



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

ELECTRIC VEHICLE NEWS

ISSN 0818-8491

Issue 235: April - June 2019

EVs on the rise!

Inside:

Specials:

Kona Electric – first impressions by first Australian private buyer

EV buyer intentions research data

New Zero EV motorcycle review

UK EV buyers survey results: knowledge is key

Long-term ownership review: Mitsubishi Outlander PHEV

Regulars:

Two Wheels Good

BEV/PHEVs available in Australia listing

Product review

Appy Hour

Branch News



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:

Hobart BMW (Tas)

Sales & Service of BMW PHEV & Electric vehicles
Contact (03) 6236 9099; sales@hobartbmw.com.au
Web: www.hobartbmw.com.au

University of Tasmania



Higher education provider and sustainability leader
Contact: sustainability.utas@utas.edu.au
Web: www.utas.edu.au/sustainability

Tesla Owners Club of Australia (nationwide)
Officially recognised club for Tesla owners and enthusiasts.

Email: contact@teslaowners.org.au
Web: www.teslaowners.org.au

SA Power Networks (South Australia)

SA's electricity distribution network operator
Phone: (General enquiries) 13 12 61
Web: www.sapowernetworks.com.au

Evse.com.au (Sydney, nationwide)

Supply & Installation of EV Chargers, Adapters, Cables & accessories.
Phone: 1300 40 62 10
Email: sales@evse.com.au
Web: www.evse.com.au

OZ-DIY Electric Vehicles (Qld, nationwide)

Supply of EV components and batteries, EV repairs and conversions.



Phone: (07) 3808 7637
Email: suziauto@live.com.au
Web: <http://ozdiyelectricvehicles.com>

Tritium (Queensland/nationwide/world)

DC Fast Charging equipment designer & manufacturer
Phone: (07) 3147 8500
Email: enquiries@tritium.com.au
Web: <https://www.tritium.com.au/>

Priority One, powered by Ngroup (Morrington Pen. Vic)
Energy efficiency specialists in electrical, solar, batteries, hot water, heating & cooling.

Email: operations@priorityone.services
Web: www.priorityone.services

Rectifier Technologies (Victoria, nationwide)

Power converters for electric vehicle chargers.
Phone: (03) 9896 7500
Email: sales@rtp.com.au
Web: www.rtp.com.au

Electro.Aero (WA)

Electric aircraft flights and training
Web: <http://electro.aero>

Gemtek Automation (WA, nationwide)



EVSE metering, installation, maintenance, service, spare parts, cables and adaptors.
Phone: (08) 9248 1881
Email: admin@gemtek.com.au
Web: www.gemtek.com.au

MiCycles - Adelaide Electric Bikes (SA)

"Adelaide's Electric Bike Specialist"



32A George St - Thebarton - South Australia
Phone: 0424 569 317
Email: electricbikes@micycles.com.au
Web: www.micycles.com.au

Ogden Power (Alice Springs, NT)

Power generation design, install & service - solar, batteries, generators.
Phone: 0427 718 774
Email: [rede@ogdenpower.com](mailto:red@ogdenpower.com)
Web: www.ogdenpower.com.au

Betts Boat Electrics (Qld, nationwide)

Marine electric propulsion outboard and inboard systems
Phone: 0419 674 135
Email: bbelectricboat@gmail.com
Web: www.bbelectricboat.com

SkillBuild (NSW)

Registered Training Organisation 70059



Phone: 1800 059 170; Mob: 0409 154 775

Web: www.skillbuild.edu.au

Zero Emission Vehicles Australia (WA, nationwide)



Designer & manufacturer of EV products incl. motor controllers, battery management and safety systems.

Web: www.zeva.com.au

Apollo Electrotech EC0171 (WA)



Electrical engineers and contractors: Electrical, ICT, Energy Management & Automation, Fire.

Phone: (08) 9434 3333

Web: www.electrotech.com.au



ACE EV Group (Qld)

Electric Vehicles and Infrastructure

Phone: 0412 028 709

Web: www.ace-ev.com.au

RetroEV (Port Adelaide, SA)



Phone: (08) 7226 9282

Mobile: 0437 485 216

Email: energy@retroev.pro

M-TECH EV Technologies (Qld, Aust)



EV charging pedestals, charging points: installations & accessories.

Phone: (07) 5580 3041

Email: info@m-tech.com.au

Web: www.m-tech.com.au

EVolution (Victoria, nationwide)

For EVerything EV, all you need is EVolution.

Phone: AUS 1300 70 11 99; NZ 0800 11 11 51

Email: contactus@evolutionaustralia.com.au

Web: <https://www.evolutionaustralia.com.au>

Notice to AEVA members

New membership fees

Starting July 1st, 2019

The new rates are:

Normal members: \$50

Concession: \$25*

Corporate: \$125

At the April 14th meeting of the AEVA national council, it was agreed that annual membership fees for concession, general and corporate should increase to \$25, \$50 and \$125 respectively. The decision to raise fees for the first time in almost two decades stems from the scale and nature of the EV expos we host each year, along with insurance premiums and web hosting services. The additional revenue generated - about \$7000 per year - would cover the cost of an event manager for the Sydney Expo and help fund a much needed upgrade of the AEVA website and membership database. The new fee structure would take place from July 1st.

* Students, Pensioners, Seniors, Health Card or similar.

Contents

Corporate members pages.....	2
Who is AEVA?	5
AEVA media contacts	5
From the editor	6
From the President.....	7
From the Secretary	8
Product Review	9
EV Website links	9
Appy hour	9
Market Update: Q2 2019	10
Current Australian BEV & PHEV availability (here, or coming very soon).....	14
Two Wheels Good	15
Review: All new Zero electric motorcycle unveiled	18
What goes into the decision to kick the ‘ICE addiction’?	22
Model Update News: Nissan announces Leaf 3.ZERO.	28
Model Update News: mid-series Hyundai Ioniq update for 2019.....	30
Owner’s experiences: First Australian Kona electric delivery	32
My Enfield dream, Part 4. <i>The journey simplifies</i>	35
Owner’s experiences: Chris Nash and his Mitsubishi Outlander PHEV	36
Bass Coast Shire councillor’s experience of an EV	38
Dry Lake racing at Lake Gairdner South Australia.....	41
Branch news:	46
West Australia:.....	46
Victoria:.....	47
Tasmania:.....	48
South Australia:.....	49
New South Wales:.....	50
Australian Capital Territory:.....	51
Queensland:.....	52
For sale/Wanted:.....	53
Branch contact info:	55

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.

NSW: Greg Partridge (AEVA President) - 0411 052 582

ACT: Peter Gorton - 0419 601 579

VIC: Bryce Gatton - 0428 537 053

TAS: Clive Attwater - 0439 941 934

SA/NT: Paul Koch - 0431 866 586

WA: Chris Jones - 0418 908 002

QLD: Leslie Smith - 0401 250 624

AEVA, publishers of this newsletter, accept no responsibility for opinions expressed, designs or ideas contained herein, or for errors factual or due to reproduction. Contributions may be edited to available space.

From the editor

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

Welcome to edition 235 of EVNews. And 'oh boy', what a journey it has been to get this one out!

With the sudden rise of electric vehicles (EVs) to prominence in this year's Federal Election campaign has come an enormous flurry of work for AEVA – nationally and in every state.

As a result, many of our national and state executive members dropped all their other AEVA work to focus on responding to media queries and (in my case) writing articles on EV topics. (As well to rectify various items of EV misinformation being promulgated in the media!). Consequently many articles, reports (and my EVNews work) fell off our collective desks to be returned to later.

Now, with the Easter truce by the parties and media about election items in general (and EVs in particular), has come the moment to get this edition out – with a few changes. On-hold is the DC charging special (due to a delay in a few articles for it), plus the overwhelming number of other really interesting articles coming in looking for space. Consequently this edition has many tales of trips, ownership experiences and new car first impressions from our various members experiencing the EV revolution first-hand.

These include long-term AEVA member Charles Dalglish's initial impressions and experience of being Australia's first private buyer of a new Kona electric. (Page 32).

Chris Jones' excellent series about electric motorcycles continues in this edition with a review of the happenings in that world for the first part of 2019 (page 15), which is followed by a review by Nigel Morris (from TheDriven.io website) of the new Zero EV motorcycle. (Page 18).

You will also find a report on some very interesting new research about EV buying intentions from the UK, starting on page 22. (A better understanding of the issues confronting potential EV buyers will make the job of AEVA just that much easier – so the more research the better is all I can say!)

In addition, there are some model update news items from overseas that we may see here soon too (Leaf3.ZERO page 28 and Ioniq BEV page 30), plus an article from Victorian branch chair Chris Nash about his long-term ownership experience of a Mitsubishi Outlander PHEV (page 36).

By the way: the DC charging edition is not dead – just delayed. Next edition will now combine DC charging, lead selection and long-distance EV driving experiences into the one issue. If you have anything you would like write for that edition – please contact me to reserve space for it: edition 236 is filling fast given I have held-over many articles for this edition to partially fill it already!

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 (note the new email address).

Yours in EV'ing!

Bryce (Also Victorian AEVA Branch Secretary)

Deadlines for the next edition are:

Articles, corporate member listings: June 1st, 2019.

Advertising space bookings: June 1st, 2019.

Branch reports and For Sale/Wanted: June 15th, 2019.

Advertising copy: June 15th, 2019

Publication date: Early July, 2019

From the President

Greg Partridge: AEVA President and NSW chair



It's been an exciting 3 months, with the first Kona EV in Australia being sold to Sydney AEVA member Charles Dalglish on April 2nd. There was a considerable amount of media coverage of this event. *(For Charles' own report on his first impressions of the Kona electric – see page 32: ed).*

Several members have also proudly purchased Hyundai Ioniqs as well and are enjoying them too.

The 2019 EV expo planning is now well underway. This year it is going to be held at Olympic Park, on 26th-27th of October and will be free to all AEVA members and the public.

We plan on having two days of try-drive for the public to experience different electric vehicles.

We are currently putting together a schedule for guest speakers, so if you have a particular topic that may interest the delegates please get in contact with the organising committee.

We are currently focusing on sponsorship and have taken on Queensland member Simone Pfuhl as a part time contractor to assist in the organising of the event. Simone brings a wealth of experience from last year's very successful event.

Anyway, looking forward to releasing further details as they are confirmed.

Greg Partridge

From the Secretary

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



Who would have thought we'd be watching our federal politicians the media discussing electric vehicles in prime time! Just a couple of years ago we struggled to get much media interest in the future of transport, but now they come to us. The Secretary Inbox has been filling up with all manner of requests from broadcasters and newspapers, while the phones ring day and night (well, early morning for those of us in Perth) with announcers and producers trying to line up informed conversations on EVs. I was even contacted by the Department of Energy and Environment in Canberra to provide AEVA's perspective on helping the shift to EVs.

The future of mobility has been firmly shoved in front of Australians, and the vast majority of us get it. The surprising thing is where the only significant opposition is actually coming from - the current government! The words 'peak stupid' have been variously used to describe the governments reaction to the federal opposition's plans for embracing EVs. From declaring the goal of 50% of new car sales to be EVs by 2030 "a car tax" to having us believe the great Australian weekend was under threat, there seemed no bounds to how far off the mark they could be. The most remarkable thing? The government's own modelling revealed the same target was needed as a minimum to achieve transport emissions reductions. The government even removed all videos of government MPs riding in EVs outside parliament house... because inconsistency is best dealt with through denial?

The alternative government's plans for EVs are very encouraging, even if they are fairly modest - we're widely expected to hit that target with minimal effort and a 100% target by 2030 is entirely feasible. The ALP policy on EV manufacturing is very exciting, however both flavours of government let Australian car manufacturing die on their watches. It remains to be seen how things will pan out, but we can be proud of the fact that the AEVA helped get electric mobility front and centre on the national stage. Keep fighting the good fight, and remember, if you are going to feed the trolls, make them dance for it 😊.

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

Ampfibian 15amp to 10 amp adaptor with 10amp breaker and safety switch. Australian made.



