla Models S and X when used with an adapter.

Barnawartha North Chargefox station. Image: Bryce Gaton

The What, Why, When guide to buying a BEV in Australia.

By Bryce Gaton, published in TheDriven.io, July 2019

Wow, it's nearly a year and a half since I wrote the original 'EV buyers guide' article, and almost 12 months since its first update: but here we are in a markedly changed EV world even in that short time – enough to review again the options and possibilities for joining the rEVolution!
(Note: technically, the term EV - short for Electric Vehicle, covers four types of EV – Battery Electric Vehicles – BEV; Plug-in Hybrid Electric Vehicles – PHEV; Hybrid Electric Vehicles – HEV; as well as Fuel Cell Electric Vehicles – FCEV. In this article I only discuss the BEV, as these are the one that most people ask about/think of as Electric Vehicles).

Around the world, ICE (Internal combustion engine) vehicle sales have now consistently failed to exceed (or even return) to their 2017 peaks whilst ever growing queues of pre-orders and orders for full battery electric vehicles (BEVs) show the pent-up demand from the public for EVs. And why not? EVs (in particular BEVs) are better to drive with their instantaneous take-off, smooth and silent travel, easy 'refuelling' by plugging in at night and unplugging in the morning, plus BEVs generally offer higher levels of safety with their low centre-of-balance and absence of volatile fuel tanks. On top of that, they are cleaner both locally (no tailpipe emissions) and globally (overall EV CO_2-e emissions are almost always lower than their ICE brethren even if run exclusively on grid power). Furthermore, with a BEV you are no longer tied to burning fossil fuel, plus your vehicle pollutes ever less as the world's electricity grids continue their inexorable move to renewable sources.

Therefore the purpose of this article is to describe the abilities of current and (and soon to come) BEVs in Australia in order to:

a) help those who have the willingness (and the wherewithal) to make the transition now should something already meet their needs and
b) for those whose transport needs aren't yet met by a BEV: better define the likely time when they will be.

BEV update for mid-2019.
Since my last BEV choice article, the following ones have been added to the growing EV line-up in Australia:

- Hyundai Ioniq (as well as its PHEV and HEV siblings);
- Hyundai Kona electric;
- Tesla Model 3;
- BMWi3 120Ah (with an increase from a 33kWh to 42kWh battery);
- 2018 Nissan Leaf ZE1

Coming this year (or at least within 12 months) are also expected to be:

- Mercedes EQC
- Audi e-tron
- Porsche Taycan
- ACE Cargo light commercial van (in limited numbers)
- Kia e-niro and maybe even their Soul EV
- MG ZS EV.

It was hoped that this year's crop of BEVs would start breaking the $50,000 on-the-road price point, but only a light 'shattering' has occurred. Most prices for the 'budget' end of EV announced have hovered around that point … 'before on-road costs'. Sadly, the dreaded ORCs have tended to multiply, ensuring all but the Ioniq resolutely refuse to go under $50k on the road. However, if $50k

is your limit: you can now buy the lower spec Ioniq BEV for around $48k on the road, and some haggling should get you a Renault Zoe or Kangoo ZE van under there too.

So let's see, updating the New BEV Choice table from late 2018 now gives us 13 available now, and probably 16 by the end of the year. (Up from 8 in late 2018):

Table 1: New BEV choices available here (or coming soon) to Australia:

Manufacturer	Model[1]	EV only range in km Quoted[2]/real world[2] (battery size in kWh)	Availability	Price (Including ORCs)
ACE	Cargo	150 – 200 TBC (23kWh)	H1 2020?	Under $50k
Audi	e-tron	397/326 (95kWh)	Late 2019?	Over $150k
BMW	i3	307/246 (42kWh)	Now	$79,000
Hyundai	Ioniq	204/200 (28kWh)	Now	$48,000
	Kona SUV	446/413 (64 kWh)	Now	$64,000
Jaguar	I-Pace	467/375 (90kWh)	Now	$140,000
Mercedes	EQC	Est: 400km (80kWh)	Late 2019	Over $150k
Nissan	ZE1 Leaf	270/240 (40kWh)	Now	$57,000
Renault	Zoe	318/300[5] (40kWh)	Now	$50,000
	Kangoo ZE van	NYR[3]/200[5] (33kWh)	Now	$49,500
Tesla	Model 3 Std range Long range	406/386 (50kWh) 526/523 (75kWh)	Now	$71,000 $94,000
	Model S Std range Long range	445/414[4] (75kW) 600/595 (100kWh)	Now	$125,000 $145,000
	Model X Std range Long range	NYR[3]/410[4] (75kW) NYR[3]/523 (100kWh)	Now	$136,000 $157,000

Notes to table 1:

1. Battery electric vehicles only listed. Table does not any PHEVs, HEVs or FCEVs.
2. Quoted = new Euro WLTP test standard results, 'Real World' = US EPA test standard results. With this update, I have moved to ONLY using WLTP test cycle standard for the 'quoted' figures. This is because the world (other than the US) are moving to use this standard only. In Australia, manufacturers are still quoting a mix of either WLTP or the older (and wildly over-optimistic!) NEDC test standard.
3. NYR = Not Yet Rated on WLTP test cycle
4. To Be Confirmed
5. Renault does not sell cars in the US market: manufacturer estimates for 'Real World' range given

Why buy an EV?

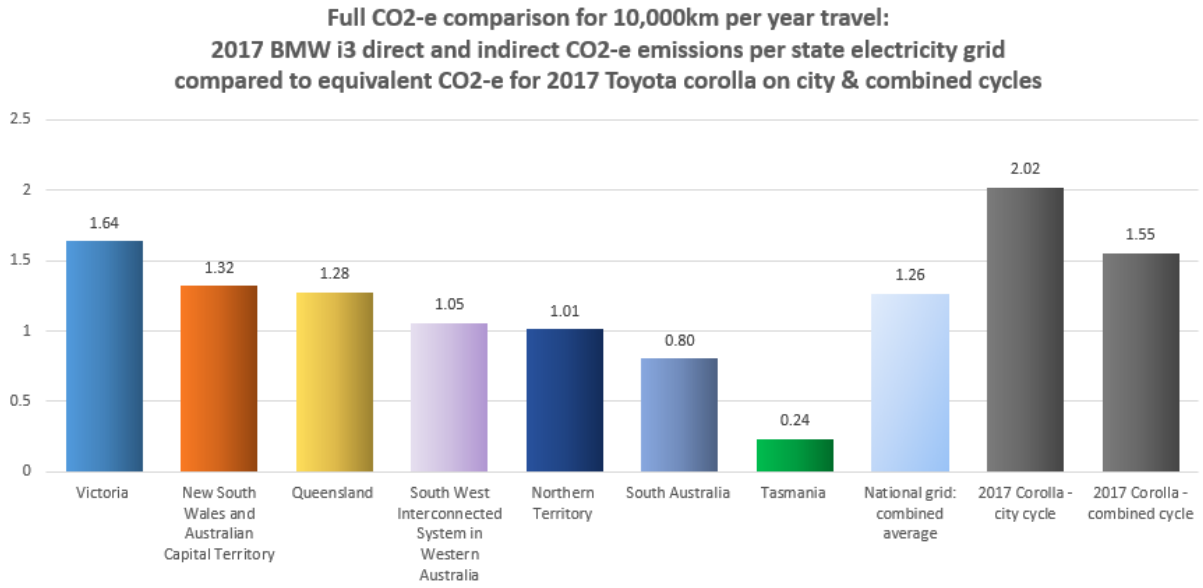
From table 1, it is still obvious that BEVs are still more expensive up-front than their ICE brethren – so why consider a BEV over an equivalent petrol or diesel car?

First up, it is worth considering your personal 'Total Cost of Ownership' (TCO). Fleet purchasers are very aware of TCO in their calculations – and I have been to several conferences recently where fleet managers are openly talking of soon switching to purchasing PHEVs and BEVs instead of ICE vehicles. This is a direct result of EV purchase costs coming down, making their TCO calculations begin to tilt in favour of running EVs. This is because EVs have much lower running and maintenance costs, as well as reduced down-time for maintenance. BEVs also generally have higher safety ratings than ICE equivalents – in part due to their lower centre of gravity making roll-overs less likely. This latter point is an important consideration for fleet owners as both business and government are stipulating ever higher safety star ratings for vehicles to even be placed on their 'approved vehicle' lists.

Secondly, you get the environmental benefits of BEVs over ICE vehicles (and especially diesel ICEs). These include:

- No air pollution from the tailpipe;
- Reduced overall CO_2-e. (Using the Carbon Accounting methodology and data as published by the Federal Government's Department of the Environment and Energy. (See graph 1 below - taken from my article in Renew magazine, edition 143).
  Note: this data is based on the July 2017 Australian figures. Given the 2019 figures are due out soon – I will revise that article and graph when they are released.
- No longer being tied to using fossil fuels, so you can go further in replacing coal and gas fired generation with your own solar or subscribing to the greener wind, solar and hydro offered by the utilities;
- Reduction in waste such as coolants, oils, brake pads, spark plugs, air filters and the like.

Graph 1:



So when should you consider changing to a BEV?

We now have a range of BEV choices in Australia, and that choice is still growing into other vehicle market segments, offering BEV choices where there used to be none!

In fact I have had to split up the tables from the previous article into several parts to cover this expanded range. The tables also include a growing range of grey import BEVs that can be bought. (I do add the caveat that you would need to be committed to EVs to do so – the grey imports are not supported by the manufacturers as maintenance and parts can differ from the Australian delivered versions. Consequently you would need to find an EV competent mechanic to maintain or repair them, which is difficult in such a small market as ours).

Below are my updated tables showing the currently available new BEVs (table 1), confirmed as soon to come (table 2) and second-hand BEV options (table 3).
Between them, they should assist in deciding if it is worth your making the change to a BEV now based on a selection of distance, route and cargo/towing options.

By the way, if no BEV yet suits your needs – you may not have long to wait. Overseas, the range is expanding at a rapid rate as well as the announcements of new models to come, so expect even more BEV choice to come in 2020. To name just a few likely to arrive here in the next year or so: VW is just about to hit the market overseas with the first of the much anticipated ID series, as well as Porche with the Taycan; Tesla in 2020 the Model Y and the new Roadster and Rivian the RT1. On top of this expanded choice, a number of economic forecasters have been moving their predicted 'price parity' point for BEVs and their equivalent ICE vehicles ever closer. That predicted date is now somewhere around 2024, or possibly even earlier.