Image: <https://ampfibian.com.au/>

Many portable EVSEs draw only 8 or 10 amps, but are annoyingly fitted with a 15A plug. Plugging this directly into a normal 10A power point without protection is not only illegal, it can lead to tripped circuits ... or if the EVSE tries to pull more than 10A - burnt wiring! One approach to the problem is to fit a 10A circuit breaker into the line feeding the EVSE – which is where Ampfibian come in. Priced at just under \$200, it is available from Bunnings, EVolution and many other stores. Further details, see: <https://ampfibian.com.au/>

EV Website links

Below is a list of all the sites mentioned in previous editions – (new one/s for this edition are in a red heading):

Australian:

TheDriven <https://thedriven.io/>

Drive Zero <https://www.drivezero.com.au/>

EVTalk <http://evtalk.com.au/>

International:

Green Car Reports <https://www.greencarreports.com/>

Inside EVs: <https://insideevs.com>

Cleantechnica <https://cleantechnica.com/>

Electrek <https://electrek.co/>

EVObsession <http://evobsession.com/>

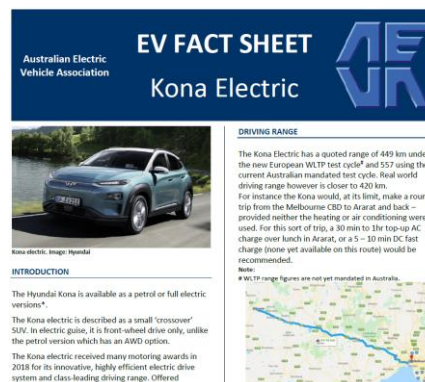
Video sites:

Fully Charged <http://www.fullychargedshow.co.uk/>

Autogefuehl <https://www.youtube.com/user/autogefuehl>

Appy hour

NEW: AEVA EV Fact Sheets



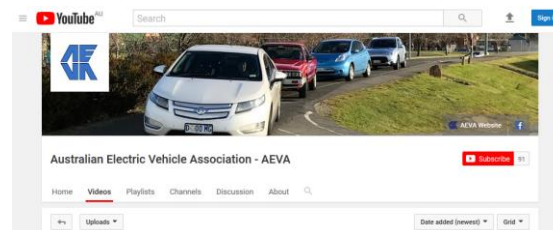
The AEVA website now hosts **EV Fact Sheets** on each of the full battery electric vehicles (BEVs) on the Australian market – plus a table listing all the BEVs and PHEVs (Plug-in Electric Vehicles) available (or coming soon) to Australia.

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/UCnXUeRil052r6pITRh46Qdw/videos>

Market Update: Q2 2019

By Bryce Gatton

The move to electric transport, in all its forms, is now well under way, and 2019 is shaping up to be a very exciting year indeed. Be it four wheels, three, two or propeller: all areas of EV transport are going electric. And that, for transport emissions, is good news indeed. For instance: in Australia, 18% of all CO₂-e is from transport, so 'going electric' in combination with renewable forms of electrical generation is low hanging fruit for meeting our Paris commitments – if only we would hurry up!

In the air:

Boeing recently successfully completed the first test flight of its autonomous electric passenger air vehicle (PAV) prototype, whilst 2018 saw the qualification of the BlackFly VTOL (Vertical Take-off and Landing) aircraft as an ultralight for use in the US. The BlackFly is now available for sale there. See: <https://www.opener.aero/>



Boeing PAV. Pic: Boeing

In addition, 2018 saw the Pipistrel Alpha Electro all-electric light aircraft become available for sale here in Australia.



Pipistrel Alpha Electro. Pic: ElectroAero

On the water:

After several years of operation, the first all-electric ferries (the 'Ampere' in Norway, launched in 2015 and the 'Elektra' in Finland – launched 2017), are continuing to rewrite the book on ferry operations. In particular, the Ampere produced data in 2018 to show the all-electric ferry cuts emissions by 95%, costs by 80%, and with much reduced noise. Latest reports suggest that over 50 more have been ordered from their Norwegian manufacturer, Fjellstrand Shipyard. (Which builds them in conjunction with Siemens and Corvus Energy).



Ampere ferry. Pic: Corvus energy

Electric motors for small boats are also becoming a 'thing': for example a small 'picnic' boat hire business is now operating a fleet of EV hire boats out of Melbourne's Docklands (<https://goboatmelbourne.com.au/>) plus specialist EV motor suppliers are opening here offering electric boat motors. (Eg: www.bbelectricboat.com)

On two (and three) wheels:

Australian manufacturer Fonzarelli have added a third, higher performance scooter to their moped range in Australia, and Australia Post has ordered 1000 three-wheeled electric delivery vehicles for their fleet.

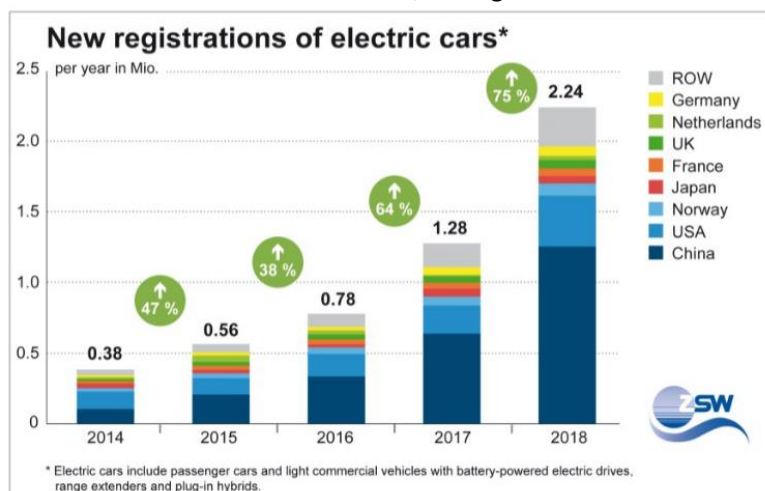


Pic: Australia Post

On four wheels:

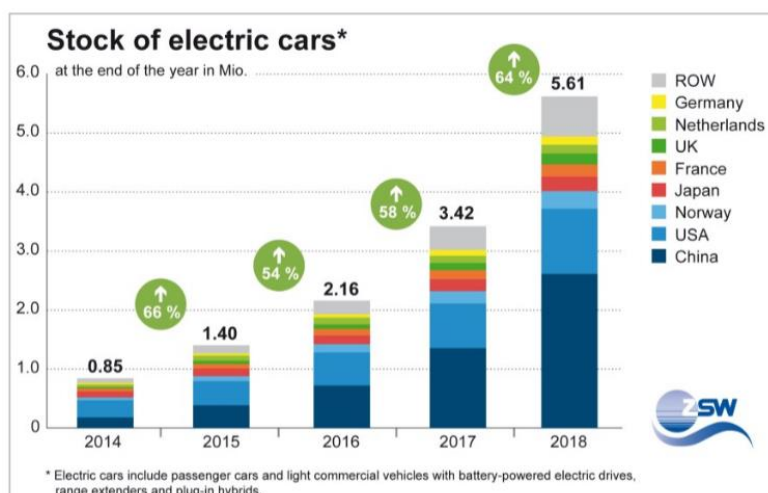
Electric cars sales are soaring, whilst internal combustion engine (ICE) vehicle sales around the world dipped in 2018 from their post GFC peak in 2017. Even plug-in EV (PHEV) sales have declined as a proportion of overall EV sales: BEVs (Battery Electric Vehicles) are now taking a larger and larger share as battery technology matures and battery production ramps up/prices per kWh fall.

In fact, it may well be that the next stage of the EV revolution has begun: EVs are currently rolling into mainstream showrooms and selling at a pace that the salespeople of ICE vehicles could only wish for. As European ICE sales fell by 0.23%, China by 6% and Australia by 3%, EV sales around the world rose by a staggering 75%. Even Australia, with its dearth of model choices, recorded a roughly 10% increase in EV sales over 2017, seeing around 2700 new EVs hit the road in 2018.



Source: Center for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW)

Based on this increase, the world EV fleet (i.e. cumulative EV sales resulting in the total number of EVs on the road) rose 64% from 2017 to 5.61 million vehicles.



Source: Center for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW)

More worrying for ICE vehicle manufacturers is the desperation that EV buyers are showing to get their hands on a new EV, just as ICE sales are starting to fall. Remember the hype around Tesla Model 3 reservations opening in March 2016? (They reached 450,000 or more, and are now rolling out of Tesla's Fremont factory at a rate of around 5000 plus per week).

Well, that clamour has repeated for the Nissan Leaf 3.ZERO, Mercedes EQ, Porsche Taycan, Audi e-tron, Hyundai Kona and Jaguar I-Pace: people are putting down significant deposits for vehicles that, in some cases, may not be delivered till 2020 or beyond. As an example: Nissan allocated 4500 of their Leaf 3.ZERO e+ to Europe for 2019, with deliveries to start in June this year. (The Leaf 3.ZERO e+ was announced in January this year and will have the long-awaited 62kWh battery and a range of 385km WLTP/real world around 350km). Within a month of the announcement, European deposit holders had taken up over 3000 of these allocations. Meanwhile, there have reportedly been 20,000 deposits placed world-wide for the all-electric Audi e-tron (The e-tron is a dual motor AWD with a 400km WLTP/370km real-world range).

So what EVs will we see in Australia in 2019? As mentioned earlier – the Australian made Fonzearelli X1 scooter is now available – reportedly with a waiting list already! As for those after more conventional four-wheeled transport: the rush to come to market in Australia began late in 2018 with the arrival of the Jaguar I-Pace, as well as the Hyundai Ioniq range. (The Ioniq range is comprised of a hybrid, plug-in hybrid and full electric versions).



Audi e-tron Pic: Audi

The full electric Ioniq is reportedly selling the best of all the three. Also from Hyundai, the first Kona electric EVs are currently arriving on our shores, with deliveries to start very soon. There are also rumours that the Kia e-Niro (a slightly larger version of the Kona electric) will be released here late this year. More certain electric releases in Australia are the Audi e-tron in Q4 and, of course, the most anticipated of them all: the Tesla Model 3!



Tesla Model 3. Pic: Tesla

Sales of the Model 3 outside of North America finally began in January this year, with deliveries to China and the left-hand drive markets of Europe. Right-hand drive production of the Model 3 is also not far off: the Tesla configurator tool for right-hand drive UK reservation holders is to open in 1 – 2 months, with the Australian configurator to follow soon after. Deliveries of the Model 3 to Australia should begin in late Q3 or early Q4 of this year.

The arrival of the Model 3 in Europe will also give the long-running top EV sales holders in Europe and the world a serious fright. The Renault Zoe held the top spot in Europe year for year-on-year sales from 2015 to 2017 (and sold 37,782 units in 2018) with the Nissan Leaf 2.ZERO pipping it in 2018 at 38,740. Nissan also holds the record for highest worldwide sales of any modern EV (to the end of 2018, more than 380,000 Leafs been sold). However, at a production rate of 5000 or more Model 3s a week (and reportedly to rise to 8000 a week very soon, followed by completion of Gigafactory 3 - which is slated to begin churning out Model 3s in China before the end of this year) – Tesla will more than likely blitz those numbers with the Model 3 by the end of 2019.

So what other announcements are likely to come in 2019? The biggest so far has been the Tesla model Y, formally revealed a few weeks ago. The Model Y will be a 'crossover' SUV based on the Model 3 (in the way the Model X is based on the Model S platform). Elon Musk (founder and head of Tesla – though not its chairman anymore) predicts the Model Y will be an even bigger seller than the Model 3. If that is to be the case – he had better get a move-along securing the locations for Gigafactories 4 AND 5. (4 is most likely going to be in Europe ... and some very speculative rumours promote Australia as a potential location for Gigafactory 5).

So what else can we expect for EVs in 2019? Certainly many more announcements: Mercedes are due this year to release the specification of their EQ EV range (sales beginning in 2020), VW will start showing production ready versions of their EVs based on their new MEB electric platform – for release sometime 'soon', (supposedly 2020: but how many times have we heard that in relation to EVs??) and Rivian (an American start-up that is startling the pundits almost as much as Tesla did when it started) will release pre-production versions of their all-electric R1T ute and R1S SUV. (They have already shown production prototypes of the R1T, and both are due for sale in late 2020/early 2021).



Rivian R1T ute. Pic: Rivian

So for those who have yet to put in a reservation on one of the battery electric vehicles arriving soon, it may end up being a while before you can get your hands on one: the current battery production bottleneck is predicted to only get worse as demand for BEVs continues to rise and rise!

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

By Bryce Gatton

Current to April 23rd, 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	Q3, 2019
Nissan Leaf 2.ZERO	BEV	285/240	40	X	TBC \$55K?	Q3, 2019
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	750kg TBC	\$132,000	Y
Tesla Model X 75D	BEV	417/350	75	750/2250kg	\$145,000	Y
Tesla Model X 100D	BEV	565/470	100	750/2250kg	\$178,500	Y
Tesla Model S 75D	BEV	490/410	75	X	\$133,500	Y
Tesla Model S 100D	BEV	632/520	100	X	\$175,000	Y
Tesla Model 3 (base)	BEV	TBC/350	50	TBC	TBC \$60k?	Q3, 2019?
Tesla Model 3 L. Range	BEV	TBC/500	75	TBC	TBC \$70k?	Q3, 2019?
Renault Zoe	BEV	400/300	41	X	\$52,000	Y
Renault Kangoo ZE van	BEV	270/200	33	322kg max	\$53,000	Y
BMW i3	BEV	335/246	42	X	\$78,000	Y
BMW i3S	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	TBC \$63k?	Q2 2019
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 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 either 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

Two Wheels Good

The highs and lows of electric motorcycles in 2019 (and it's only April)

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

2019 is well under way and the world of electric motorcycles has already seen exciting highs and devastating lows. Let's start with some good news.

Late last year, US motorcycle legends Harley Davidson announced they will be doing a production run of their Livewire electric cruiser. The Livewire was released a couple of years back as a 'tester' with the intention of testing their loyal fan's appetite for electric machines. I'd love to have been a fly on the wall in that first board meeting. As it turned out everyone who rode it loved it. It polarised riders into two camps – those who loved it and those who haven't ridden it yet. The bike had 55 kW of power which may not sound like much, but as the old saying goes, power comes for free, torque is what you pay for. A motorcycle journalist friend of mine said it was the fastest Harley he's ever ridden, but I'm not sure if that was a compliment. Two years later Harley announced they will start production in 2019 and have them on sale in 2020. Pricing is steep - US\$30,000 for a 220 kg bike with 140 km of highway range and 200 km at city speeds. Still, it's a great looking bike and will be sure to attract the next generation of HD fans. With any luck we'll see a price drop by then too.



Harley Davidson Livewire (Image courtesy of mcnews.com.au)

California based e-moto veterans, Zero released their 2020 Zero SR-F machine (*see also Nigel Morris's review of the Zero, starting page 18*) to great fanfare last month and was by all accounts well received. The 81 kW bike weighs in at 220 kg and boasts a newer, larger, air cooled motor. It comes standard with 14 kWh assuring 160 km of highway riding, but there is a 'power tank' which brings the total capacity up to 18 kWh and almost 200 km of highway range. It also adds 20 kg to the top of the bike. The SR-F retains its distinctive naked look, but the frame has gone from aluminium to a trellis steel frame. This was invariably to accommodate the larger, re-designed battery pack and motor, but it looks pretty sharp too. Unlike most e-moto manufacturers, Zero are already in production with plenty of sales to boast. At US\$20,000 it is also a more affordable machine considering the improved range and power.



Zero SR-F (image courtesy of Zero Motorcycles)

Still in California (or perhaps Shanghai) Lightning Motorcycles have re-entered the scene with their 67 kW, 206 kg Lightning Strike. Lightning first built the LS218 superbike with outrageous power and looks, but was never truly put into production despite the claim they were making dozens of them (a Lightning owners club ride was reportedly a lonely affair). However CEO Richard Hatfield has secured capital and set up a factory in China which will produce components for assembly in California. This is a critical step towards achieving the incredibly low starting price of \$US13,000 for the 10 kWh machine. A mid spec bike with 15 kWh of battery will set you back US\$17,000 while the top-of-the-line machine is US\$20,000. The 'Carbon' version has a 20 kWh battery, 90 kW motor and weighs in at a remarkably light 220 kg. Although not as powerful as the original LS218, it still puts within the realms of 600 cc race replicas. Deliveries will commence in July.



Lightning 'Strike' photographed while in testing (image courtesy of iMotorcycle)

Now for some disappointing news. Alta motors went bankrupt. These guys had the most compelling electric dirt bike around, at a reasonable price too. Perhaps too reasonable. The company partnered with Harley Davidson in a mutual arrangement which would see both firms benefit from enhanced battery development and production methods, but the deal lasted 6 months before Harley backed out. Within months Alta ceased operations and their factory was liquidated. Did Harley bring them undone? It seemed coincidental, but starting an electric motorcycle factory in a tough market is not for those short on money and partnering with HD made sense. Alta had some pretty impressive technology in its battery pack, and thanks to Shea Nyquist we now know how they kept the battery cool: <https://www.youtube.com/watch?v=1BoWQ54NpU0>



Shea Nyquist pulls apart an Alta electric dirt bike battery

Perhaps the most devastating news in the e-Moto world this year was the fire which broke out in the pit garage of the MotoE field, destroying all 18 bikes before the series even began. MotoE is the new, premier class electric motorcycle race series to be held in conjunction with the MotoGP. It features some world-class racers like Bradley Smith and Aussie Josh Hook, on a standard fleet of Italian made Energica Ego bikes. Testing was going well at Jerez where most riders were lapping only 6 seconds behind the MotoGP bikes. Witnesses said all bikes were off charge at the time the fire broke out, but that one of the chargers started to smoulder before catching alight. The fire soon spread to the vinyl tent which destroyed the series in short order. Peak body FIM have confirmed the series will still go ahead, but with a revised Europe-based schedule.



All 18 MotoE bikes were destroyed in the blaze. (Image: MotoE)

Here's hoping we get some more good news in the world of e-motorcycles very shortly.

Ride safe!

Chris

Review: All new Zero electric motorcycle unveiled

By Nigel Morris.

First published February 27th this year on the new Australian EV dedicated website TheDriven. (thedriven.io) Article link: <https://thedriven.io/2019/02/27/review-all-new-zero-electric-motorcycle-unveiled/>



The new Zero SR/F. Source: Zero Motorcycles

At a major event in the US on the February 25, Zero motorcycles revealed the first major upgrade to its range since 2013.

As a self-admitted Zero fanboy, I have to admit I have already started mulling over the options open to me to upgrade to the new model, and I like what I see. Overall, my personal score would be 8.5/10 for accomplishment. As a technologist and someone who understands a little about market realities and manufacturing, I would score them 9.5/10.

I'm going to summarise the key specifications, changes and reasons for my score for you.

Key specifications and updates.

This is a major overhaul of the entire Zero platform with literally only a half a dozen or so parts common to previous models. After decades using a lightweight aluminium chassis, Zero have now switched to an all new steel trellis frame and all new swing arm assembly. Apart from looking great, this upgrade presumably allows for some cost saving and flexibility in layout and also accommodates the all new larger motor. I like it.

The Zero motor is a wonderful feat of electrical motor design developed both in house and in partnership with external suppliers.

The new motor weighs around 25kg and delivers 11 per cent more torque than a 2019 2000cc Harley Davidson engine (189Nm v 169Nm) and the same power as a 2019 937cc Ducati Supersport S engine (82kW). That's borderline sick. Zero have done some incredible engineering around optimising magnetic flows and



The new Zero SF/R. Source: Zero Motorcycles

manufacturability and for 2019 also introduced axial cooling fins rather than transverse.

They claim this overcomes issues with temp limits in earlier models and allows more sustained full power operation. The new model delivers a 57 per cent more power and 21 per cent more torque than last year's model, so whatever they have done is impressive.

Top speed is now almost 200km/h which, quite frankly, is plenty for aging guys like me (lower gearing option anyone?). Feeding the motor is a staggering 900A controller. It hasn't been revealed if they have retained the stalwart Sevcon or moved on from the popular brand.

The all-critical battery capacity remains unchanged, interestingly, at 14.4kWh and is upgradable to 18kWh with the optional powertank. In the new SR/F this equates to a city range of around 320km and a highway range around 163km.

Notably, this is 10 per cent less range than the previous model. The reason for this hasn't been completely unravelled yet but is more than likely the result of much larger on board chargers and a consequent 9 per cent weight gain bringing the Powertank equipped model to 225kg.

That's around 20kg of extra weight and not a showstopper but something of a retrograde step when power minus weight equals range.



Zero SF/R. Source: Zero Motorcycles

The new Zero have maintained its KISS design philosophy and retained air cooling for its motor and battery and frankly with the power and range available, I for one think it's a solid strategy for a street bike.

The only exception to this is that under fast-charging conditions the thermal mass in the (fully sealed, very densely packed) battery is substantial and can lead to excessive temperature rise.

The latest model includes enhanced thermal management and passive cooling fins on the battery pack so fingers crossed this minimises the previous temperature rise issues.

Now, range is the holy grail of all EVs. For years the theory has been "add more battery". But batteries are expensive and heavy so there has been a delicate balancing act and a transition to "add more fast chargers, not batteries".

Zero have finally caught up with this and now offer up to 12kW of onboard charging capacity, which is fan-bloody-tastic. As long as you can find a 12kW outlet of course.

This allows a charge time of around an hour which really opens the bike up to longer rides where charging infrastructure is available. Luckily in Australia, we have a newly released EV policy, which is a policy to create a strategy about a policy plan. Yay.

Other features

Zero also added a new cellular communications feature allowing remote charging control, monitoring, security functions and better over the air diagnostics and updates.

This is a really valuable feature allowing far more intelligent battery management and is extremely welcome. Combined with an all new dash and up to 10 custom programmable modes they have clearly listened to their customers on this one.

The bike also now features upgraded Showa suspension front and rear, Bosch traction control, ABS and larger dual disc brakes with radially mounted dual piston calipers on the front end. Big tick.

They have also restyled the bike (which is a highly subjective matter) but have retained the streetfighter/naked look. Overall, the new SR/F looks more muscular and features the electric nature of it even more than before. Personally, I think the design looks very current and I think I like it.

The tank design is also changed and now includes a flip out charge port cover and (what looks like) a flip up “frunk” (that’s what we call the dummy tank that serves as a front trunk). A small thing, perhaps, but by all accounts Zero have also finally improved its notoriously uncomfortable seat.

The reviews by a number of motor writers who rode it are glowing, to say the least – Zero have made this a better motorcycle, not just a better electric vehicle and that’s critical for wider appeal.

Let down

Overall, I am thrilled about this major evolution for Zero and excited as a potential owner. As a daily electric motorcycle forum stalker, impressively the changes to the new bike address the vast majority of “wish list” items by current owners in a poll just four months ago, and then some.

The only things owners asked for that were not delivered in this new bike were larger battery capacity, a lower price, better aerodynamics (a fairing) and perhaps most importantly fast DC charging.

Fast DC charging ability is a growing gap, but extremely difficult for Zero to overcome in its current platform, simply because the battery/drive-train configuration runs at a voltage that is just too low for almost every DC fast charger in the world.

With great reviews so far and a world of comments, things look good for Zero with this new bike and let’s hope the real-world results back it up because I’m betting this platform is where they are going to be for a few years yet.

The penultimate test they now have to pass (at least for the next couple of years) is down to one competitor, in my humble opinion.

Sure, Harley will erode some sales and some of the other big names are coming fast, but right now it is the insane (on paper) Lightning Strike, also out of the US.

Lightning Motorcycles have promised a bike that is capable of 240km/h has a 240km range, featured DC fast charging and is almost 40 per cent cheaper.

These are massive claims and Lightning don’t yet have a distribution network to speak of so are far behind, but if they come close to delivering they could be Zero’s biggest threat.

Advertising space available:

¼, ½ (vertical or horizontal) plus full page options.

Email EVNews@bigpond.com for full details and rates.

Deadline to reserve your space in next edition is June 1st

(Deadline for ad copy – June 15th)

What goes into the decision to kick the 'ICE addiction'?

*What does it take for the average ICE vehicle owner to make the decision to switch to an EV?
Bryce Gatton reviews the results of some recent studies in the UK.*

Several studies into EV buying intentions and EV buyer attitudes in the UK have thrown up some interesting results. In this article I will analyse two studies recently undertaken by *Which Car?*, plus another undertaken by Encore Digital Media (also in the UK). In summary – I will contend they can both be summarised in one word. And the word is ...