Table 2: Selection criteria applied to new BEVs on Australian market:

Criteria:	Available now									
	Tesla			Renault		BMW i3 42kWh	Jaguar I-Pace	Hyundai Ioniq EV	Hyundai Kona EV	Nissan Leaf 2.ZERO
	X	S	3	Zoe	Kangoo ZE					
Do you travel ≤ 50 km/day? (Av. daily Melb commute = 30km)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Do you travel ≤ 140 km/day?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Do you travel ≤ 200 km/day?	✓	✓	✓	✓	?[3]	✓	✓	✓	✓	✓
Do you travel ≤ 300 km/day?	✓	✓	✓	✓	X	✓	✓	?[1]	✓	?[1]
Do you travel ≤ 400 km/day?	✓	✓	✓[4]	?[1]	X	?[1,2]	?[1]	X	✓	X
Your long distance travel follows a Tesla interstate Supercharger route?	✓	✓	✓	X	X	X	X	X	X	X
Do you need a car for towing?	✓	X	✓	X	✓	X	✓	X	? TBC	X
Have a approx. budget of $60,000	X	X	X	✓	✓	X	X	✓		✓

Notes to table 2:
1: Can make these ranges if topping up during day or use DC fast-charge option (or 3 phase AC charge for Zoe)
2: No DC fast-charge (or 3 phase AC charge) for pre-2018 BMW i3. 2018 i3 has both.
3: Kangoo ZE has neither fast-charge DC nor 3 phase AC options
4: Base Tesla model 3 has less than 400km range, but Long Range does

Table 3: Selection criteria applied to new BEVs coming soon to the Australian market:

Criteria:	Coming soon		
	Kia e-Niro (early 2020)	Audi e-tron	Mercedes EQC
Do you travel ≤ 50 km/day? (Av. daily Melb commute = 30km)	✓	✓	✓
Do you travel ≤ 140 km/day?	✓	✓	✓
Do you travel ≤ 200 km/day?	✓	✓	✓
Do you travel ≤ 300 km/day?	✓	✓	✓
Do you travel ≤ 400 km/day?	✓	?[1]	? (TBC)
Does your long distance travel follow a Tesla interstate Supercharger route?	X	X	X
Do you need a car for towing?	TBC	X (TBC)	X (TBC)
Have a approx. budget of $60,000	X	XX	XX

Notes: 1: Can make these ranges if topping up during day or use DC fast-charge option

Table 4: Selection criteria applied to available second-hand BEVs likely to be under, or near, $30k:

Criteria:	2nd hand						
	24kWh Leaf	30kWh Leaf[3]	Mitsubishi iMiEV	BMW i3 22kWh	BMW i3 33kWh	Mitsubishi MiEV van[3]	Nissan E-NV200[3]
Do you travel ≤ 50 km/day? (Av. daily Melb commute = 30km)	✓	✓	✓	✓	✓	✓	✓
Do you travel ≤ 140 km/day?	?[1]	✓	?[1]	?[1,2]	✓	?[1]	?[1]
Do you travel ≤ 200 km/day?	X	?[1]	X	?[1,2]	?[1,2]	X	?[1]
Do you travel ≤ 300 km/day?	X	X	X	X	?[1,2]	X	X
Do you travel ≤ 400 km/day?	X	X	X	X	X	X	X
Does your long distance travel follow a Tesla interstate Supercharger route?	X	X	X	X	X	X	X
Do you need a car for towing?	X	X	X	X	X	X	X
Have a maximum budget of $30,000	✓	✓	✓	?	X	✓	✓

Notes:

1. Can make these ranges if topping up during day or use DC fast-charge option.
2. No DC fast-charge (or 3 phase AC charge) for pre-2018 BMW i3. Note: some may have CCS1 DC port, but this needs to be changed to CCS2 to be useful (easy, but could be costly).
3. Second-hand, 'Grey Import' Japanese Mitsubishi MiEV vans, 30kWh Nissan Leafs and Nissan E-NV200 vans now being imported by several vehicle businesses.

Two Wheels Good

What's new in the world of E-moto

From Dr Chris Jones, AEVA National Secretary and EV motorbike devotee

MotoE

The world of electric motorcycles has seen some attention in recent months, so we'll start with the MotoE racing series in conjunction with MotoGP. After a disastrous fire in the Jerez pit garage in March this year, Energica managed to assemble another entire field of electric race bikes in time for the July series opener. The inaugural race was held in Germany at the Sachsenring, where Finnish rider Niki Tuuli set the pole, fastest lap and took the top podium spot. The UK's Bradley Smith and France's Mike Di Meglio took second and third. It was an eventful 5 lap race – cut short from 7 laps due to a red flag after crash.

Round two of the single-make class was held at the Red Bull Ring in Austria where Mike Di Meglio secured pole and first place. Belgium's Xavier Simeon took second place while Bradley Smith clinched third. The race was declared wet, which made for some entertaining riding – trying to pull 240 kg of bike up on a slippery track proved treacherous for some, with several crashes late in the race. And hot off the timesheets this weekend (15/09/2019) Italian rider Matteo Ferrari has secured first place at San Marino, with Spain's Hector Garzo and Xavier Simeon taking second and third place. Current championship standings are tight, with Matteo Ferrari in the lead with 47 points, Xavier Simeon on 45 points and Mike Di Meglio on 41 points.

The racing in MotoE is quite different to the other petrol classes – most notably the goal is less about tyre preservation and strategy, and more about getting in front as best you can. The riders seem more willing to take a risk and pull off a tight pass knowing there won't be many more laps to make up lost time. With lap times typically 4 seconds off the pace of Moto3 and 10 seconds behind MotoGP, gains will be rapid once the field is opened up to other makes of bike.

Hector Garzo rounds a corner at the Austrian Grand Prix on board an Energica Ego electric race bike. Image: Crash.net.

Fonzarelli NKD

Australian electric scooter company Fonzarelli have just released their latest machine – the Fonzarelli NKD. As the Leetspeak suggests, the bike is largely naked in appearance with a minimalist flair. It's capable of 100 km/h and is quite at home on winding roads as it is commuting through town. Leaning on the convenience of a rear hub-mounted motor, the NKD enjoys the freedom to explore novel designs with respect to battery placement. The 3.3 kWh battery affords a decent range, but claims of 120 km might only be met by keeping it under 40 km/h. The bike is on sale for

$10k to $15k, which is not bad for a 10 kW machine. Director, Michelle Nazzari was at the launch of the bike in Adelaide last month, and plans on manufacturing the bike in SA. “At this stage we will keep it in Sydney so we can start getting some bikes out, but hopefully by end of year we will have full scale production down here in SA” she told EV news site, The Driven. The NKD charges from a standard 240 V EVSE, with the current bike utilising a J1772 inlet.

It raises an interesting observation on the charging front too – while most public charging infrastructure is geared towards cars, motorcycles are rarely given thought. Most electric motorcycles have a standard 10 A plug, while larger bikes such as the Zero SRF and Energica Ego utilise level 2 charge points. But motorcycle parking is rarely located near charge points. This is an interesting development, and will hopefully result in a diversification in charging infrastructure away from just cars. www.fonzarelli.com.au

Fonzarelli NKD electric mini-moto. Image: Fonzarelli.com.au

Evoke Urban

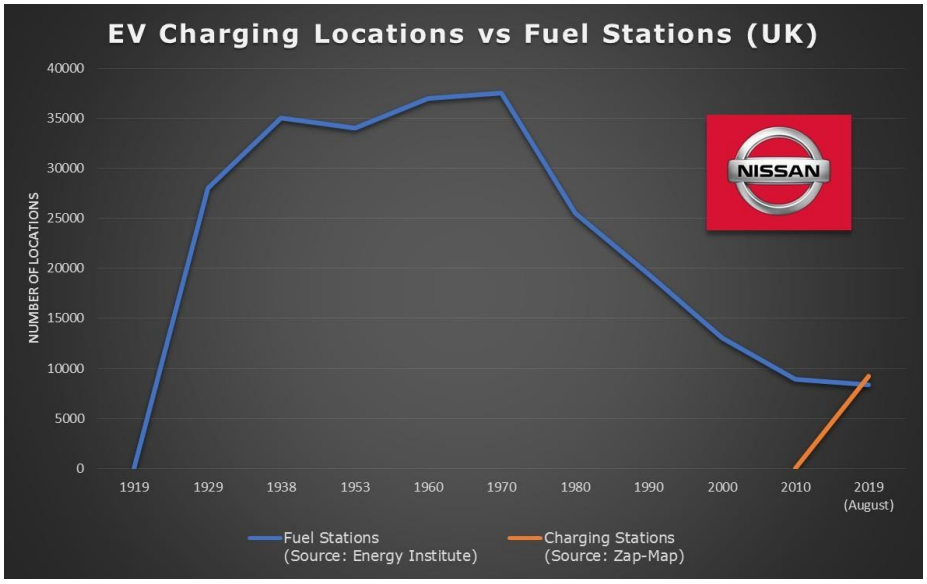
Finally the Evoke electric motorcycle has been approved for sale in Australia. The Evoke is another hub-motored bike with practical range and performance, but clearly more conventional in appearances. Capable of 130 km/h and a claimed 200 km range, the bike shapes up as a viable contender for the 125 cc ICE motorcycle class. Manufactured in China, the Evoke is on sale for about US$8,000 but exact pricing for Australia is yet to be revealed. www.evokemotorcycles.com.au

Evoke Urban electric motorcycle. Image: Electric Motorcycle News.

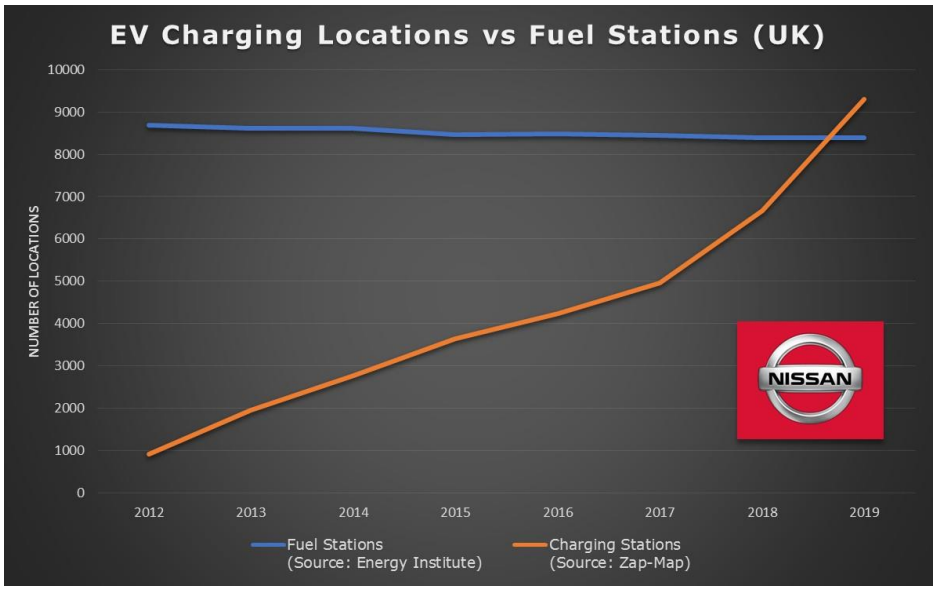
The rise and fall of the petrol station

UK public EV charging station sites now exceeds the number of fossil fuel stations
By Bryce Gaton. First published on TheDriven.io, August 2019

It is coming up to a century since the first fuel station was installed in the UK (their first opened November 1919 at Aldermaston in Berkshire) with currently approximately 8,400 of them scattered around the cities and countryside there. However, in a sign of yet another tipping point being passed in the EV revolution – that number is now exceeded by the number of public places to charge EVs!



The rise (and fall) of the fuel station: UK numbers 1919 - present.
Source: Nissan Motor GB Ltd



Number of EV Charging Locations vs Fuel Stations in the UK, 2012-2019.
Source: Nissan Motor GB Ltd

By the way, if you are wondering what ICE vehicle owners did in the early days before fuel pumps – petrol was bought in two-gallon tins from all sorts of places, not just garages. (These included chemists, hardware shops and hotels – imagine the fire risks that presented, given the heavily

regulated petrol station construction and maintenance industry that exists now). That period by the way lasted some 20 plus years – puts some of our early EV charging issues back into perspective!

Back to the present: even of these 8,400 UK fuel stations, more than 1600 already provide DC fast-charging. According to Zap-Map (https://www.zap-map.com/statistics/), two new DC fast-chargers came online in the UK every day in the last month. In fact, all UK motorway fuel stations now have charging stations installed, the majority of which provide a DC fast-charge option.

To further smooth the transition to EVs in the UK (given most electric vehicle owners only need to charge at home), the UK government is now looking to further support EV adoption with their recently proposed law requiring the installation of charge points for EVs in all new housing. (Something that is barely on the radar for Australian building codes).