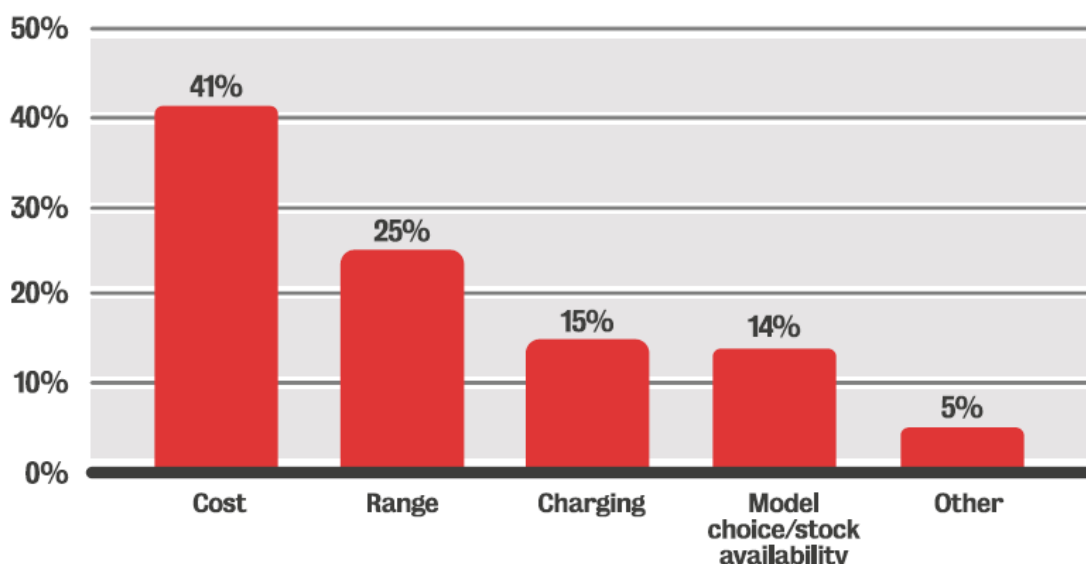
Knowledge!

The first of the *Which Car?* studies was a 3 month survey of 9000 consumers, where 8.4% of respondents said they were '*considering a fully electric vehicle as their next vehicle*' and were then tracked in their research journey to buying a car. The second was a review of the data of 80,000 users of the *Which Car?* vehicle comparison tool. That review showed that a fully electric car (or BEV, short for Battery Electric Vehicle) was the optimum choice for 10% of users - yet only 0.7% of new car sales in the UK are currently fully electric – potentially meaning there is a huge potential market for selling EVs yet to be met.

So if buying intentions are up around 8.4% for BEVs, and a BEV would suit 10% of people looking to buy a new car – why are only 0.7% of sales there BEVs??

This is the question the *Which Car?* survey tried to come up with answers to: and they came up with some rather interesting results. To start with, they found that the biggest initial concerns by potential EV buyers were:

Concerns about EV ownership?

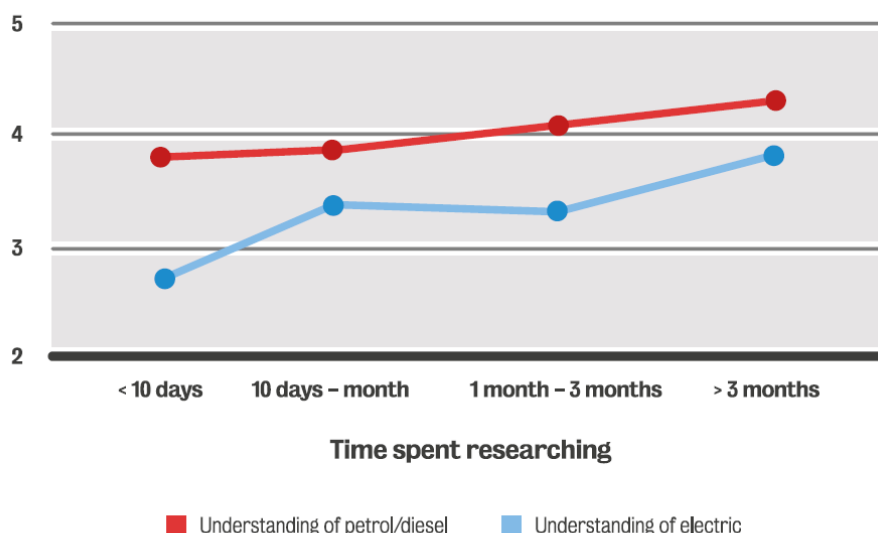


What Car? Survey data

The data become then particularly interesting as *Which Car?* followed potential buyers through their EV researching journey.

To begin with, potential BEV owners rated themselves as having a poor understanding of EV technology, and it took 3 months or more to catch up to their perceived ICE vehicle knowledge. (By the way ICE = Internal Combustion Engine meaning they run on petrol, diesel or LPG).

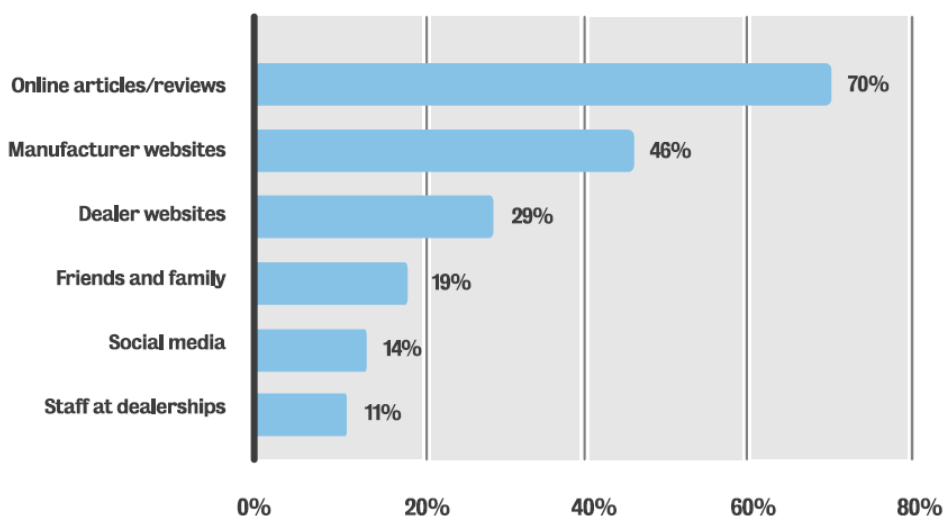
Car buyer understanding of car technology over time (score out of 5)



What Car? survey data

And where did they get this knowledge? Well as it turns out, it wasn't from the sales staff at dealers! As is well known by us in our AEVA branches around Australia – potential buyers are hungry for dispassionate advice on EVs and EV technology and in particular find vehicle sales staff are not (yet) at all well informed about EV technology. This is also seen by popularity of the various EV websites and you-tube channels.

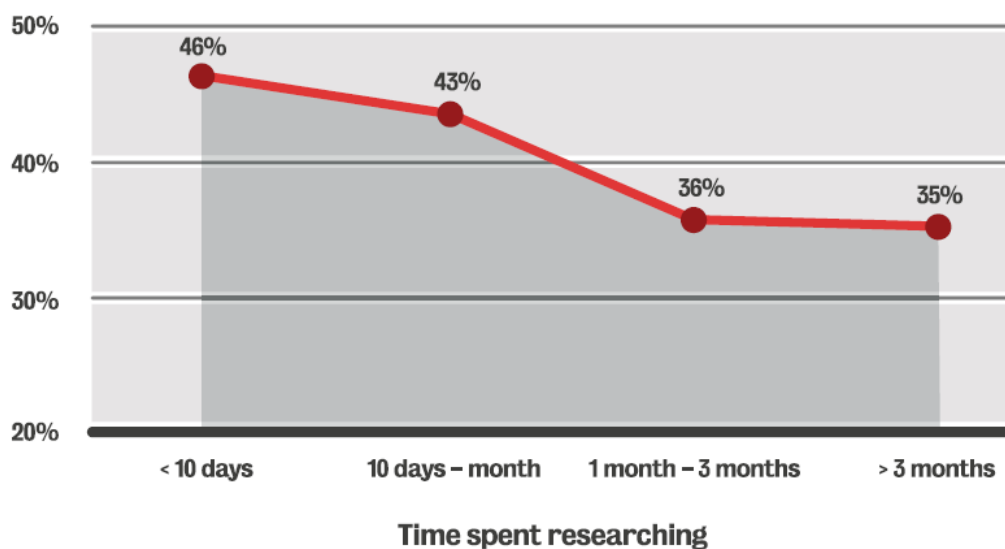
Sources of influence for electric car buying research



What Car? survey data

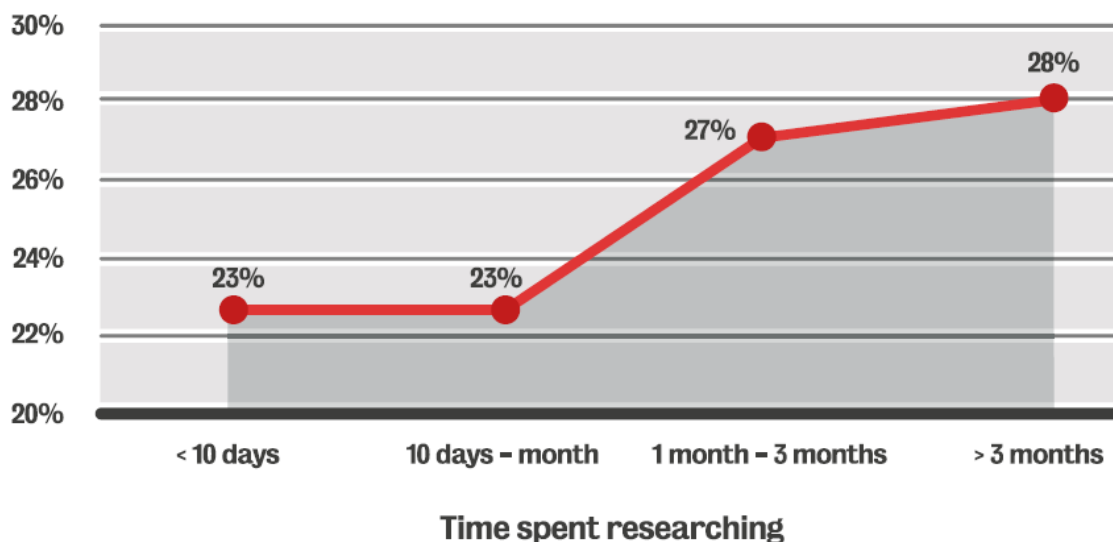
So, as potential buyers researched EVs – what happened to their perceptions of these issues?

% concerned about cost over time



What Car? survey data

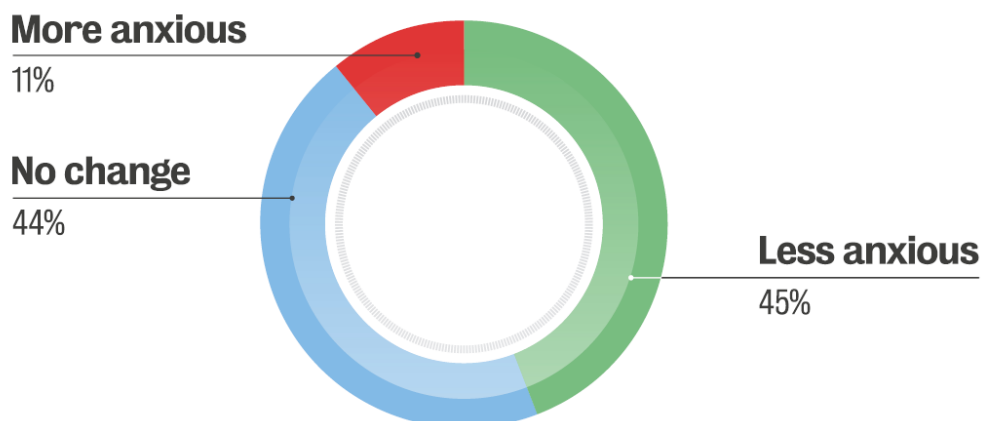
% most concerned about range over time



What Car? Survey data

Interestingly, once the EV was purchased – ‘range anxiety’ almost halved. Again, personal knowledge gained from experience was the key to improving people’s comfort with EVs – and it appears that the information out there did not help to sort the worries of potential buyers before taking the plunge.

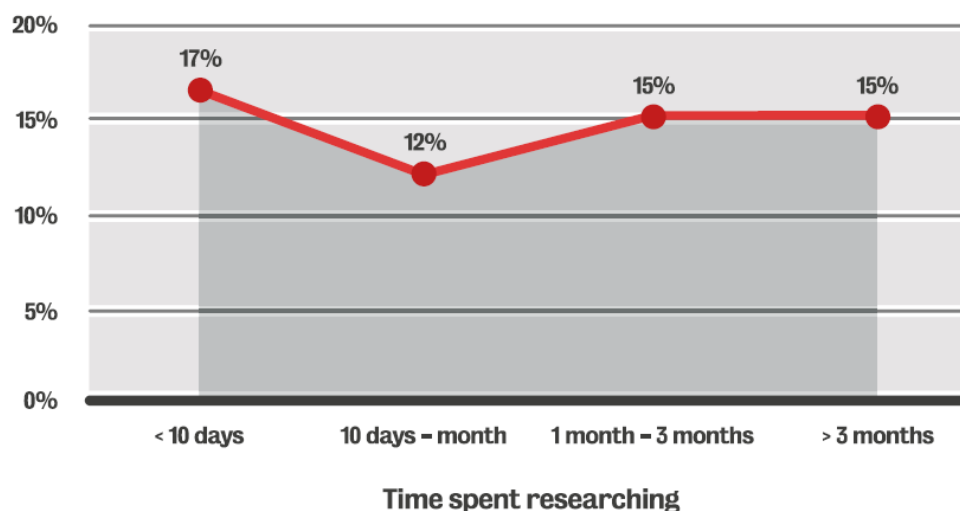
Change in range anxiety since EV ownership



What Car? survey data

What was also interesting was the charging result – it seems that the scanty information from manufacturers on how to charge and how long it took meant that the charging knowledge component changed the least from beginning to end of their research. (From my experience: manufacturer charging information can't be easily compared to others, as well as usually being incomplete).

% most concerned about charging over time



What Car? Survey data

Given how much work I personally have put into creating a standardised model for the AEVA EV Fact Sheets to be able to easily compare the charging times and rates for the various BEV models – (and I was an electrical trade and maths teacher for many years teaching this sort of stuff!) I can seriously sympathise with the average potential buyer of an EV.

On the other hand – the lived experience of plug-in EV owners is that charging is not at all hard to get a grip of – nor is it ‘inconvenient’, as the mixed messages that come out in the media would have it to be.

So how did *Which Car?* rate the manufacturers in their information provision? Well, the results (yet again) make ‘interesting’ reading. Only three of fifteen manufacturers scored 5 out of 5, and one of them (VW) has almost no EVs for sale yet. (Remember though: VW group have excellent US EV websites, EV promotion resources and EV charging network rollouts to draw from, courtesy of their US\$2 billion mea culpa for Dieselgate called ‘*Electrify America*’).

Brand	How EV tech works	Info on charging	Cost savings of EVs	Range / real range difference explained	Q&A section	Score
	~	✓	✓	✓	~	4 5
	~	✓	✓	✓	✓	4.5 5
	✓	✓	✓	X	✓	4 5
	✓	✓	X	X	X	2 5
	✓	✓	X	X	X	2 5
	✓	✓	✓	✓	X	4 5
	✓	✓	✓	✓	✓	5 5
	✓	✓	✓	✓	✓	5 5
	X	✓	✓	✓	X	3 5
	~	✓	~	✓	X	3 5
	~	✓	✓	~	X	3 5
	✓	✓	X	✓	X	3 5
	X	✓	✓	X	X	2 5
	✓	✓	✓	✓	X	4 5
	✓	✓	✓	✓	✓	5 5

Yes 
Limited details 
No 

So my summary of the *Which Car?* UK results is that knowledge is the key to allaying the fears of potential EV buyers but the traditional sources of that knowledge (manufacturers and dealers) are the worst at providing it, resulting in a lot of time and research being needed to overcome that impediment.

Steve Huntingford, editor of *Which Car?* UK, put it this way: “Our research has shown there exists a gap when it comes to the public’s understanding of electric vehicle technology and their features – and this is holding back some from actually buying one. It’s understandable that it takes buyers three months of research to be as comfortable with electric vehicles as they are at the beginning of their research on petrol and diesel vehicles because the technology is new – but it is clear that the industry and legislators must start making it easier for would-be buyers”.

Meanwhile, in another study by Encore Digital Media (also in the UK), it was found that there are clear age differences between EV buying intentions, these being:


- a) 18-24 year olds who are much open and interested in EVs;
- b) 25-54 year olds who are not averse but do have distinct concerns. (This audience are most likely to turn to the halfway house of a hybrid), and
- c) 55+ year olds who are significantly harder to convince.



Whilst it is purely speculation without additional research, a possible link could be inferred from the two sets of studies: the same 'familiarity with the known' and low general EV knowledge found in the *Which Car?* studies could also be behind these age dependent attitudes towards EVs. In other words, the older someone is would align with how experienced, confident and knowledgeable about ICE technology they are, and how a poor knowledge of EVs would naturally steer them towards the 'safe' choice of another ICE vehicle.

Such a link would also suggest that EV knowledge information programs may need to be tailored towards differing levels of experience with ICE. (And, as a corollary – those most familiar with ICE technology, i.e. mechanics and other workers in the existing ICE world, may be the most resistant to the change!).

BETTS BOAT ELECTRICS

Electric inboard & outboard propulsion



 **www.bbelectricboat.com** 

0419 674 135

OCEANVOLT EPROPULSION

Model Update News: Nissan announces Leaf 3.ZERO.

Bigger battery, more range, more power, more features, later than expected.

By Bryce Gatton. First published on TheDriven.io, January 2019

The huge Consumer Electronics Show (CES) that runs in Las Vegas each year is slowly turning into the CE(V)S as more car companies choose to make major new models announcements there.

This year's CES is no exception – with Nissan confirming at this year's January 2019 even that it is beginning production of an updated model offering a 62kWh battery option.



Nissan 3.ZERO e+ Leaf (Source: Nissan)

A little bit of history is needed here, as the 60-ish kWh version has been Nissan's worst-kept secret since sales of the second generation (2018) model began in late 2017. Originally expected to be offered as one of two battery size options with the second generation model, the 60kWh battery version was delayed, and delayed again, throughout 2018.

Given the knowledge that a bigger battery was in the wings, the motoring press as a result was quite scathing about the fact that Nissan seemed to be missing the boat in terms of advancing EV technology, given in 2011 they were the first ever mass-market, ground-up EV design to go on sale. At the end of 2017, the second generation Leaf (with a 40kWh battery and 280km WLTP range) was not even matching the range of the newcomer Chevrolet Bolt (at 380km) or even the then recently upgraded Renault Zoe (at 300km).



New 62kWh battery (Source: Nissan)

In 2017, a 60kWh Leaf would have been seen as a market leader, further advancing the technology as others were striving to match it. In 2019, the release of a bigger battery for the Leaf is now seen as a catch-up rather than an innovation, given new competitors like the Hyundai Kona and Kia Niro already offer longer range vehicles (with faster charging systems) than the 62kWh Leaf. Also, now that Tesla is almost exponentially increasing its Model 3 production, many possible early larger battery Leaf buyers are now likely to wait to compare the two as the Model 3 will soon arrive in Europe and, in late 2019, Australia as well. Given a 62kWh Leaf will not be a lot less in price to the base Model 3 – Nissan may have a hard time selling the larger battery version in the numbers it would have likely seen in 2018.

Anyway, so much for brickbats to Nissan for delaying the EV revolution – what does the 3.ZERO Leaf offer?

Well, it will come in two versions – the 3.ZERO which retains the 40kWh battery, but will feature such improvements as a larger infotainment screen, Nissan Connect app, new colour options and a two-tone paint option. The second version, called the 3.ZERO e+, has the above improvements PLUS the 62kWh battery and a more powerful 160kW motor – together offering a 385km rated range on the new WLTP test cycle. (Which will probably translate to a real-world range of around 350km. We will await the US EPA rating of the e+ with interest, as their ratings are generally spot-on for achievable driving ranges).

Updated infotainment screen (Source: Nissan)

Charging is also improved, offering 70kW DC fast-charging speeds (peaking at 100kW). However a note of caution needs to be sounded here, as Nissan are sticking to the CHAdeMO standard for DC fast-charging. As mentioned in earlier articles in EVNews on the 'plug-war' between CHAdeMO and CCS: CCS is



currently winning – both in the number of chargers being installed, as well as in offering charging speeds of up to 350kW with the current crop of CCS chargers being rolled out. (Including here in Australia). Meanwhile, all the CHAdeMO chargers currently installed are a maximum of 50kW (and many rather less). In fact, it is only a couple of Japanese manufacturers that are persevering with CHAdeMO – all the others have moved to CCS, or are in the process of doing so. (Including Tesla).

Order books for the Leaf 3.ZERO and 3.ZERO e+ are now officially open (for European, Japanese and American buyers) with first deliveries of the 3.ZERO in May, and the e+ sometime mid-year.

What this means for the announced June 2019 arrival of the 2018 Leaf in Australia (effectively 'Leaf 2.ZERO') is now an open question. Will Nissan Australia stick to bringing in an already superseded model that does not have the bigger battery option? By doing so, they are likely to end up selling almost none of them as consumers rush to snap up the cheaper priced alternative of the Hyundai Ioniq Electric (WLTP range of 212km), or the likely similar priced (but better specification) Hyundai Kona Electric (WLTP range: 446km), Tesla Model 3 base version (350km range??), or even the Kia Niro at around 450km WLTP range. (If that one hits our shores in 2019).

Model Update News: mid-series Hyundai Ioniq update for 2019

By Bryce Gatton. First published on TheDriven.io, January 2019



Image: Hyundai Motor Company

It seems the Ioniq series of hybrid (HEV), plug-in hybrid (PHEV) and full battery electric (BEV) has only just arrived (hang-on, that's because here in Australia it has just only arrived!). Overseas however, the HEV and BEV versions have been for sale for around 3 years, whilst the HEV has been available since late 2017.

As a result – Hyundai UK announced yesterday (Jan 17th) that the Ioniq is getting a mid-run 'freshen-up' to keep pace with its competitors (including one within Hyundai's own ranks). The updates will initially apply to the HEV and PHEV versions, but will be applied 'soon after' to the BEV. Given the UK is a left-hand drive market – this means the announced changes for the UK *should* follow on soon after to Australia.

As I alluded to above, one of the competitors to the Ioniq is Hyundai's own Kona Electric. As the Kona Electric is a more recent design, Hyundai are now taking the opportunity to incorporate many of its best features into the Ioniq range. These include (to quote from the press release) '*1-pedal driving capability, Smart Regenerative Braking, use of on-board functions even while the vehicle is switched off, and Eco+ Mode for extending remaining energy during unforeseeable emergency situations*'.

A new driving feature to be added to the Ioniq HEV and PHEV is what Hyundai are calling '*the world's first 'Green-zone Drive Mode (GDM)'*'. This feature will automatically switch the vehicle's driving mode in defined areas to further run on electric power rather than the internal combustion engine. Presumably this would work through the in-car navigation system. Given some cities in Europe and Asia already have diesel vehicle bans, this would be a useful feature to have when these bans extend to all internal combustion engine vehicles!



Image: Hyundai Motor Company

Externally, the grill, front and rear bumper design designs have been revised, along with a redesign of the (optional) LED head and taillights. There are also three more paint colours available – Fluidic Metal, Electric Shadow and Liquid Sand – bringing the previously limited range to a total of eight. Interior changes are more minor, with a redesign of the control panel for the heating and climate control.



Image: Hyundai Motor Company

The changes will occur for the European Ioniq range in the second half of 2019, so hopefully it will not be too long after that before they come to us here in Australia.

Owner's experiences: First Australian Kona electric delivery

AEVA member and proud new Kona electric owner, Charles Dalglish, gives his first impressions.



Pic: TheDriven.io

Day 1: Friday 2.45 pm ...

That's the time we have to be at Ryde Hyundai. Emails have been flowing over the past few days. Hyundai are pulling out all stops to get me the very first Kona electric in Australia. There were many levels of staff all cc'd to make it happen.

A huge blue ribbon adorned the bonnet and photographers hovered in anticipation of us keeping this appointment. We even had the general manager of Hyundai in attendance. Scott Nagar who had been treading the boards with the prototype over the last 18 months, deserves a mention, for without him it would not have happened for us. The NSW manager was busily pulling strings also finalising updates on software.

I could not help but grin. I did my little speech to the video camera. I hope that comes out. Meanwhile poor old Dean Jones felt like cabbage left out of everything. After all he is the manager of Ryde Hyundai. Dean is a hardened Hyundai salesman...Could you throw in a dash cam? Could you throw in a roof pod? Can I get a free Hyundai jacket? All these questions ended with Dean Jones's shoulders slumping forward and whispers of no margins, it's the first one, why would we give anything off, you are lucky to be getting the first one. You have no idea the work that went on behind the scenes for this to be yours! (I had to ask :-).