In a comment that should also be heeded by Governments here, lest the existing lack of leadership and support for public EV charging infrastructure by the highest levels of government continue here: Kalyana Sivagnanam (managing director of Nissan Motor (GB) Ltd.) is quoted as saying (in relation to this landmark EV charging site figure):

> *"Many consumers are saying their next car will be electric. That means the industry needs to ensure their desires are met with both the car – how far it can go, what technologies it has – and how it interacts with the world around it – where they can charge and how convenient that is for them.*
> *"We've moved beyond the early concerns of range anxiety with EVs now exceeding the vast majority of customer's daily driving needs. The next challenge is for charging infrastructure to keep pace with the number of EVs on the road, and that the experience of recharging is as enjoyable and effortless as that of all-electric driving."*

ELECTRIKHANA

Australian
Electric Vehicle
Association
www.sa.aeva.asn.au

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FREE EVENT
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Booking essential for drives and rides at **www.electrikhana.org/sa.html**

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Vehicle Association Inc.
PO Box 5285
Clayton, Victoria 3168
secretary@aeva.asn.au

NOTICE OF 46th ANNUAL AEVA GENERAL MEETING

10.00 am Sunday 27th October 2019
Sydney Showgrounds, Grand Parade,
Sydney Olympic Park
Hub 2 meeting room (next to the exhibition in Hall 6)

AGENDA

- Apologies
- President's address
- Minutes from the 2018 AGM to be tabled
- Minutes from the National Council Meeting to be tabled
- Treasurer's report and Statement of Accounts
- National Secretary's report
- Membership Secretary's report
- Newsletter editor's report
- Branch reports to be tabled
- General Business

If you cannot attend, please consider nominating a proxy:

Proxy nominations may be sent to secretary@aeva.asn.au where they will be tabled. Alternatively, the bottom of this form may be filled out and presented in person.

- -

I, ……………………………………will not be attending the 2019 AGM

I Nominate ………………………………………………… As my proxy

Signature…………………………………………… Date / / 2019

Your Branch representative willing to act as Proxy: (or nominate Meeting Chair)

Sydney Electric Vehicle Expo Program

26th – 27th October 2019 10.30am – 4.30pm

NISSAN

Innovation that excites

JET CHARGE

SYDNEY Showground

Sydney Olympic Park

CHARGEFOX

NRMA

The 2019 Sydney Electric Vehicle Expo

Following our successful Brisbane Electric Vehicle Expo in 2018, which saw several thousand visitors to the Brisbane Convention Centre, the Australian Electric Vehicle Association (AEVA) is delighted to present the 2019 Sydney Electric Vehicle Expo. Our aim is to once again provide a first-tier presentation of Electric Vehicles and technology featuring the very best in Electric Vehicles.

The Sydney Showground has been chosen as our venue, providing us with an amazing opportunity to offer test drives and rides. There is nothing more powerful than the opportunity to showcase electric vehicles by providing real world experiences. We will be able to offer a wide range of currently available models on a roughly 7km test drive circuit for cars, and an indoor circuit for bikes, scooters and skateboards.

The AEVA has become a trusted partner to help reach and educate the general public about the arrival of EVs. This is supported by our schedule of passionate speakers which will include such topics as “What is my range, really?”, “Alternative energy opportunity” and “e-bikes and the law, and how to encourage the update of e-bikes”. Our Master of Ceremony is John Harris (a man passionate about all things eco) who will be guiding our speakers, ensuring a smooth and well-run speaker program to our visitors on both the Saturday and Sunday.

The AEVA Annual General Meeting, which is held at this event each year, will see members convene at 10am on Sunday the 27th of October in the Hub Meeting Room 2, which is adjacent to Exhibition Hall 6.

The Australian Electric Vehicle Association Inc. the oldest continuously active, electric vehicles owner’s association formed in 1973 is a not-for-profit organisation dedicated to promoting and accelerating the migration of Australia's transport networks to electric drive as quickly as possible. A big thank you to our major sponsor Nissan, with further sponsorship from NRMA, Jetcharge and Chargefox, allowing the AEVA to continue to promote Electric Vehicles. It’s because of their support that we can provide comprehensive and accurate EV information to the community.

Electric vehicles are a growing industry, currently in its infancy in Australia but with an increasing number and variety of vehicles available. Putting this together with the rapidly growing interest from the public, it is important for AEVA to continue hosting this event on an annual basis.

This year’s event also features a show-n-shine section thanks to Shannons Insurance. If you are intending to drive to the expo in your Electric Vehicle, please do enter your vehicle in the Show-N-Shine. This year’s event coincides with a number of other expos held at the Sydney Showground, including the Property Buyers Expo in Hall 5, allowing visitors access to both expos as an added bonus.

This convention will address many of the questions that need to be considered with the arrival of EVs over the next few years. This is a good opportunity for all participants to get a deeper understanding of the current state of the industry and how it will progress in the future years in Australia, to help plan for the changes EVs will bring.

See you at the EV Expo!

Speakers Hub – Speaker's Schedule

This schedule is subject to change.

Saturday October 26th

Times	All kinds of EVs	
10:00 AM	**Nissan, Platinum Sponsor presentation**	
10:20 AM	Michelle Nazzari, Fonzarelli	Electric motor scooters and motor bikes
10:40 AM	Mark Tipping, Tesla Owners Club Australia	Teslas
11:00 AM	Bryce Gaton, AEVA	Choosing an EV that suits your needs
	Charging at home	
11:50 AM	**Jetcharge Gold Sponsor presentation**	
12:10 PM	Brendon Wheeler, EVSE	What are the options?
12:30 PM	David Hiley, AEVA	EV charging with solar and storage
	Charging on the road	
1:20 PM	**Chargefox, Gold Sponsor, Marty Andrews**	How people really charge on the road
1:40 PM	AEVA	What is my range, really?
2:00 PM	Anthony Weinberg, Waverley Council	3-Council Electric Vehicle Charging Project
	Making the transition	
2:40 PM	**NRMA, Gold Sponsor presentation**	
3:00 PM	Aldo Gretch, VoltWALL	Alternative energy opportunity
3:20 PM	Jon Bannister	Our Journey to a Carbon Free Council by 2030
3:40 PM	Mark Gjerek, Mov3ment	EV Transitions in Government
4:00 PM	FINISH	

Sunday October 27th

	All kinds of EVs	
10:00 AM	**Nissan, Platinum Sponsor presentation**	
10:20 AM	TBC	Eco Boats
10:40 AM	Rebecca Lee, RevBikes	E-bikes and the law; encouraging uptake of E-bikes
11:00 AM	Chris Bennetts, Transport for NSW	
	Charging at home	
11:50 AM	**Jetcharge Gold Sponsor presentation**	
12:10 PM	Les Smith, Tritium	Changing face of charging
12:30 PM	Clive Attwater, AEVA	
	Charging on the road	
1:20 PM	**Chargefox, Gold Sponsor, Marty Andrews**	How people really charge on the road
1:40 PM	AEVA	What is my range, really?
2:00 PM	EVie Networks	
	Making the transition	
2:40 PM	**NRMA, Gold Sponsor presentation**	
3:00 PM	Dr Sanath Alahakoon	CQU's Green Transportation
3:20 PM	Trevor Richards	Towing with an EV

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Model update news: Renault Zoe shipment quarantined in Australia.

By Bryce Gaton. First published on TheDriven.io, August 2019

Pic: Renault media

Australian supplies of Renault's all electric hatch, the Zoe, ran out in March this year (after only selling two in 2019), so with the arrival of a new batch of 75 this July it was expected that Zoe sales would pick-up for the second half of 2019.

Sadly, this is not to be the case – as the majority of the batch were contaminated by an oil spill in the cargo area of the ship carrying them. As a result, they have all been quarantined in port awaiting assessment and cleaning up.

A statement from the managing director of Renault Australia, Anouk Poelmann, should reassure Zoe order holders: *"It is our commitment that no single vehicle will be released to our dealer network unless we are 100 per cent satisfied that there is no impact on the exterior, interior or future reliability of the vehicle."*

In the meantime – those awaiting the filling of their Zoe order will have to wait just that little bit longer. (Something potential EV buyers in Australia are rather ***too*** used to).

Future trends: California 1st half-year sales report.

Tesla Model 3 third best-selling car (of ANY type) in California, H1 2019.
By Bryce Gaton. First published on TheDriven.io, August 2019

In yet another sign of the inexorable takeover of the passenger vehicle market by electric cars: the all-electric Tesla Model 3 has been the third best-selling car (ICE or electric) so far this year in California (33,005 sales), beaten only by the Toyota Camry (33,638) and the Honda Civic (39,081). Alongside of this result, an interesting set of movements in internal combustion engine (ICE), hybrid (HEV), plug-in hybrid (PHEV) and battery electric (BEV) vehicles has occurred.

So why is Californian car and EV sales data important to the rest of us? Because what happens in the Californian market is generally a sign of what is to come for other Western passenger vehicle markets. This results from California being a world-leader in:

(a) strict emissions legislation;
(b) significant incentives to promote the sale of low emission vehicles;
(c) strong support for public and private EVSE installations (through the US$2 billion Electrify America campaign kindly provided by VW as their mea culpa for Dieselgate) AND
(d) a broad public EV information and education campaign (again, via Electrify America).

As a result, the percentage (and actual volume) of electric vehicle sales (BEV, PHEV and HEV together) in California is well ahead of most places in the world, making it an indicator of what is to come as an EV market matures.

As part of that maturation process, it is interesting to see that the 'valley of death' alluded to by some pundits may be starting already. By 'valley of death', I mean buyers abandoning the new ICE market in anticipation of buying an EV **before** the legacy manufacturers can build EVs in large (and profitable) numbers. This could lead to a period of substantial losses for the existing auto industry, with the potential failure of one or more of them if they do not have the reserves to sustain them through to the other side.

And what signs do I suggest are there for this valley of death beginning? Well, it's the continuing (and accelerating) fall around the world in ICE vehicle sales alongside the continuing (and accelerating) increases in worldwide EV sales. California is now on track for the third year in a row of falling total car sales in combination with continuing EV sales growth. (See figures 1 and 3 below).

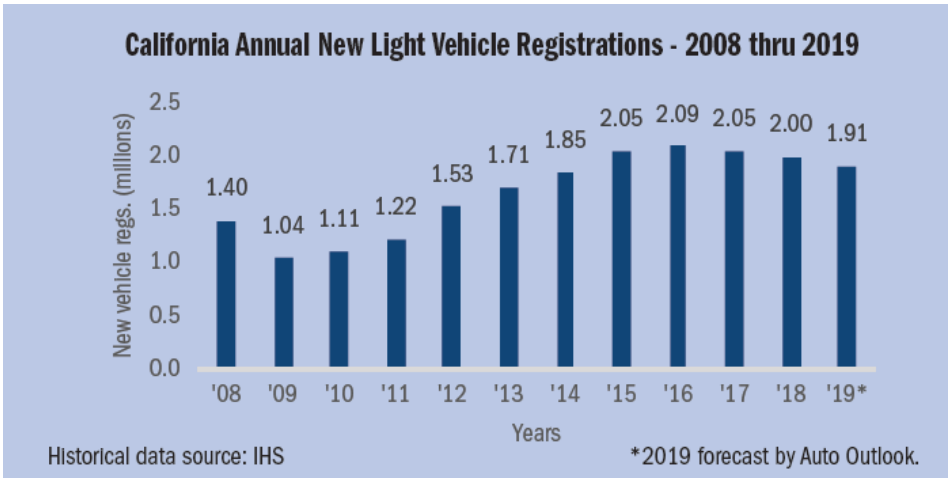


Figure 1. Source: California Auto Outlook/IHS Markit

On top of this, an increase in used car sales figures points to those people who did change cars choosing second-hand over new. (Figure 2). Californian light vehicle second-hand sales in general went up 5.2% in the first half of 2019, with 6 year old or newer up 10.2%. Are people perhaps deciding that an EV is now within their next new car cycle, so only choosing cars that will last the time frame to when an EV suiting their needs (and price range) is expected to be available?