Meanwhile the circus subsides and we are handed over to Jill Uren. Jill had the task of explaining all the buttons, a long and tedious process. We are now connected to Hyundai service. The new to me technology is amazing. If I prang on the way home and an airbag goes off, an ambulance is instantly dispatched to the scene!

So we set off in the Sydney evening traffic, uninsured as no one has it on their system yet. Because of traffic, we had three goes to get through the first set lights in Ryde. This gave me time to program the GPS using Siri, a first for me. Then I was able to set up active cruise control and lane assist.

It was a superbly quiet exit into traffic and I was thrilled and relieved to feel the car pull up smoothly and aggressively as needed for our first full stop. The car sat silently with the auto climate keeping us cool.



Pic: TheDriven.io

As the traffic moved off, a little dab on the throttle brings us automatically up behind the guy in front, until he stops and it is done all over again. So simple and less than half the work load for Sydney's finest rush hour driving! Unfortunately I have to interpret the traffic lights and apply brakes and hold them. After touching the throttle, a flick up of the cruise select toggle locks it right back into the tag team.

As for the heads-up display - I have never had one before, but it is a great addition. (And legible to blind old bats!). I would not want to be any taller though, or I would only get half the story. Three things are projected on it: (a) the speed limit; (b) the speed you are doing and (c) any navigation directions. BTW: The voice commands are clear, but I had no idea every crossing is a children's crossing!

The car is quite spacious and it feels quite a wide cabin. We had been warned that Sport driving is a bit scary. Certainly comfort setting gave us tremendous performance. A few kilometres along the way however I was ready to try "Sport Mode"....

A black R 3 Audi pulled up alongside at the lights. It had oversized exhausts that blatted between gear shifts. (It also wore the required 'P' plates). Thinking to myself *"Now would be a great time to find out what all this talk about wheel spin and shrieking tyres is about!"*... the lights went green, the traffic was clear: I floored it, and on my left I counted at least 3 blats of his exhaust as we surged ahead together up to 70 km/h. I had him by a length! Carol said that the neck jerk reminded her of our early Lotus 7 days, but thank you, that will be enough! This is such fun, and we made no noise, and all thanks to the power of the sun.

Regarding the heated and cooled seats, I put the cool seat onto maximum and moments later I felt as if I was wearing a sweaty tea shirt and someone threw a bucket of cold water down my back...how do they do that through leather seats?

Carol is well pleased with the fine classical music preselected with perfect clarity. We all know climate control lessens an EV's range and so with a flick of the sunroof button we lifted the back to make a vacuum. The fresh air soon cooled the cabin and we gained 7 kms range. Now down to 230 kms range at Penrith. Still on cloud nine I convinced Carol that rather than drop into Blaxland Maccas we should go the Outback Steak House on Mulgoa Rd. for dinner.

I carefully parked it and hoped to get no dents from nearby parkers. As we walked away toting up our skills of walking backwards, we noticed that no one gave any interest in it whatsoever. It could have been a 2000 Toyota Corolla! I guess the Jaguar I-pace would have been different. I really don't care. It is going to be wonderful economic transport for our future. Thank you Hyundai for your marvellous electric car!

After a great dinner, Carol takes over the reins. Initially a bit of tension to say the least as I persuade Carol to engage the cruise. It was now dark and she did not understand what was happening with the cruise control and failed to understand that the actual cruise speed is set in a much smaller window just above the range number. After threatening to turn it all off and let her just drive, she did finally work it out and eventually relax enough to leave the cruise engaged and marvel at its reliability. I have had the Mitsubishi Outlander fail to see a truck and go full acceleration into it! I can't trust that one fully as it has happened about 4 times over the last couple of years.

But today so far I feel very confident in the Kona.

It's very comfortable for me in the passenger seat. The electric buttons recline for me to easily sleep in it. The headrest is perfect and is the first car I have been in that does not require a pillow!

After our steep descent down Mount Victoria we arrived home with 180 kms range left. Slightly less than half a tank showing, time to pull the granny charger out of the boot that is so nicely packaged. Let me see what 22 hours to charge it up? It says it is using 10 A. I am not leaving this on all night on my off-grid solar system. 40 hours to full charge it. You have to be kidding. I have a feeling the granny charger will be in pristine condition when the Kona dies.

Would I sell this for \$80,000? (I could: there is a year's waiting list in most parts of the world!). If Hyundai sell heaps to the Government, in a couple of years time, I'll bet all my friends will want one. I hope they don't, because we will have punch ups about who needs charging. (Who can't get home without a charge, etc, etc. At the moment my friends frown on me charging my Mitsubishi, when I could run on petrol). Early days.

Day 2: Saturday and slowly deflating from our very big day yesterday!

It rained all night and today looks very overcast. So today I get our beautiful new baby wet while I drive it over to our big hangar with 15kW on its roof. It may not produce power at night, but even in overcast conditions it still happily exceeds 10A: enough to charge the Kona.

I did note that after 5 hours it had managed to put in enough to bring the range up to 260kms. That is incredible. Only 5 hours at 10A to come from Sydney. These cars are so efficient. However we must remember the climate was on in Sydney and it is not on here as we charge.

I had the chance to chamois the car down. No need for a ladder so I can reach the roof. I can't help but put the radio on. It's very good. I had to try the heated seats. There are three settings...Warm...Just right....Too hot. I also tried the heated steering wheel. That's got to be a gimmick, right? No I don't think so. It is going to be heaven in our approaching winter.

So now fully charged I have to tuck it up while we go off to NZ. for a week.

I suspect Robert my son might come down and borrow it. I know he will take great care of it as he does with the Ford G6E. It will be interesting as to what he makes of it. I know Jodie will immediately turn the seat warmer on.

My Enfield dream, Part 4. *The journey simplifies*

*Part four of a series from Greg Partridge on buying, importing and restoring an Enfield 8000 EV
(For Parts 1, 2 and 3, see issues 231, 232 and 234 of EV News)*

For those following my journey to being able to both own (and drive!) an Enfield EV – below is a quick update.

After conducting some research into rust repairs on my original imported Enfield 8000, I came to the realisation that it was terminal. All of the floor pans and much of the tubular chassis was non-existent due to rust. Something the UK car dealer failed to mention.

Around the same time I had the opportunity to purchase Randal Love's Enfield 8000 which is in excellent condition internally and mechanically and will just require a new coat of paint, something I am hoping to have done by the Sydney Expo in October so it can be on display along with other members vehicles.



Advertising space available:

¼, ½ (vertical or horizontal) plus full page options.

Email EVNews@bigpond.com for full details and rates.

Deadline to reserve your space in next edition is March 1st

(Deadline for ad copy – March 15th)

Owner's experiences: Chris Nash and his Mitsubishi Outlander PHEV

Victorian AEVA branch chair, Chris Nash, answers a few questions about his 2014 Mitsubishi Outlander PHEV.

What other EVs have you owned?

I also currently own a converted 1989 Mazda MX5 – which sadly has a few issues consigning it to the shed till I find time to fix them.

How long have you owned the vehicle/how many kms have you driven it since purchasing it?

Just coming up to three years now, having done around 70,000 km in that time.



Pic: our family loves the PHEV: Zoe Nash 'hugs' the family EV

Why did you choose the Outlander PHEV?

Many reasons: I wanted an affordable EV that had room for the kids, a good tow capacity plus the range for weekends away. Given no BEV in Australia could offer me those features (other than the - for me - unaffordable Tesla Model X) I refocussed my search on a PHEV. After doing my research, I found that the Outlander offered the longest 'EV-only' range, and worked out that around 80% of my driving should fall within its 'electric-only' driving range, making it a viable option. (As it turned out: the Outlander was the ONLY EV that suited my needs: proved there's not a lot of EV choice out there yet, but at least I had one). I should add that experience has borne my calculations about using it mainly on electric-only driving: since buying it, I would only fill it with fossil fuel about once a month.

How was the buying experience?

Awful – I bought it as an ex-demo vehicle from a dealer, who knew incredibly little about electric vehicles, and in particular the EV capabilities of a PHEV. Given I had done lots of research on PHEVs to get to this point, it did not take long into the test drive, for me to start filling him in on how it worked as an EV! However, since I was most impressed by the test drive (if not the dealer experience) and it was at a good price – I bought it.

What do you like about it?

It is well put together, has good regenerative braking and provides all the data I need (in a useable format) to help me adapt my driving in ways that maximise its EV potential. All up it is a really good package with great PHEV technology that works seamlessly 'behind-the-scenes' to make it work as I want it to.

What don't you like about it?

The range: it's too short! They really missed an opportunity with the more recent update to increase the battery size. The only other quibble I would have is there is no seven seat option for the PHEV version, only the fossil one.

Would you buy another one?

Yes! I am putting my money where my mouth is on that answer too: the lease is about to run out on my current one and I'm planning to replace it with a later model Outlander. (Sadly with virtually the same EV-only range as they have only increased it by 4kms since I bought mine).

Chris Nash
Chair, AEVA Victorian Branch



Advertising space available:

¼, ½ (vertical or horizontal) plus full page options.

Email EVNews@bigpond.com for full details and rates.

Deadline to reserve your space in next edition is June 1st

(Deadline for ad copy – June 15th)

Bass Coast Shire councillor's experience of an EV

By: Cr Geoff Ellis, Bass Coast Shire Council. (Article first published in the Bass Coast Post)

WHEN mayors change, so do their official vehicles. Our current mayor has been BYO car for two terms. But maybe there's an EV in the Shire's future.

EV. That's what the cool kids call electric vehicles. Neil Rankine tells me that they're just around the corner. To find out how far they've come and how far can they go, we took one for a spin.

As mayor, Neil Rankine drove a Prius. We could have tested a Tesla (the electric equivalent of an Aston Martin) but they are well beyond the means of this rural council, so we plucked a five-year-old Nissan Leaf from seaside semi-retirement at the RACV Resort. As it was untethered from its suckling point, Neil was initiated into the art of driving EVs.



Neil Rankine (L) and Geoff Ellis (R) Pic: Bass Coast Post

"Hit 'go' and keep an eye on the range. The heater drains electricity, a lead foot chews up more, steer clear of hills and make sure you turn it off when you get out."

A new Nissan Leaf can travel 240kms between charges. Neil asked about our limit as he gripped the wheel. I'd been told to rely on 75kms. Button pushed, Neil pointed at the electronic promise of 118.

"How far is the next charge point?" As self-appointed navigator I should have known that we were 61kms from the other charge point. There are only two in Bass Coast, one in Inverloch and one on Phillip Island, amongst the penguins. Just to add to the car's burden we decided to visit some of the shire's disappearing foreshore along the way.

After ten seconds of planning we roared off to the Inverloch surf lifesaving tower. Standing in the space where it used to be, Neil explained that reducing carbon emissions was vital to slowing climate change. EVs could play a big part in that but our dirty electricity negates that potential.

From the tower we whisked to Eagle's Nest for the obligatory poke under the bonnet. It was too cold for tyre kicking so, after a few swift happy snaps, we jumped back into the tepid car. As Boswell chuffed off in a cosy gas guzzler, we fleetingly workshopped turning on the heater.

Neil planted his boot on the accelerator and steered for the wide open road that all Aussies take as their birthright. Rather than the sensuous roar of the exhaust, our soundtrack was the utilitarian whirr of the motor amidst the roar of an Antarctic gale.

Along the Bunurong Coastal Drive we passed one postcard view after another as the range dropped to double digits in a frighteningly non-linear manner. Those penguins might be beyond reach.

We'd planned to visit the State Coal Mine to consider plans to power part of its operation from solar energy. Range anxiety nixed that little detour.

In the manicured streets of Wonthaggi, I asked about recurrent flooding around the Rescue Station. Neil mentioned a stormwater treatment design that has gathered moss in a drawer at Parks Victoria for seven years.

On the Bass Highway we realised that the range indicator subtracted kilometres more rapidly than they were physically clocked up. Neil explained how hard it is to measure the charge in a battery, though newer EVs are more intuitive.



Neil and Geoff view the workings of the Leaf. Pic: Bass Coast Post

Passing Kilcunda, the greatest concern for councillors, ex and current, became the prospect of our lifeless car stuck in the middle of that bridge. Where was the calculator? Somewhere near Anderson we crossed the line. Our origin was more distant than our capacity to return to it.