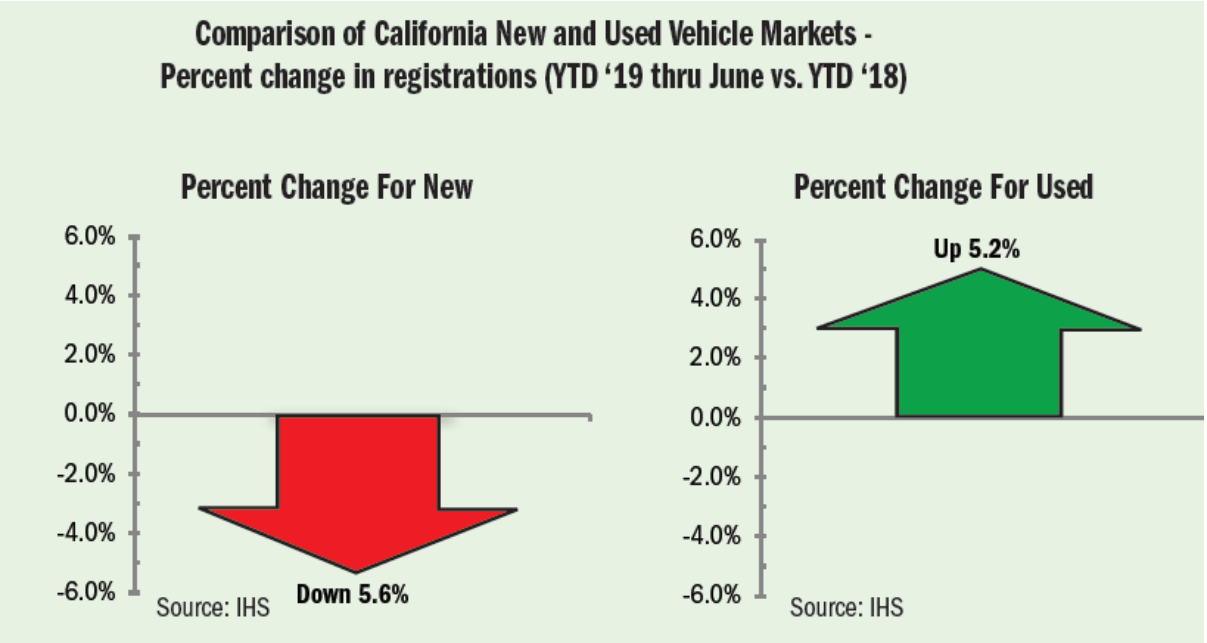


Figure 2. Source: California Auto Outlook/IHS Markit

In the meantime, the EV purchase statistics make for interesting reading, as well as allowing room for further speculation. (See figure 3).

Overall EV sales now make up 13% of the total Californian market, with BEVs at 5.6%, HEVs at 5.2% and PHEVs at 2.2%. It is worth noting that Californian PHEV sales have taken a significant dip so far in 2019, whilst BEVs and HEVs have increased their shares. Part of that dip in PHEVs could perhaps be attributed to there being fewer options for PHEVs with decent 'electric-only' ranges, given GM ended Chevrolet Volt production in March this year. A second explanation could be that full battery electric cars now offer ranges sufficient to let people skip the 'stepping-stone' technology of the PHEV in favour of the full BEV.
Meanwhile, the uptick in hybrid sales could be seen as an indication that EVs are moving from 'early adopter' interest to the more mainstream market. (Just as hybrids were the first-choice of the early EV adopters in the late 90s and 2000s). Hybrids are now being marketed as the first 'toe-dipping' into EVs, through offering a first EV choice of a simple fuel-saving HEV drivetrain without the seeming complication of working out the leads. (The less said about the seeming perpetual motion machine marketing strategy for HEVs as 'charges while you drive, no lead needed', the better).

It will be interesting to see whether this HEV trend is an aberration or the start of a trend, as until now the market share of hybrids has been declining – perhaps as a result of the early adopters moving to full BEVs? (See figure 3).

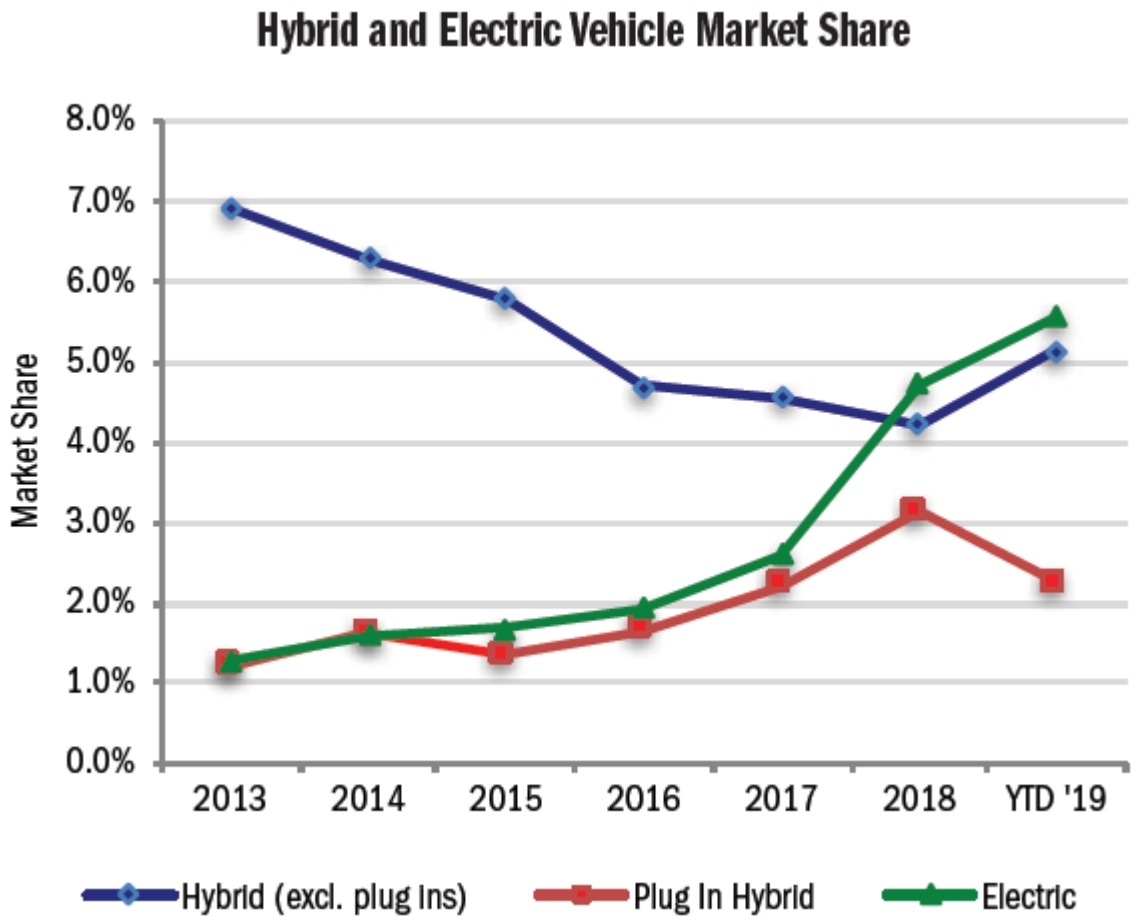


Figure 3. Source: California Auto Outlook/IHS Markit

Getting back to that statistic of the Tesla Model 3 being the third best-selling car **of all fuel types** in California so far this year (despite the significantly higher price of the Model 3 over the other two) - it begs the question of whether ICE sales will fall off a cliff when BEVs reach price parity with ICE vehicles (predicted to be around 2024) and are produced in enough numbers and styles to fight head-to-head with ICE offerings.

As a final note, that steepening ICE sales fall may also happen well before 2024 with VW about to launch the ID3 onto the market in large numbers early next year (and others to follow) – the 'Tesla Stretch' (termed as the extra money people are prepared for a Tesla over the cost of the ICE new car they would have previously chosen) may very well turn into the 'EV Stretch' and EVs start slaying ICE sales before the price parity point is reached.

Under the covers: Vehicle test cycles explained.

By Bryce Gaton. First published on TheDriven.io, August 2019

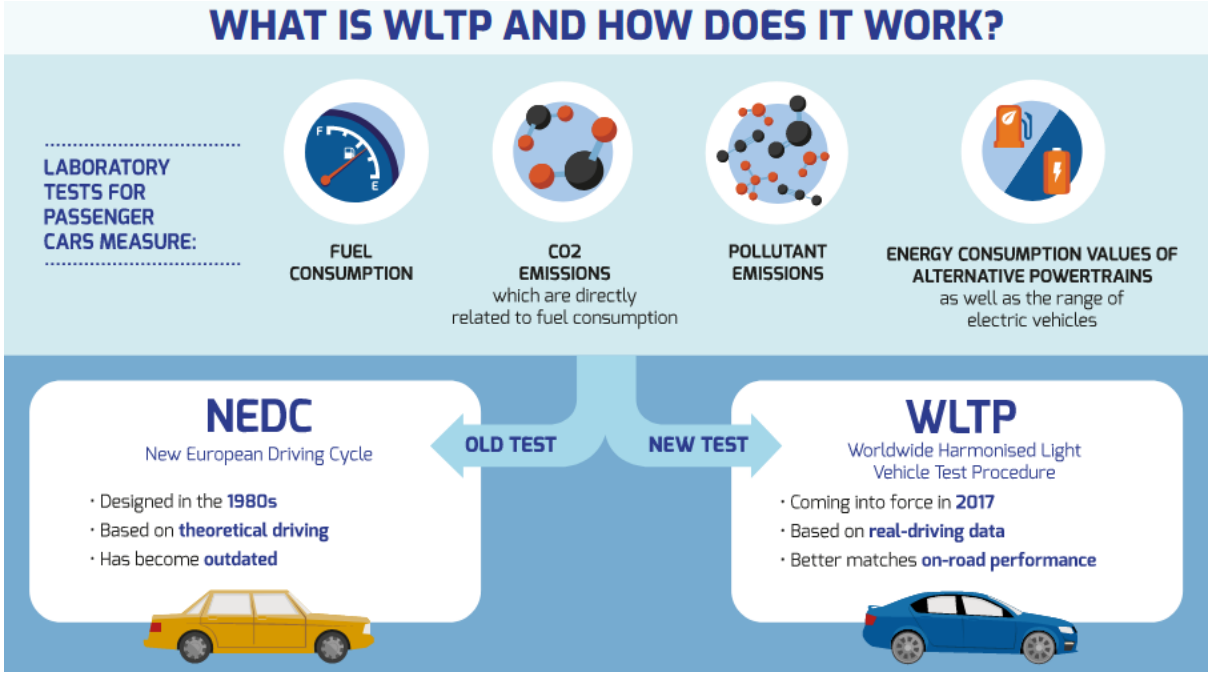
Range estimates for electric vehicles (EVs) - and for that matter, vehicles in general - are often the source of contention.