There's no reserve in a Leaf, only a pair of leads and a small charger in the boot. Why are there so few turn off lanes on the highway? Each halt for turning traffic added to our anxiety as did the rise of the Western Port Bridge.

We workshopped knocking on someone's door and asking for a charge. Would they offer us a cuppa as we waited for that new-age green light? We decided to press on. Over that bridge our ambitions were mocked by distance markers as we whirled along Back Beach Road. Passing Bimbadeen farm, Neil extolled the virtues of sustainable agriculture. "They're doing great things there," he commented as I kept an anxious eye on the gauge. "Carbon needs to become a tradable commodity ... and their animals have the best lives! Those eggs ..."

Turn Left! The Penguin Parade sign foretold a dozen kilometres to spare in that battery. Onwards!

As we trundled into the construction zone there were no signs to indicate the charge point. A couple of aimless circuits set the car's alarm bells ringing. Five kilometres left, four and then the numbers disappeared. A sedated voice intoned "Seek the nearest charge point!" What the bloody hell did Siri think we were doing? A quick phone conversation pointed us in the right direction and finally the Leaf was tethered for the charge.

The South Coast Road is a great path to travel when the winds are blowing, rain is threatening and you need to get lunch while your EV regains capacity. The views are magnificent and ever changing.

Here we discussed the merit of EVs. As our coffees went cold we calculated the CO₂ that had been emitted to create the dirty electricity we had consumed. The result is interesting rather than compelling, though technology is improving all the time.

The comparison (over 120kms):

- Corolla (2018) – 18.72 kgs CO₂ equivalent
- Hybrid Corolla (2018) – 11.52 kgs CO₂ equivalent
- 2014 Nissan Leaf on Victoria's electricity grid – 18 kgs CO₂ equivalent
- 2014 Nissan Leaf charged with green energy – near zero CO₂ equivalent.

Councils need to lead by example while not squandering the rate money. Premium recharge stations cost around \$20,000 but ones that don't meter dispensed power cost around one fifth of that figure. Is that a worthwhile impost to encourage EV drivers into the area?

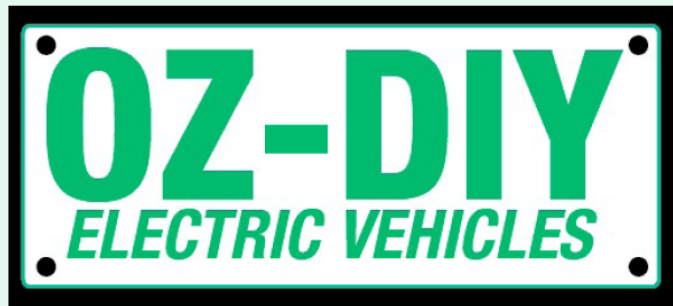
Sadly, after just over two hours, the Leaf was only half charged. Fingers crossed, Neil hit 'go' one last time and made an express return to Inverloch. We had ten kms left in the battery when we got there. EV Bliss!

This Nissan Leaf can be hired from Inverloch RACV for as little as \$20 for a half day or \$30 for the full day. Lunch at Kilcunda is a safe bet. Bring the camera.

For Do-It-Yourself electric car conversions

- ✓ Budget priced AC & DC kits and components
- ✓ Workshop services to help complete current projects
- ✓ 'Drive in, Drive out' conversions, repairs and maintenance on all Electric Vehicles

Call or SMS
0412 514 032
Graeme or Shane



www.OzDIYelectricvehicles.com
3339 Pacific Highway, Springwood, Brisbane

Dry Lake racing at Lake Gairdner South Australia

The tale of how three Queensland AEVA members get to SA's Lake Gairdner to watch Eva Hakansson (on the EV motor bike 'Killa-Joule') take on the world speed record.

By: Mike Arnott

Lake Gairdner is a 160 km long and nominally 48 km wide salt-lake located in an extremely remote area 550 km North West of Adelaide. In certain parts it has salt up to 1.2 metres thick.



The setting sun on the ripples of salt near the edges of Lake Gairdner.

The ripples are caused by rain water and wind during the wet season, generally at the edge.

Some competitors support vehicles and spectator cars can be seen leaving the dry lake surface after speed runs of the day.

Held there annually is a speed event organised by "Dry Lakes Racing Australia" (D.L.R.A.) in the first week of March. This is organised for those with the ambition, determination (and money) to indulge in the expensive sport of attempting to beat the existing land speed record. These people use this lake and the Bonneville salt flats in United States for this purpose due to their size, flat and level surface.

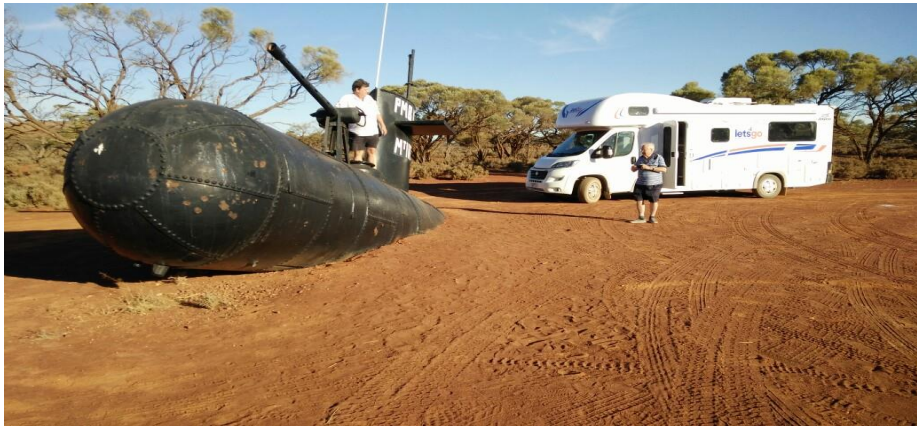
The main purpose of going to this event was to see the super-fast electric motor bike sponsored by the Queensland EV conversions business "OZ-DIY".

Three people decided to go to this event from Brisbane; Graeme Manietta (Qld AEVA chair and owner of OZ-DIY), Mike Arnott and Keith Pedler. Flying to Adelaide, we then tried to hire a camper van with three separate beds. This didn't prove to be as easy as we thought, due to lots of other people doing the same thing during that week! We eventually found one that fitted the bill, so we consequently lodged a booking, only to get a response that it was no longer available, but there was a larger one available at twice the cost. We all reluctantly agreed and committed to the more expensive one due to the time factor and having already committed and paid for flights.

After leaving the city of Adelaide and travelling a few kilometres, we noticed hundreds of wind generators on the hills outside Adelaide. The scenery eventually gave way to a very flat, barren and dry surface that was sparsely populated with dry grass; the usual signs of little rain.

Lake Gairdner is accessed via a sealed road from Adelaide, passing through Port Augusta, after which you turn right onto dirt road immediately after the turn off to "Iron Knob". This dirt, dust and gravel road continued for approximately 150km right up to Lake Gairdner. On the way we came across a group of emus and numerous kangaroos plus many carcasses on the dirt track most of which had been dried up by the extreme heat and dry.

We thought this road was bad but the worst was yet to come. The last 30km to the lake not only had talcum-like dust that reduced visibility close to zero whenever a vehicle passed in the opposite direction, it also had extreme corrugations. This last part of the trip enters an extremely remote part of Australia and requires you to take all survival equipment and provisions with you.



The make-believe submarine just prior to the lake, with our mobile home in the background. (That's Graeme in control of the sub!!)

Located a short distance from the lake and before arriving at the lake, the local Rotary Club has built a make-believe submarine made from storage tanks and half buried in the red dirt, with its nose is pointing upwards. Consequently, we stopped to take some photos. Note our mobile home in the background.



Impressive sight of a natural phenomenon: Lake Gairdner.

We arrived at the lake just at dusk, so parked the van and walked down to the shore of the lake and took a couple of photos.

After a quick look at the scene we went back to the van to have a shower. Little did we realise that the ceiling vent in the shower and toilet room had been left partly open during the trip. The result was red dust all over the toilet, shower cubicle and wash basin. Later we found that there was no area in the van that the red dust did not enter; areas that you think were impossible to enter!

The following morning we decided to get down on the lake as soon as we could. Upon arriving at the lake access, we were provided with a blower to blow as much loose red dust off the vehicle as

possible, in order to prevent contamination of the salt surface. Having done this, we were issued with the weekly pass for lake access and we drove the vehicle at the regulated walking pace speed over the rubber mats leading to about hundred metres onto the salt-lake surface. The speed limit on the salt surface was 60km/h for general vehicles. We had decided not to compete our campervan in any record attempts!!!

After settling down on the lake, we then sat down on the chairs outside and in front of the van waiting for speed runs to commence.

The speed run is 12 kilometres allowing for acceleration and deceleration, with three kilometres of it being the official timed section. Our spectator location was approximately halfway along the timed section and about 500 meters from the track for safety reasons.

When internal combustion engine (ICE) vehicles started their run, the sound of the engine (being so loud) was heard long before it became visible and passing us. The announcements were made by local transmissions on VHF radio so we could hear who was about to do their speed run by overhearing our next-door neighbour's radio, as unfortunately, we didn't have one. After each run the speed achieved by the competitor was announced. This speed has to be achieved twice in order to have it officially recognised.



Image: Competitors getting ready and on the way to the start.

There was a variety of different vehicles in the pits including motor bikes with one having an engine that was two cylinders cut from a "Merlin" aircraft engine with a toothed timing belt.



A couple of the powerful ICE bikes.



We found out the anticipated time Eva was going to do her test run in her electric motor bike (**Killa-Joule**) and waited with bated breath to see her run. Finally, we heard the announcement of the start for Eva and looked with intent at any sign of the vehicle coming closer. Being an electric the vehicle it makes no sound so visual sighting is the only way to locate it.



Graeme with the "Killa-Joule" team after a speed run.

Fortunately, it is long and red in colour, making it easier to see. It is quite uncanny to see it virtually flying across the salt at such a high speed with no sound, although if you were really close. you would probably hear a low whirring sound.



Eva's husband Bill, fitting the new design of outrigger stabilising wheel. Note the removed rubber wheel to his right.

After the run we went over to the pits to see the results. Although the vehicle has already done 434k/h on existing pneumatic tyres, they are not capable of the 500k/h and the ultimate 600k/h that Eva is chasing. She therefore had to design a new type of solid tyre. The purpose of this run was to test the new design of the outrigger stabilising wheel. (Refer above picture)



The new design of the drive wheel. Although the outrigger stabiliser wheel is of the same design which proved to be satisfactory the drive wheel requires more design input due to its inadequate traction during the acceleration phase.

This was turned from a single aluminium billet to ensure maximum strength. Perfect concentricity, together with balance is of paramount importance at these high speeds.

Eve and the team were very friendly and no question was too much trouble for them to answer.

She runs this vehicle on Lake Gairdner and the Bonneville salt flats in the U.S. and having spent in excess of \$250,000 so far and building a fast version for next year she said she would go for a crowd funding solution to raised funds.

This is clearly a “bucket list” trip for those who are particularly interested in the development of high-speed electric vehicles. So, for those interested it is fully recommended, just treat as an adventure, due to the outback terrain one needs to travel through.



Eve taking the vehicle out on a slow speed run to test the new design drive wheel. (Full cowlings not needed on this run). It must be said that the engineering expertise that has gone into this vehicle is of a very professional standard.

Eve is a lecturer in engineering at Auckland University, New Zealand.

Branch news:

West Australia:

The WA branch of the AEVA held its annual Electrikhana event on the 9th March. For this year we had the new location, The Canning River Eco Education Centre, or CREEC for short. Our thanks go to the City Of Canning for sponsoring the event and providing the excellent facilities.

While the weather was not kind and drizzle was the name of the game all day, we had an excellent response right through. Our drawcard (and by far the most popular) was the new 2019 Hyundai Ioniq BEV, which was kindly provided by Chris Tassell from AHG. We also had the new 2019 Nissan Leaf 40Kwh (due for release in August 2019) for test drives kindly provided by Nissan Regional WA. Other vehicles on the test circuit include BMW i3 BEV, Renault Zoe 40Kwh and the Tesla Model X 90D.

Plenty of static displays provided great viewing in the grounds of CREEC including a beautifully converted BMW 3 series owned by Kim Cramer and the amazing Sur-Ron electric bikes shown by Eco Commercial.

Special thanks also to Mel Bainbridge from the City Of Canning for suggesting the location and working closely with us. We can see EK 2020 shaping up to be our biggest event to date with many new models released by then and new technologies such as home energy storage becoming mainstream.