However, despite appearances, these estimates are not plucked from thin air. The generally quoted figures are normally derived through one of three international testing standards. These are:

- NEDC (New European Driving Cycle),
- WLTP (Worldwide Harmonised Light Vehicle Test Procedure) and
- US EPA (Unites States Environmental Protection Agency).

These three test cycles vary as to what proportions of city/country driving is included, as well as the defined climatic conditions. Naturally the European test cycle tends to favour inner city and suburban driving whilst the US one tends to include more outer suburban and highway driving trips.

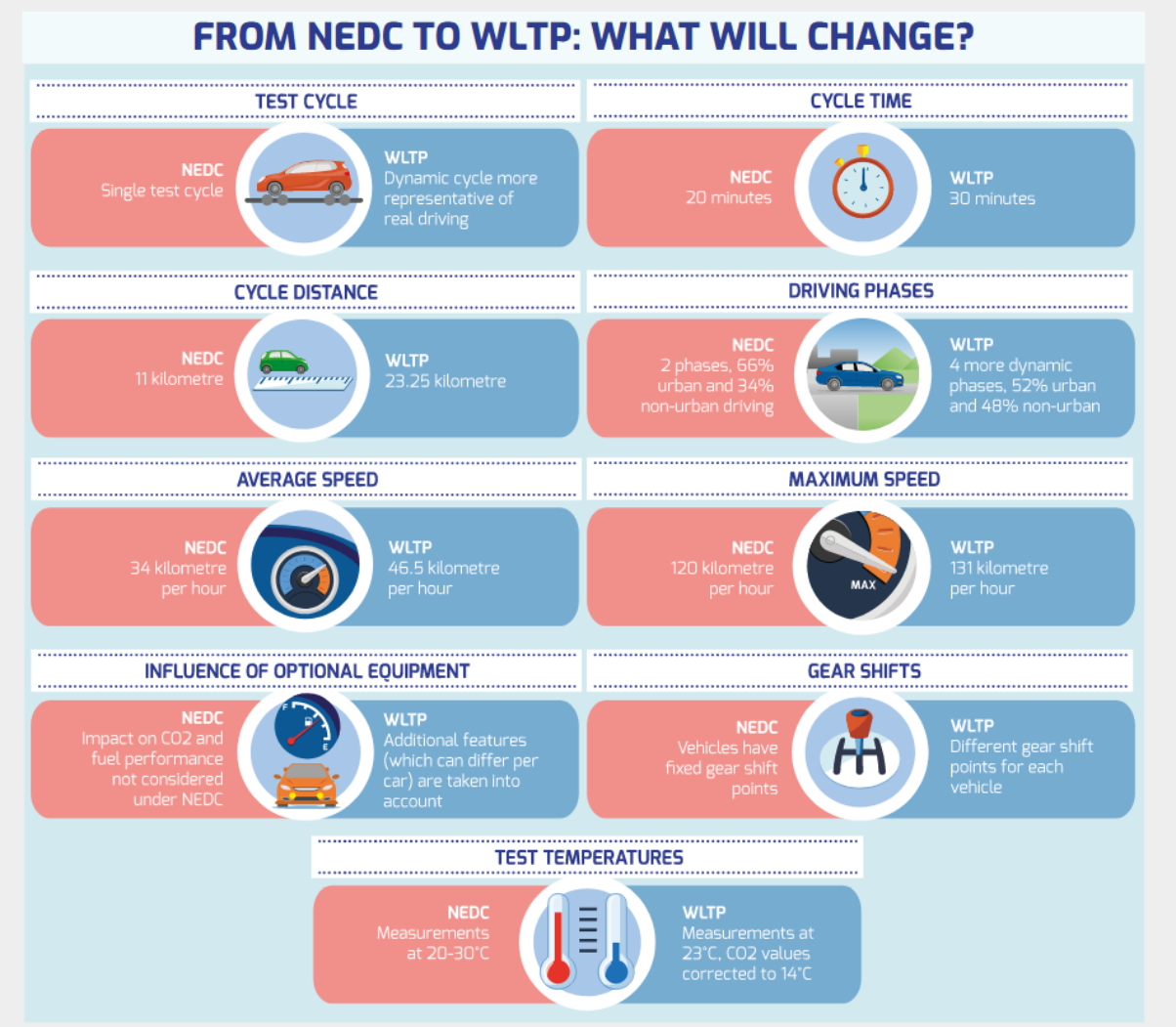
By the way, the reason two European standards are bandied about is that WLTP is progressively replacing NEDC for new vehicles as they come onto the European market. This began in September 2017, with all new vehicles in Europe having to display WLTP figures from September 2019.



Source: https://wltpfacts.eu/

As background: NEDC is notorious for producing figures around 30% above 'achievable' distances - particularly so towards the end of its reign. This was partly to do with the NEDC test cycle becoming 'too' settled, as well as rather theoretical. Together, these two factors led to auto manufacturers became quite adept at gaming the system to produce cars optimised to the tests. (And don't forget VW's outright cheating of the test cycles – termed 'Dieselgate').

As a result of the perceived failings of NEDC, the WLTP test cycle was introduced for European use late in late 2017 to provide more 'real-world' estimates for European driving conditions and usage.



Source: https://wltpfacts.eu/

Here in Australia, we effectively use NEDC figures – and hence the rather optimistic EV ranges found on the Australian Green Vehicle Guide website (https://www.greenvehicleguide.gov.au/). This is quite annoying, but a result of the Fuel Consumption labelling requirements under *Australian Design Rule 81/02 — Fuel Consumption Labelling for Light Vehicles) 2008* being written before the introduction of WLTP. Consequently, our standards are closely related to NEDC. This means NEDC is effectively the current Australian test cycle applying to showroom labels and the Green Vehicle Guide website. (Note: many auto manufacturers here in Australia are quoting WLTP figures in their advertising material for their EVs).

As mentioned above – NEDC is notoriously around 30% greater than what the 'average' driver achieves. So how can one find out what a realistic EV driving range is? This is where the Environmental Protection Agency in the USA comes in. On the other side of the Atlantic from Europe, the US EPA has long set its own and very different set of vehicle consumption testing standards. Widely regarded as more stringent and realistic – US EV drivers regularly report that they can easily achieve (and even sometimes exceed) the US EPA range figures. As US driving patterns are more akin to Australian ones – they are also more likely to be achievable here in Australia.

Therefore – when researching the range of a new EV to buy – I would suggest trying the following strategies for ensuring your chosen vehicle is likely to meet your driving needs:

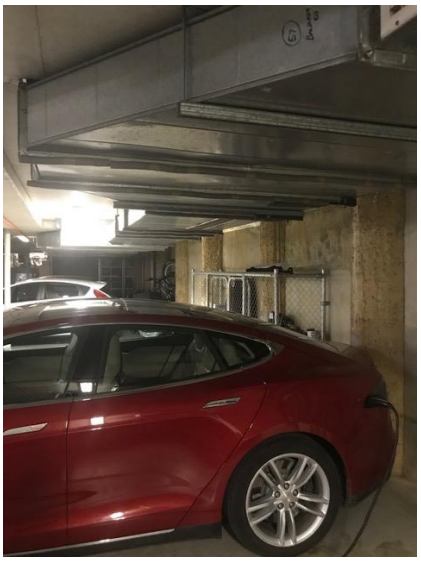
1. Check which test cycle the range estimate was made under. (If NEDC, subtract 30% for starters!);
2. For the WLTP range estimate, check the manufacturers' advertising material – often they quote WLTP instead of NEDC, or go to a European website for the vehicle. (Remember when checking overseas websites to check the options, wheel sizes etc as these can differ to Australian delivered cars). By the way: whilst WLTP is closer to 'real-world' consumption, WLTP ratings are still up to around 10% too high for Australian conditions;
3. If the vehicle is offered for sale in the US (which covers almost all EVs except Renault who do not sell vehicles in the US) – check the US EPA rating for an even closer range estimate.

It is worth remembering that any of these test standards are still good for comparison ***between*** vehicles. What you must do is to check you are comparing 'apples with apples', i.e. when making comparisons, always ensure you are using the ***same*** test cycle (NEDC, WLTP or US EPA).

Ultimately though, fuel/energy consumption is a very individual thing. Getting a rating that reflects your individual usage is a bonus – but checking the rating system that your chosen EV is tested under certainly helps avoid disappointment.

Owner's experiences: Musings on EV charging, its costs and apartment living

By AEVA and TOCA member, Dick Friend.



Solar charging of your EV from your own roof panels may be the ideal, but EV owners living in city apartments can have an advantage. My Owner's Corporation have charged (until recently) just the wholesale rate of 11c/kWh for charging my EV directly from the building's supply. For the first three years and 52,000 kms in my Tesla S, I had paid just $1200 to charge it (ie a fuel bill of just over $0.02 cents/km). Now 73,000 kms, I'm yet to receive the latest bill.

AGL offers a charge rate for EVs of $1/day, and no wonder, as city cars are unlikely to burn that much. Can it really be that cheap? For full disclosure, let's examine it further.

Apartment charging works … even if sometimes slow.

Charging EVs is by one of four methods:

a) FREE charging at a flow rate of 600+ km of range/hour for the lifetime of the car provided by Tesla (as part of the purchase price) on their Supercharger network which stretches uninterrupted from Qld's Sunshine Coast to SA's Port Augusta; and increasingly inland. Free charging on the Qld Superhighway stretching up to Cairns; and at NRMA stations in NSW. Supercharging enables seamless travel with charge stops required only as long as one needs to have coffee, lunch, loo stops and/or to stretch one's legs during one's journey.

b) FREE charging at a rate of 60+ km/hour at motel "Destination Chargers" (whose owners absorb the minor cost as marketing to attract customers) and at RACV & RACT outlets. Tesla provides the equipment and, just as for Tesla owners, the property owners pay for the switchboard connection (~ $1,000) and the power consumed.

c) OCCASIONAL connection to 3-phase power outlets (32 or 16 amps) if and when you go long distance in the "bush". I borrowed special adaptors to travel beyond Alice Springs in 2018, and this year to connect to Showground power outlets in outback Queensland. But increasing coverage by Superchargers and Destination chargers are making this unnecessary.

d) EMERGENCY connection to a 240V 10amp 3-pin socket using the cable supplied in my car. This is a trickle charge option, taking up to 33 hours if the car is fully discharged to recharge to the full 490 km range. It's a simple but very rarely used option, but could be used to top-up overnight after a 250 km journey to a remote destination in order to get home the next day.

7,000 kms for $25 total fuel

During a three week 7,000 km journey in April/May this year, I was charged a total of $25 for all fuel consumed (this one charge at a country Showground, using method c above). So, you might say, my figures don't include the FREE power I've consumed along the highway, or when in the snow, or at a remote beach property. And you're absolutely correct, I do enjoy that free power.

How much is free? "Tess" has an average energy consumption of 189 Wh/km travelled, as recorded on my tachometer, for my current total of 73,135 kms. Comparing that with my individually metered consumption of at my apartment of 13,828 kWh, one can determine about one quarter of my charging has been away from home.

Not many EV brands have their own charge network, and Tesla are not saying if their new "affordable" Model 3 arriving soon will have free charging indefinitely, so every situation is different. But the take-out is:

- EVs are undoubtedly fuel efficient, economical, clean and practical.
- Charging takes 10 – 20 seconds at home. (= length of time needed to plug and then unplug it!)

Why do I say 10 - 20 seconds? Well, that's how long it takes to unhook the lead from the wall and, approaching Tess's tail light assembly, the charge flap flips open to engage the charging socket. It automatically begins charging or starts later if you so choose (my default time is set to 1am). So, no waiting in the cold or wet of a service station drive through (or a deviation to get there in traffic) - just a "re-fuel" while enjoying home comforts - very practical! A few seconds more at the end to unplug the lead and you're away!