WA Electrikhana: bad weather didn't deter the crowds ... much

Victoria:

The first quarter of 2019 has been a busy and exciting one for the Vic branch. Our February meeting attracted a good following to hear about the ins and outs of installing EVSEs at home – be it a stand-alone house or for a strata title unit. Later that month we set-up a display at the *'Smart Building and Living E-xpo'* in Buninyong (about 130km W from Melbourne). Alongside the AEVA, the EV section was well represented with local car dealers bringing an I-Pace and an Ioniq BEV, plus several local and Melbourne business electric bicycle set-up well stocked stands. There were also displays of local member's EVs, plus a couple of Melbourne members came up with their PHEVs (Paul Fallon with his Volt and Michael Klimmer with his BMWi3 Rex). Renault head office also kindly lent us their Twizy quadricycle to display, which attracted a large crowd to the AEVA stand.

Following that, March brought the annual Melbourne EV Expo (run by Renew). Starting with an 'Industry Afternoon' on the Friday covering presentations from various businesses on their EV adoption experiences and attended by fleet managers and other business vehicle decision makers – the event rolled into the second day with the main public Expo on the Saturday. Brilliant weather saw large crowds attending, and a well-staffed AEVA stand was kept VERY busy all day fielding EV questions. Particular thanks go to Brendan Davis for looking after the Twizy and answering the host of questions it triggered from the public! It was also the first day that we displayed the new AEVA Fact Sheets covering the seven available battery electric vehicles currently on sale in Australia, along with the full list of all PHEVs and BEVs on the Australian market. These were very popular – and the unofficial survey they created (100 of each was printed) showed that pricing (and availability) is now what is behind much of EV car interest. (The 'survey' results were that we ran out of the Ioniq sheet by lunch and the BEV/PHEV details list a little after that. The Renault Zoe came in third – having only a few sheets left by the end of the day).

Media EV coverage has stepped up a gear too. The executive of the Vic branch attended a media training session run by the Climate Media Centre just before the EV Expo – and the CMC kindly organised several media appearances in the run-up to the Expo. These included Radio National's 'Life Matters' and a segment filmed on the Expo site (yet to air) on Sky News.

Our March meeting was also well attended with a display and presentation on the Twizy and the history (and safety) of the quadricycle explored.

Next quarter sees the likely set-up of a Ballarat sub-branch to support the rapidly expanding interest in EVs and EVSE installations in that region.



Some shots from the Melbourne EV Expo.

And yes – you are seeing straight: in the middle is a right-hand drive Fiat 500e – winner of the 'best converted EV' award, and on the right, a Renault Twizy.

Tasmania:

The main focus of the Tasmanian branch has been the Electrikhana Hobart 2019 on 2 March. Four dealers brought vehicles (Hyundai, Nissan, BMW and Mitsubishi) plus members cars providing about 30 cars on display or in circulation with drivers/riders. Other displays included e-bikes, mobility scooters, solar/battery vendors, a UTas electric racing car and the State government.

About 400 people attended, with over 300 passengers and drivers, very good considering the day was a record for March, 39.5°C. Sponsors and commercial displays said it was well worth coming and that they would be back for the next one.

Feedback from visitors was overwhelmingly positive with ratings of 4.6 out of 5 on our exit survey. People appreciated: 'good information/learning', 'a chance to drive or be a passenger', 'ability to compare vehicles in one place' and 'the chance to speak to experienced owners'. There were a few minor criticisms but most people said that there was nothing to be improved.

The week of paid radio ads was supplemented by very good media coverage on the day, with ABC interviews and commercial radio broadcasting from the site. Interviews went to air four times an hour over several hours, and newspaper and TV news gave exposure to the event.

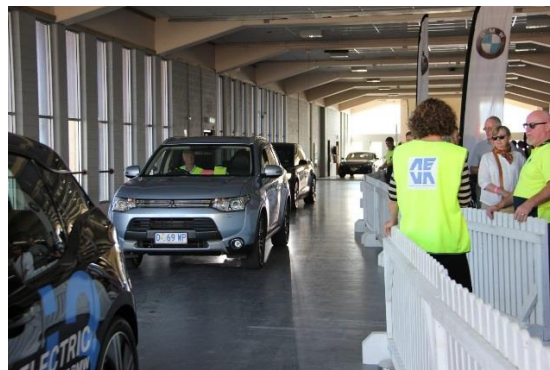
On the exit survey 75% said they would be buying an EV 'this year', 'next year' or 'my next car'. One third were seeking a range of 200 km or less and two thirds 300 km or more.

Other events: AEVA had a good presence at the Devonport Motor show, the week after Electrikhana, a regular event in the north of Tasmania with an EV presence for the past few years that always draws attention.

Dealer EV training begins: AEVA Tas is providing training to car dealers, starting in Hobart, on what they need to know to answer customer questions. There is a four session package, already delivered to one dealership. Other dealers will start training over the next few months as EVs arrive at their dealerships. We will extend this statewide over the next year or so.

Coming up soon:

- March 31 Launceston Motor Show
- April 13 Northwest Ecofest, Ulverstone
- May 2-4 AgFest Dealers have offered their new model EVs for our site.



A couple of images from the Hobart Electrikhana

South Australia:

The start of the year has again seen the branch involved in some very exciting events.

In January we welcomed Wiebe Wakker (Plug Me In Project) to Adelaide, and he was hosted by an AEVA member. Through his local media activities, he raised the profile of electric mobility. He spoke at a special meeting in February to a packed room, regaling us with adventures. The big message though, was that his travels demonstrated the robustness of the technology, and that electric vehicles are really a viable option for the majority of people.

At the evening we also enjoyed a presentation from David Brandenberger who spoke about his journey on his Solartrike II from Europe to Australia. In particular Dave highlighted the versatility of solar energy to power his trike and the spirit of adventure.

Our normal February meeting was held at the local Hyundai dealer, Maughan Thiem. Over 70 people, including a member from Alice Springs, attended, where the Ioniq and Kona (ICE version) were on full display. It gave everyone the opportunity to look closely at the different models and speak to the sales representatives.

We had a very informative presentation from Gary Pearce - Senior Manager, Business Sales, Hyundai Australia (Melbourne), who outlined the company's plans and direction. It is a very exciting future ahead.

All our members enjoyed the event, including the fantastic catering, with everyone coming away with a great appreciation of the commitment Hyundai has for EV adoption in Australia.

The branch had also been working on hosting their Electrikhana event in early April. Unfortunately, due to issues with the planned site, the event had to be postponed. The event will now be held later in the year again in central Adelaide. Planning is moving ahead and support is coming from Carbon Neutral Adelaide, who are promoting EV ownership, using renewable energy, as an important strategy in reducing the city's carbon footprint. We are very excited to be part of the mix towards making Adelaide one of the first carbon neutral cities in the world.



Members at Maughan Thiem Hyundai event.

New South Wales:

Events: AEVA NSW supported no EV Events in Q1, however there has been a lot of behind the scenes activity preparing for the AGM in Sydney later this year. The date has been set for 26th-27th October this year at Olympic Park.

All members of the Sydney Executive attended a course provided by the Climate Council Media Centre on 17th January.

Sydney Branch had a meetings on 13th February, as well as various informal meetups mostly once a week.

Wiebe Wakker and his car, Blue Bandit, finished their marathon trip from Amsterdam in Sydney on 7th April, in the Royal Botanic Gardens, Bennelong Lawn.

Charging infrastructure: NRMA Fastcharge network is progressing – now at 8 of 40 stations (CHAdemo and CCS-2) operational, and more expected soon.

The first of 20 smart street lights, each believed to cost around \$30,000, has been installed in Sydney's Blacktown and offers free – for now – charging points for EVs. Further poles are expected to be rolled out in Blacktown and Canada Bay in Sydney's inner-west. This is a trial by JET Charge, along with Ene.Hub.

NSW has had a state election on 23rd March, which returned the incumbent LNP government. Given the commitment of \$3 million for charging infrastructure, before the election, it will be interesting to see how this is implemented.



Australian Capital Territory:

The Canberra branch Working Group On EV Policy and Advocacy has been busily engaged in conversations with the ACT government in relation to the policies announced last year by the ministers. Much work has gone into drafting a practice note for owners' corporations concerning EV charging at existing properties as well as liaising with government on their commitment to ensure all new strata developments have charging facilities for residents.

The group has also sought clarification as to the status of number plate identification for emergency services and EV incentives such as charging/parking and transit lane use. In a reply from the Minister Rattenbury he stated that the Ministerial Council for Transport and Infrastructure (TIC) had signed off on an amendment regulation to require that all electric and hydrogen vehicles be labelled on Dec. 14 last year and that all that is to be done is the production of the labels. In the interim all effected emergency and public services will be educated about the changes in policy and practice. He also mentioned that the most efficient way to police EV parking and transit lane use is to utilise the existing RTA database which allows police to identify the vehicles' motor type via the number plate.

March is also when the Council of ACT motor clubs holds their annual Shannon's Wheels event and we were happy to have a good selection of EVs at the event. It was noted that the discussions with the public have changed notably and people's awareness and desire to drive an EV has greatly increased.



ACT AEVA member Rene's eBoxer

Queensland:

Members of the Queensland AEVA have been busy designing and building modifications for their cars. Some members were able to bring CAD diagrams and pictures to illustrate the great detail of their modifications, and also gave small talks about the how and why of their design choices. One weekend a workshop was held to replace the batteries in a Mitsubishi iMiEV.

In January were visited by Queensland University of Technology, who explained the future of superconductive motors. It was very interesting to find out what is required to make them work and how efficient they can be.

In March, some members travelled to South Australia to cheer on Eva Håkansson, who was trialling a new design of wheel for her electric racer, KillaJoule.

In preparation for the upcoming EV displays, QLD is working on a theme to create props and informational panels to help with the most commonly asked questions.



Pic: Members replacing the iMiEV pack during the weekend workshop

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

Reminder to State Branches:

AEVA will be placing
another order for AEVA
charging signs shortly.
Could each State/
Territory please let the
National Secretary know
if they require more
signs.
(And if so, how many!)



Member ads:

For Sale:

Member ad:

2013 Mitsubishi iMiEV

Registration FREFUL. Dark maroon, as new cond.
Reg. to Dec 2018. Done 15,000km. Range 115km.
Takata airbags replaced.
Price: \$19,000.
Location: Wangaratta, Vic.
Contact: Frank 0428 568 008,
francisreeves@bigpond.com or Meg 0408 108 963.



Parts:

6.7' ADC motor and 6 kW hub motor

Best offers

Contact: Greg 0411 052582

Electric Holden Camira for sale – complete or as a removed set of parts. (Will not part-out)

Components:

- 9 inch series wound Advanced DC motor
- 144 volt Curtis controller
- 2 x 144 volt switch mode chargers
- 144 to 12 volt DC-DC converter
- vacuum pump
- 2 main contactors, various heavy current leads with brass connectors and amp and volt meters.

Price: \$3000 for entire car or \$3300 for components removed from the car.

Location: Bendigo, Victoria.

Phone: 0477 856 871

WTB: good 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>

iMiEV parts:

Stripping a 2011 of all its running gear (batteries, motor, charger, air con etc) for use in a conversion, so those parts are NOT available. Car was a write-off from a rear end smash. All other parts available

Location: Brisbane

Contact: via PM on AEVA forum.

<http://forums.aeva.asn.au/viewtopic.php?f=34&t=5709>

Non-member ads:

WANTED:

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.

Non-member ads: (Continued)

Mitsubishi iMEV 2013

One elderly owner since new, in showroom condition.

First registered Dec. 2013.

13,500 kms only. Hoping to find a good home for a wonderful little car.

Price: \$16,000 ono

Location: Mandurah WA

Contact: (08) 9534 7324



Corporate member ads:

Hobart BMW:

Mention this ad to receive a complementary 5 year/ 80,000 km BSI service package*.

(*offer expires September 30. 2019. Talk to consultant for T&C's on BSI Package)

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

South Australia:

Meeting day:

Third Wednesday of each month - 7:30pm

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? ☐

INDIVIDUAL MEMBERSHIP

Renewal? ☐

Please tick a box

TYPE (Please tick): ☐ ORDINARY \$40.00 per year
☐ CONCESSION \$20.00 per year

FIRST NAME:		LAST NAME:	
-------------	--	------------	--

CORPORATE MEMBERSHIP TAX INVOICE

☐ SUBSCRIPTION: \$100.00 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.