Are there more reasons why EVs are such a threat to the established vehicle industry, the fuel companies and their re-fuelling networks, vehicle dealerships and repair shops? With Teslas rated the safest vehicles on the road and with so few moving parts, service costs are minimal. With no oil changes or grease nipples, with regeneration braking meaning brake pads last for hundreds of thousands of kilometres, and tyres lasting twice as long as normal…

Hey, how is that possible? Tess had two new tyres after 64,000 kms, and the other two original tyres replaced at 73,000 kms (almost twice the usual distance for tyres). Partly because the regenerative braking means tyres aren't subjected to rapid stops, partly because there is smooth delivery of power without any gear changes providing those small applications of grip-slip as power comes on, but also because despite the heavy weight (2.2 tonnes for a Model S) the weight is low down where the batteries form the floor pan between the wheels, and the front and rear boots do not provide the G-forces which scrub the wheels in corners.

"The lifts will slow down" & other noxious vapours

The benefits are even greater for apartment owners: in our block the three basement levels provide 60 car spaces, and diesel and petrol cars required installation of large extraction fans, which switch on when sensors detect concentrations of the noxious gases emitted.

Now the Owners Corporation have overcome their fears that Tess won't cause the lifts to slow down when I charge, and they realise how little power is actually required, perhaps they will provide a rebate for not contributing to power for extraction fans? I'm not holding my breath to achieve that, and just happy to be able to breathe easier and have quiet enjoyment of EV driving.

The ideal is coming.

What's the ideal? Our holiday apartment is installing solar panels on the roof and, as part of the electrical upgrade, the Owners Corporation is making provision for EV charging. Then, rather than rely on the 3-pin plug for slow charging when away from home, we'll have fast charging from the sun. Ideal!

Owner's experiences: BEV: my Barina conversion project

AEVA member Bryan Drummond describes his EV conversion of a 2000 model Holden Barina.

BEV stands for Battery Electric Vehicle or in my case, Bryan's Electric Vehicle. I've had a dream for the last few years to build a BEV in my retirement phase. The search criteria was a small, 2 door coupe, light weight, manual transmission, small engine capacity and no networked electronic modules in the vehicle.

The Holden Barina, Model SB "City", year 2000, manual 5 speed, 1.4 litre engine fits these criteria well. By the way, the Barina is actually an imported Corsa from Vauxhall/Opel, and made in Spain. To make things a bit easier, I also bought a Haynes Service & Repair Manual online.

The finished Barina EV

According to the manual, there are 52 steps to remove the engine, which I followed religiously, after identifying about a half dozen electric wires I needed to reuse for the EV conversion.

I had two major design criteria decisions to make, being the battery capacity & type of electric motor.

The type of battery was an easy decision to make as modern Lithium batteries pack twice the energy as a conventional lead acid battery. Running a 144 Volts system requires 45 LiFePO4 batteries connected in a series configuration. The standard sizes are 100 Amp hour or 160 Amp hour. The larger size would weigh about 280 kilograms, which I thought would affect the vehicle's handling too much. So by choosing the 100 Amp hour size, this gives a theoretical range of about 100 kilometres, based on the 14.4 kWh energy capacity. By comparison, the older 24kWh battery Nissan "LEAF" had a 'real-world' range of around 130 km.

The next design decision was the type of electric motor drive, being DC or AC.

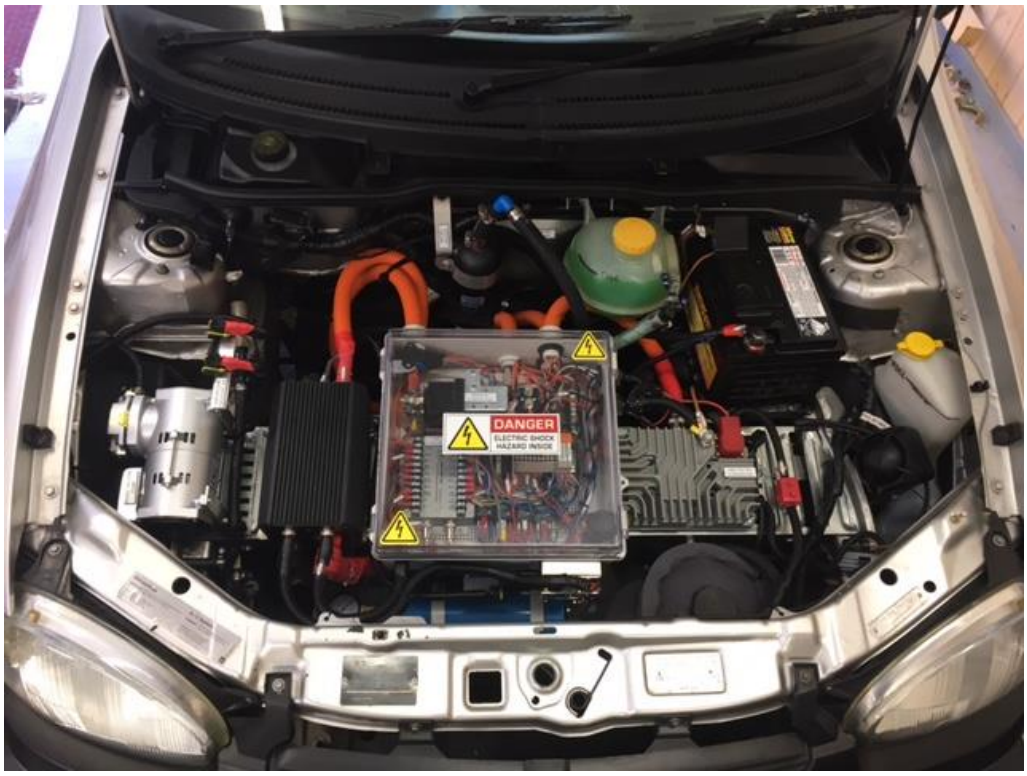
The new technology is AC as the motor has no brushes and hence no maintenance is required. It also has the ability to have energy regeneration by electronically braking and this generally improves the range by 10 to 15%. The DC motor is very old technology, as used in trains & trams. It is relatively simple, has huge torque at zero rpm and costs about a third of the AC system. *(Editor's note: AC system prices are getting very close to DC now).*

In choosing the DC system, I decided to remove the clutch and drive the car in third gear all the time, giving a top speed of about 110 km/hr at 5,800 motor rpm. *(Editor's note: I don't recommend leaving out the clutch, particularly for AC conversions. Talk to those who have done both to understand why!)*

I put the project on a serious weight diet and removed such things as fuel tanks & lines, existing engine, air-conditioning system, radiators & fans, power steering pump, etc. I even removed the spare tyre, which weighs 14 kg and replaced it with a puncture repair aerosol can weighing 300 grams.

The kerb weight was 920 kg before the conversion and only 1000 kg after the conversion. The handling of the car wasn't affected at all. The battery pack replaced the rear seat and the seating capacity was reduced from 5 people to only 1 driver & front seat passenger. This means that the Gross Vehicle Mass (GVM) was reduced from 1400 kg to 1200 kg, which kept the VicRoads assessor very happy.

Removing the internal combustion engine creates a number of problems for the normal operation of the vehicle. I had to install an electric vacuum pump & accumulator cylinder for the vacuum assisted braking system. A small 800 watt water heater & recirculating pump for the heater/demister system was also installed. As there is no alternator to charge 12V DC battery, a 144 to 12V DC convertor was installed to keep the normal car battery fully charged for normal operation of lights, wipers, radio, etc.



Top view of completed engine bay

The battery pack frame was designed to withstand an impact of a 20g collision (i.e. 20 times its own weight). This was achieved by using 6 mm thick structural grade aluminium welded together.

The other mechanical challenge was to get an adapter plate & coupling fabricated to connect the electric motor to the existing 5 speed transmission. I used 40 mm thick aluminium flat section for the plate and steel with a taper-lock for the coupling. This gives a very strong & vibration free connection between the EV motor & transmission.

All the main items were ordered from a WA supplier and the internet has heaps of information, including wiring diagrams to follow.

There is a National Guideline for EV conversions (Vehicle Standards Bulletin 14) to follow, which the VicRoads consultant uses as a checklist. He took about two hours to do the assessment, including a half hour drive and an underneath car inspection on a hoist.

The car drives very smoothly from a standing start and has great mid-range acceleration compared to the original 1.4 litre petrol engine. I am still testing the range, which I believe will be in the 80 to 90km area. This is fine for me, as it's only intended as a small city based daily driver.

ZEVA Main Status screen and Battery Summary screens

The materials cost about $16K and services like machining, welding, hydraulic steering hoses and VicRoads consultant costs about another $4K. As I'm using my house solar panels to charge up the car (takes about 4 to 5 hours), the project payback time is about 6 to 7 years, based on annual petrol costs of $1,500 and annual maintenance servicing costs of $1,500.

If anybody is interested in doing an EV conversion, there is plenty of information about on the internet and organisations like the AEVA to help out with practical advice.

Fitting OEM 30kWh Leaf batteries to earlier 24kWh models

By Bryce Gaton. First published on TheDriven.io, August 2019

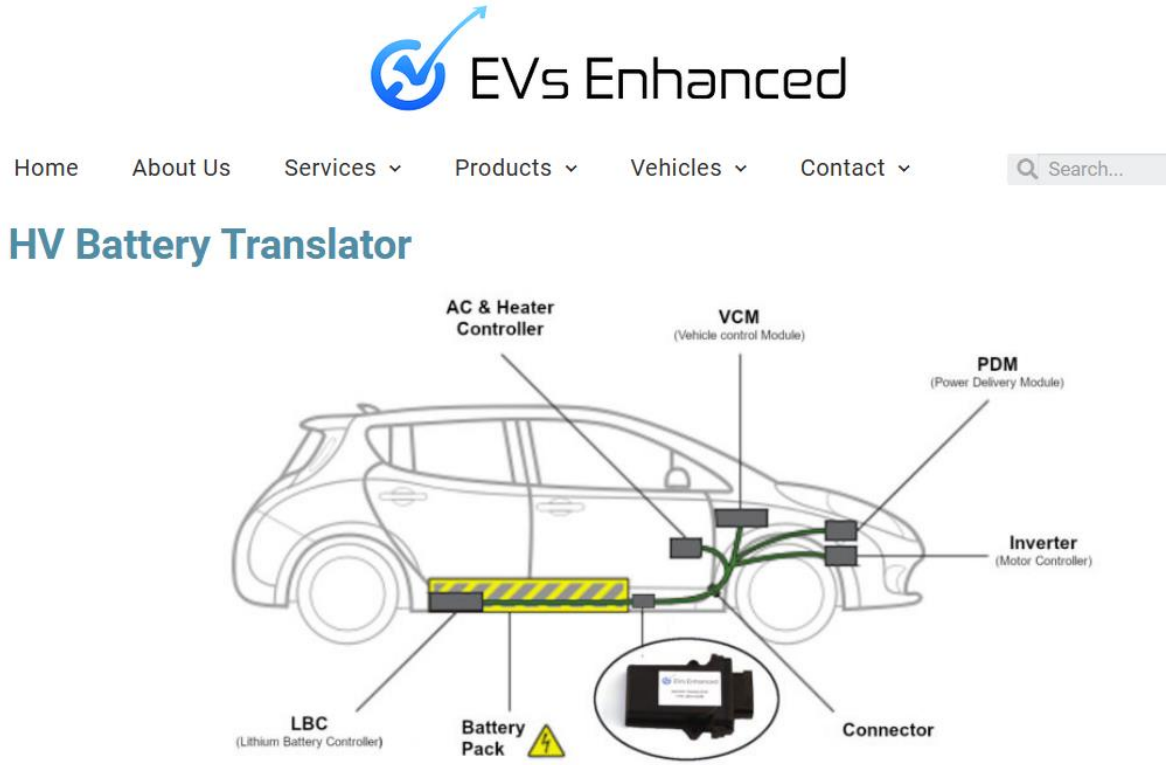


Image: evsenhanced.com

It has been a source of annoyance to existing 24kWh Leafs that despite the 30kWh battery fitted to later models of the first generation Leaf being an ***exact*** fit in shape and mounting points, Nissan saw fit not to make the 30kWh battery backwards compatible.

However New Zealand company *EVs Enhanced* (based in Christchurch) has very kindly been working on solving this problem, recently releasing a 'battery translator' to enable the fitting of later model 30kWh batteries to the 24kWh AZEO model.

Image: evsenhanced.com

As they describe it:
"EVs Enhanced's HV Battery Translator …. can be easily installed to effortlessly and elegantly resolve communications problems between an earlier car and a later-type battery. The battery translator module sits between the donor battery and recipient Leaf keeping all systems happy. Using the entire battery pack from another vehicle ensures that the lithium battery controller is a perfect match for the cells being used so it can function as originally intended. This Battery Translator in conjunction with our HV Battery Pairing Tool, offers a wealth of new battery exchange opportunities for Leaf owners, especially as new third party battery packs are introduced at the top end. Going forward, we will have a cascading range of battery upgrade options".

It is worth noting that Australian delivered Leafs (being all ZEO models) cannot make use of their current battery translator. Hope is on the horizon though: EVs Enhanced are working on a translator for the ZEO model and hope to release it soon.

A further problem for Australian Leaf owners is that there are no 30kWh batteries available here! However that should not stop an enterprising EV business from setting up to import and install the components once the ZEO translator becomes available.

For further details and updates, see: https://evsenhanced.com/products/battery-translator/

Branch news:

West Australia:

The WA branch has been busy with several events, presentations and shows. After returning safe and sound from the big drive to Esperance and back, Jon Edwards has ensured the Chargepod (Veefil DC fast charger with generator) was running smoothly at the Arthur River Roadhouse. This is the exact half-way point between Perth and Albany, and will serve as a great test-case for more installations in remote locations. Indeed, local solar and off-grid installer Global Protection Systems is investigating setting up a solar-powered, battery-backed recharging station to eventually replace the temporary charger. We look forward to seeing this progress!

Christian Clarke from Northside Nissan brought a brand new Nissan Leaf 2.0 to our August branch meeting, and fielded lots of questions from curious members. Christian was pleased with the response, and has assured us support from Nissan WA with next year's Electrikhana.

National Science Week celebrations took place at the Canning River Eco Education Centre, where the AEVA had a small stall showcasing a few EVs. Richard Baird's Kona EV was certainly the centre of attention, but I'm convinced my E-Max scooter was really the star of the show…

E-max scooter and Kona at Eco Education Centre

Ant Day's Leaf at SHD.

I have been sitting on a WA EV charging infrastructure working group for the past year and while we have assembled a very convincing case, the wheels of government turn painfully slow. The group consists of representatives from Department of Transport, Main Roads, Landcorp, Synergy, Western Power, RAC WA and UWA, and has put together a comprehensive network of DC fast, and ultra-fast chargers for the whole of Western Australia. The estimated total cost – about $20 million. If you think this sounds like a lot, the WA roads budget last year was the best part of $1 billion. Frustratingly, the WA government seems beholden to the whims of the natural gas industry, and are entertaining the prospect of a hydrogen economy, including refilling stations. I doubt this will come to much, but it's fair to say a fast charger network represents much, much better value.

Finally, the AEVA has continued to partner with Renew on their massively successful Sustainable House Day event. By parking an EV in the driveway of a sustainable home-open, we helped introduce visitors to the concept of renewable energy powering transport, sparking plenty of good conversations. We look forward to teaming up again next year.

Chris Jones, WA branch chair and National Secretary.

Victoria:

Well, it has been yet another extremely busy quarter for the Victorian branch. July saw a presentation from member Peter Quick on his recent tour of US EV conversion workshops and EVs in general, whilst August was a combined AGM and 'conversion night' meeting. With presentations about four conversions covering the trials and tribulations of their owners, members attending were then after able to view the cars in the undercover carpark below to discuss the finer points of each of the conversions with their owners. One of these – a Holden Barina, has both a write-up in this edition of EVNews, plus is listed for sale in the For Sale section.

Then it was September – and our inaugural 'EV Week', designed to line up with the expanding 'Drive Electric Week' that this year included 8 countries. (Including our Victorian events that week here in Australia! See https://driveelectricweek.org/)
The events were:

- Electrikhana on Saturday 14th September. A fantastic day blessed with clear skies and warmth. The final stats are yet to be collated, but the dealer-provided test-drive vehicles were kept going non-stop all day, the stalls were all well attended and the classroom for the public talks fitted in nicely with the layout of the event. The talks themselves provided an excellent opportunity for the public to get answers to their many EV questions. We have now gained a good understanding of the site, and are planning an expanded event for 2020 with more stall holders sites organised into a better hard standing area, plus a bicycle test ride circuit.
- Sunday saw us work with Renew on their Sustainable House Open Day, with AEVA providing 'EV Ambassadors' to about a dozen of the Victorian Sustainable Houses open that day. All reports from the Ambassadors, homeowners and attendees were that having knowledgeable EV owner/drivers to ask questions of provided a great 'value-add' to the SHs they were a part of.
- The EV Long Weekend Drive and public information tour from September 14th to 21st went off brilliantly, with around 2500km covered in 7 days in 300 – 400km stints each day. Each day also included talks to a series of regional state government offices on the abilities of current-day EVs, as exemplified by the EV Long Weekend Drive itself. The Kona performed brilliantly and was no harder to refuel than remembering to plug it in every night. (The driver performed less well, and needed almost a week to recover!)
- AEVA stand at ECOSS Sun Festival, September 21st. A fun and relaxed event that included TOCA (Tesla Owners Club of Australia) members and their vehicles. A good family event where we could talk and show off the features of both older and new EVs to like-minded group of environmentally aware people. The festival was also where the EV Long Weekend tour ended.

Bryce Gaton – secretary, Victorian AEVA branch secretary

Ballarat and region sub-branch news:
The new Ballarat and region branch of the AEVA was recently launched, with our first meeting held on July 16th at the Western Hotel with great enthusiasm. Bryce drove up in his new electric Kona to present on EVs and their charging needs in regional areas, quite a contentious issue in the region at the moment - but hopefully on its way to being solved as more councils come on board. It was wonderful to spend an evening with like-minded 'Eheads' from our local area.

Megan Wahr – secretary, Ballarat and region AEVA sub-branch

Tasmania:

17 of our club members purchased the ex-AVASS lithium cells last year (and earlier this year) through AEVA. Building a battery from these cells requires that each cell be managed, both for voltage and temperature. Some of us decided as a group to build our own battery management system circuit boards in the spirit of AEVA DIY. 15 people joined in the group buy, including 11 of us in Tasmania.

In June and July we held a series of working bees to assemble the circuit boards. These were good fun, if rather cold days in the Walkdens' garage. They are mostly surface mount components, so we had to put on solder paste, place the components, bake the boards and solder in the through-hole components. Then we had to program each one and test! Rejects went into the box for re-soldering, then back to test them again.
This tested eyesight, coordination and patience, but we found plenty of jobs for everyone. In all we made about 250 circuit boards, dozens of cups of tea and at least 3 pots of soup. We each now have one less excuse why we haven't finished our project...

In other news, the Tasmanian Government DC fast charger grants were announced. Without counting our chickens too soon, it looks like we might have 15 fast charger sites in the state by the end of the financial year!

Ray programming and testing the boards

Shayn assembling some of the (many) module boards

South Australia:

Our branch meetings continue to be well attended to hear from interesting guest speakers and updates from those undertaking conversions. August saw a full house to see the new Nissan Leaf with a great presentation from Adrian Brien Automotive.

We have been busy organising Electrikhana Adelaide which will follow a similar format to last year's successful Green Drive Day. This year we have support from the State Government via the Department of Energy and Mining, the City of Adelaide/Carbon Neutral Adelaide and SG Fleet. The timing coincides with the final day of the World Solar Challenge so there will be all sorts of EVs on the city streets including ebikes, scooters, cars, vans and solar cars. We are looking forward to a fantastic day with a bigger display than last year as well as offering rides and test drives.

In July we made a well-received stakeholder submission to the SA Government EV Strategy and have since attended a follow-up meeting on ways to encourage EV uptake and EV public transport for all.

In August we attended the launch of the ACE Cargo Van, to be assembled in Adelaide and on display at Electrikhana, with committee members being lucky enough to have a test drive. One of our branch members, Katherine has ordered the first one for SA (pictured).

And for those who prefer two wheels, another frosty early August morning saw us attend the launch of the Fonzarelli NKD motorbike along with the opening of Adelaide's first motorcycle public charging station. Both vehicles show exciting prospects for Australian EV manufacturing.

The recent AGM resulted in Sally Knight going from Vice Chair to Chair, after Paul Koch did not stand due to increased personal work commitments. We would like to thank Paul for all of help on the committee over the years. This left the Vice Chair position open, with Dan Deleur offering to take this on. Thank you Dan, and welcome to the committee.

SA branch member Katherine, who has ordered the first ACE for SA

New South Wales:

Events: AEVA NSW supported a number of EV events in Q3:

- A Nissan Leaf Try drive Evening on 9 August.
- The Footprint ECO Festival on 25 August.

Meetings:
A number of activities were live video streamed including our branch AGM on 14 August; a meetup at TAT (Premier Automotive) in Brookvale on 28 August; and an interview at EVSE in Seven Hills on 6 September. Jason Mead has been instrumental in working out the technology to do the live streams.

Results of the Branch AGM Spill are that Greg Partridge is retained as the chairman. David Hiley has stepped down as Vice chairman, and the post is now vacant. Michael Day is retained as the Treasurer, and Mark Roberts is retained as Secretary.

National AEVA EV Expo:
There has been a lot of activity preparing for the AGM in Sydney later this year. The contract with the venue has been signed and the date is set for 26 and 27 October at Olympic Park.

Charging infrastructure:
NRMA now have 17 Fastchargers commissioned in NSW, out of the 41 planned.
City of Newcastle's second Veefil DC Fastcharger (CCS2 and CHAdeMO) together with 2 x dual Type 2 EVLink EVSEs have entered service. They are run by Chargefox for the Newcastle City Council.

City of Newcastle Veefil DC fast-charger and AC EVLink AC chargers: now open for business!

Australian Capital Territory:

Net zero CO2 emissions has long been a target of the ACT government. Contracts are in place to achieve net zero emissions for the Territory electricity supply in 2020. Electric power in the ACT (and, of course EVs charged here) are now over 80% renewable thanks to the contracts which have already come into effect!

Thanks to Mark Hemmingsen, for many years of service as President. Mark was forced to step down at the AGM, due to growing responsibilities in his business.

Recently Mark and Damian Butcher have finally handed over "the Queen", a converted 6 x 6 Land Rover Perentie. Due to the weight, number of axles and the 12 seats, the Perentie has been registered under the National Heavy Vehicle registration. This is a first for Canberra and perhaps Australia for EV registration.

While the loss of Mark Hemmingsen will be felt, it has created an opportunity for David Brow to step into the top leadership role. David has an electric power conversion kit for postie bikes in the works, having recently managed to get a new conversion registered, an electric postie bike named EMail. He has been touring around postie bike events since then displaying the bike to postie lovers.

Southfest is on again, Saturday 16 November, and AEVA ACT will be there. Preparations are in the capable hands of Darryl Bourke & Adele Craven. More details at https://southfest.com.au/

Also – look for us at Summer Nats 2020. https://www.summernats.com.au/

ACT AEVA member Mark Hemmingsen hard at work on the Perentie

Queensland:

The Queensland AEVA members attended various events in the last quarter, including the University of Queensland sustainability week, The Workshops Rail Museum Electric Vehicle Rally, Brisbane EV Cruise and Greenheart Fair Carindale. Members of the public show greater acceptance and genuine interest in electric vehicles.

New charging stations have been installed at Warwick and more are planned for 2019 and 2020. Also, auto dealers have been attending with new electric vehicle models, which is excellent to see.

Leslie Smith, secretary AEVA Qld branch.

For sale/Wanted:

For Sale:

Vic. number plate EV identification stickers.

THE required EV identification label in Victoria.
(but NOT supplied by VicRoads)
Made to VicRoads specification (Regulation 48B)

$10 pair. Postage included
Contact Bryce: bryceg@zoho.com
Or see him at AEVA events
All profits to AEVA

AEVA charging signs:
Contact your local State/ Territory branch secretary for details/supplies.

Member ads:

For Sale:

2013 Mitsubishi iMiEV
Registration FREFUL. Dark maroon, as new cond. Reg. to Dec 2018. Done 15,000km. Range 115km. Takata airbags replaced.
Price: $15,000 ONO.
Location: Wangaratta, Vic.
Contact: Frank 0428 568 008, francisreeves@bigpond.com or Meg 0408 108 963.

2011 ZEO Nissan Leaf
Included in price is a new Zappy 7kW EVSE.

This car is one of the very first batch of 16 that Nissan brought to Australia. Note that this car is English spec, not Australian spec. (Differences to the later Australian spec are: left hand indicator stalk, no spare tyre fitted, no solar panel on rear spoiler and a confused sat nav).
Important: this car is NOT a grey import. It was sold by Nissan, and is backed with Nissan dealer service.
9 bars remaining on 12 bar battery capacity gauge. Reliable range still of 85km and 100km in summer. LeafSpy readouts of battery health and other vehicle info can be provided to interested buyers. (See article on LeafSpy in edition 233 of EVNews).

Done 43,xxx km
In excellent condition
Serviced by Nissan Blackburn
Comes with custom fitted, Italian made leatherette seat covers.
Price: $16,500 with RWC
Location: Melbourne, Vic.
Contact: Bryce, 0428 537 053

Vectrix VX1 ev lithium electric motorbike

I have acquired this bike as part of a trade so need to move it on. 60km range at 70km/h. 40km range at 100km/h.
Price: $4,500
Location: Camillo WA
Contact: Leon. 0429986375

Electric Beetle conversion

Components:
Motor: HPEVS AC-50
Controller: Curtis 1238 650 Amp, 96 Volt
Instrumentation: Xantrex Link Pro
Charger: Elcon PFC2500
Charge port: J1772 Inlet, and Controller
Cooling System: EV West
DC/DC Converter: 400 Watt Elcon
Battery Voltage: 127 Volts, 37 Cells
Battery Type: CALB 3.5V
Battery Capacity: 22.5 kWh
Battery Management System: Battrium Watchmon
Description:
Conversion completed by Traction EV in Brisbane. The car has full engineering compliance and is currently registered in NSW with 7 months remaining.
The normal range is 130km and it can comfortably cruise on the highway at 110km/h. Car is for sale at half the cost of a Zelectric classic Beetle in the USA which start at AUD$100,000. My price is below the actual cost of the project. I love driving this classic electric car, but I have to make room for the next project.
Price: $49,500
Location: Northern Rivers region, NSW
Contact: Nick. njlake@gmail.com

BMW 318i 1990 conversion
Electric conversion done by EV Works 9 years ago. Still has 80Km range and is in good condition.
In 2010 the car had only done 34,000 Km when we had it converted. Reason for selling: Just bought a Hyundai Kona.

Location: Applecross, Western Australia
Price: $12,000 ONO
Contact:
psamson555@gmail.com; 0427 040 653

1994 Mitsubishi FTO conversion
335,000 km overall, 100,000 km as electric

Components:
Motor: Netgain Warp 9 DC
Controller: Solitron 1
Batteries: 45 x 180 Ah Thundersky = 145 VDC. About 12 of them have been replaced in recent years.
BMS: ZEVA EVMS 3.0 with EVMS Monitor
Charger: 3kW onboard (15 Amp GPO required)
Recharge cycles: approx 1900 but rarely let go below 50% capacity
Aircon: 145 VDC compressor (needs a regas)
Heater: 145 VDC 1000W ceramic radiator
DC:DC Converter: 60 Amp 145 V to 14.5 V
Remote central locking / keyless entry and alarm system, leather seats.

Description:
Car works well and has been driven almost daily for 8 years. Body is in rough condition, dings, scratches and a bit of non-structural rust on roof. Front bumper is slightly damaged but it doesn't affect driveability.
Rear suspension upgraded 4 years ago.
Rear battery box has settled slightly and can impinge on rear torsion bar making a knocking sound. Not dangerous though.
Will need new tyres soon.
Range is about 100 km these days, it used to be 180 km when new. It could be improved significantly by replacing a few of the older cells and rebalancing the whole pack.
Price: all sensible offers considered
Location: Salter Point (10 km South of Perth WA).
Contact: Paul Peterson, 0427 072 373

2000 Holden Barina conversion

2 door coupe. Converted 2 years ago using DC motor technology.

Components/specs:
Transmission: Clutchless.
Batteries: 45 x 100Ah Winston LiFePo4.
BMS: EVA HMI, EV controller, BMS modules and 600 amp DC controller.
Charger: 2 kW.
Heater: Hot water type, 800W and front seat warmers with low/high setting.
Description:
Range of 100 km and a top speed of 110 km/h. Carrying capacity of 2 people with full original boot area. Battery rack is located where the back seat was The car body is in excellent condition with the roof /bonnet re-sprayed. The batteries have an estimated life of 13 years to go based on 5000 cycles to 80% discharge.
The car comes with full Vicroads approval & RWC. Test drive will not disappoint. Reason for selling is that I want to build another one.
Price: $14,800 ONO
Location: Melbourne, Victoria
Contact: Bryan; 0408 588 250

General:

SolarEdge StorEdge Unit for charging and discharging batteries. In perfect condition. Purchased 2018 so still in warranty. Ideally sell together but will separate.
Price: $1,500 ONO
Location: Tasmania
Contact: Geoff
E: talltimbers27@gmail.com
Phone: 0459 773 025

Wanted:

***Desperately* Wanted:**
Instruction manual for *Plug-In Supply* plugin kit for Series 2 Prius. If you can help, please contact Bob Rich.
Email: bob@bobswriting.com
Phone: (03) 5962 3875
…. who will be eternally grateful.

Wanted: Holden Volt
Preferably in WA, but willing to get one shipped interstate if the price & condition is right.
If you're thinking of trading one in for a nice shiny new EV, save us both the hassle of negotiating with a dealer!
Contact: Mitch Bisby (WA AEVA Events Coordinator) via AEVA forum For Sale section:
https://forums.aeva.asn.au/viewtopic.php?f=34&t=6087

Wanted: second-hand electric DC motor
(warp9, montenergy ME1002, etc) and controller (zeva, Curtis, etc).
Contact: via PM on AEVA forum.
http://forums.aeva.asn.au/viewtopic.php?f=34&t=5715

Corporate member ads:

Betts Boat Electrics:
E-propulsion Spirit 1
1 Kw outboard motor, including battery
Price: $2690
Location: Queensland
Contact: 0419 674135

Branch contact info:

ACT:

Meeting day:
First Monday of each month from 7pm
(except January)
Venue:
Hellenic Club Canberra City, 13 Moore St
Some members meet in the Bistro at about 6:15 pm for a meal beforehand
Postal address:
N/A
Contact:
Greg Walpole
E: gregorywalpole@gmail.com
Ph: N/A

New South Wales:

Meeting day:
First Wednesday, every 2nd month (starting in February each year).
Venue:
Baulkham Hills Sports Club
11 Renown Rd, Baulkham Hills
Postal address:
PO Box 5285, Clayton Vic 3168
NSW Contact:
Mark Roberts
E: mark.roberts.aeva@gmail.com
Ph: 0412 588 803

Queensland:

Meeting day:
Third Wednesday of each month - 7:30pm
Venue:
The Albion Peace Centre
102 McDonald Rd, Albion
Postal address:
PO BOX 6031, ST LUCIA, QLD, 4067
Contact:
Leslie Smith
E: les@nano.com.au
Ph: 0401 250 624

Northern Territory: NEW BRANCH!

Meeting day:
To come
Venue:
To come
Postal address:
To come
Contact:
NT (Alice Springs): Hunter Murray - (08) 8952 3411
NT (Darwin): Richard Smith – 0401 110 198

South Australia:

Meeting day:
Third Wednesday of each month - 7:30pm
No meeting in December
Venue:
Vogue Theatre, 25 Belair Rd, Kingswood SA 5062 (Northern Function Room).
Postal address:
AEVA (SA), PO box 434, Park Holme 5043, SA
Contact:
Eric Rodda
W: www.sa.aeva.asn.au
E: See SA AEVA website for contact link

Tasmania:

Meeting day:
Every eight weeks, on the Wednesday.
Visit www.aeva.asn.au/tasmania for date.
Venue:
Varies - See AEVA website
Postal address:
226 Four Springs Road, Selbourne TAS 7292
Contact:
Penny Cocker
E: chair@tas.aeva.asn.au
Ph: 0466 269 636

Victoria:

Meeting day:
Second Wednesday of the month
Venue:
varies – see AEVA website
Postal address:
PO Box 5285, Clayton Vic 3168
Contact:
Daryl Budgeon
E: budgeond@gmail.com
Ph: 0432 401 132

West Australia:

Meeting day:
Second Tuesday of the month
Venue:
Varies - See AEVA website
Postal address:
26 Minerva Way, Carine, 6020
Contact:
Antony Day
E: secretary@wa.aeva.asn.au
Ph: 0416 345 575

Australian Electric Vehicle Association Incorporated
ABN: 27 629 533 129
PO Box 434
Park Holme
SA 5043
www.aeva.asn.au

MEMBERSHIP APPLICATION FORM

Membership is for one year from date of payment received.

New Membership? ☐

Renewal? ☐

Please tick a box

INDIVIDUAL MEMBERSHIP

TYPE (Please tick): ☐ ORDINARY $50.00 per year

☐ CONCESSION $25.00 per year

FIRST NAME:		LAST NAME:	

CORPORATE MEMBERSHIP *TAX INVOICE*

☐ SUBSCRIPTION: $125.00 per year

COMPANY NAME:	
CONTACT PERSON:	
POSITION:	

CONTACT DETAILS *...for either type of membership / renewal*

ADDRESS 1:			
ADDRESS 2:			
CITY/TOWN:			
STATE:		POSTCODE:	
PHONE:			
MOBILE:			
FAX:			
EMAIL:			
WEBSITE:			

AEVA BRANCH (meetings you attend):	

By Joining you agree that you support the aims of the association and will abide by the rules of its constitution.

SIGNATURE:.....DATE:...../...../.....

No GST is included as we are GST EXEMPT.
Please Make Cheques and Money Orders Payable to **AEVA Inc.**

Privacy Statement:
The Australian Electric Vehicle Association Inc. will not pass your membership details on to any third party without your permission.