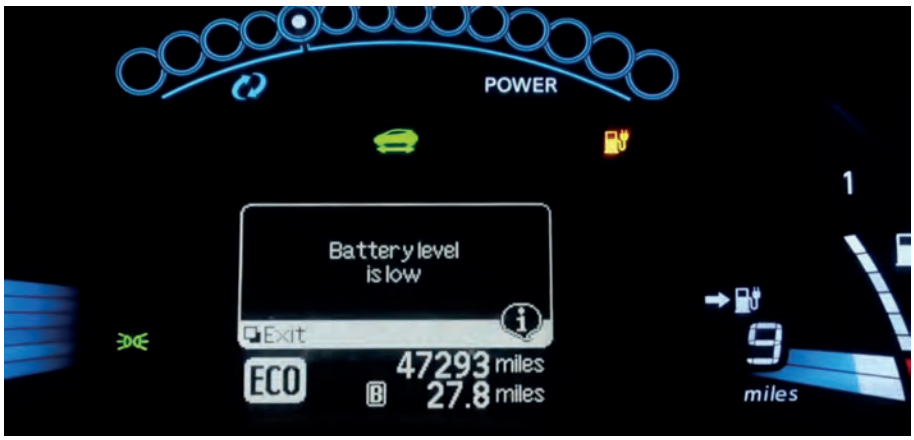
EV talk

NZ'S NEWS SOURCE FOR ELECTRIC, INTELLIGENT AND AUTONOMOUS TRANSPORTATION

MONTHLY MAGAZINE OF EVTALK.CO.NZ – VOLUME 2 | ISSUE 5 | JANUARY 2018



Import breakthrough for EV batteries

A breakthrough has come in getting new and used EV batteries into New Zealand.

A new process that meets international dangerous goods regulations and provides documentation for some battery types has been established by the Imported Motor Vehicle Industry Association (VIA).


Malcolm Yorston

It will allow shipping via sea of mainly Nissan Leaf batteries from Japan with the first container load probably due around the second quarter of this year, VIA technical manager Malcolm Yorston says.

The batteries are expected to be competitively priced.

Yorston says they have to be sourced, checked and packaged according to requirements, and will take about three weeks to ship here once a vessel is specified.

"So the lead time could be about three months."

The VIA's breakthrough will allay concerns about supply and battery deterioration and range among EV owners and those refurbishing EV batteries here, he says.

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INSIDE

First new generation Leaf lands

A third generation Nissan Leaf 40kWh G 2018 all-electric car offered by EV Central in Taupo has attracted considerable interest.

Nearly 100 people added it to their watch list on Trade Me Motors alone.

The phone has been running hot for EV Central EV manager Richard Blakeney-Williams who had 10 calls in one day.

He says he anticipated high customer interest would come after bidding online for the car at auction in Japan.

The new black five-door hatchback has barely 100km on the clock and is priced at $64,990.

It's the only 40kWh Leaf in the country, and has a range around 300km, EV Central says. Most Leafs here are about 30kWh or 24kWh with ranges of about 170km to 130km respectively.

Blakeney-Williams says this Leaf is a "massive upgrade" over the previous model, the 110kW motor producing 320Nm of torque.

"You will be the first person in possibly the Southern Hemisphere to own this car," the company's website says.

The highest Model G spec has all the extras optioned. Features include 10 airbags, an upgraded

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EVtalk

EVtalk Magazine is published by Auto Media Group 8/152 Quay Street, Limited. P.O. Box 10 50 10, Auckland City, 1030. Ph. 09 309 2444.

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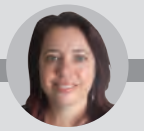

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Printed by: Alpine Printers.

automedia GROUP LIMITED

evtalk.co.nz EVtalk
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autotalk.co.nz autotalk
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DRIVE ELECTRIC

New Zealand's best-selling new EV – the Hyundai Ioniq.

Massive year for Hyundai's Ioniq

Hyundai's award-winning Ioniq is rapidly gaining popularity in New Zealand after being introduced here new earlier last year.

About 250 have sold in New Zealand, 206 of them the pure electric model, Hyundai New Zealand general manager **Andy Sinclair** says.

And demand is growing month by month, he says.

"We're confident of the Ioniq's future here and are excited about the growth of the electric vehicle category in New Zealand."

The Ioniq has taken the awards circuit by storm.

Third overall at the New Zealand Car of the Year awards where it was the EV/plug-in hybrid category winner, the Ioniq was the supreme winner at the Women's World Car of the Year 2017, Company Vehicle Small Business Car of the Year, AMI-New Zealand Autocar Electric Car of the Year, Driven's Green Car of the Year, Stuff's top plug-in Car of the Year and Automotive News NZ Car of the Year. It also won a Green Design Award in the United States.

It is among the first cars in the world to have separate hybrid, full electric and plug-in hybrid powertrains within one body type. The plug-in hybrid arrived here just before Christmas.

"It's been a massive year for the Ioniq," Sinclair says.

It's the country's best-selling new electric vehicle and many of the new cars brought in during November have been grabbed by car share firm Yoogo in Christchurch.

Prices start from $46,990 for the hybrid, with a three-year factory warranty included and the high voltage battery covered for ten years from registration.

It has a range of around 210km although Hyundai New Zealand says it has driven it 238km from Mt Maunganui to SkyCity in Auckland on one charge.

Customers like the fact that the pure electric Ioniq is cheap to run and service, is quiet and smooth and that it's emissions free while being stylish.

It has plenty of zip too, getting up to 100kmh in about nine seconds.

The model mix is available with a variety of accessories and extras, with an optional one for the all-electric Ioniq being a fast charger wall box which can boost it to full charge in about four or five hours.

That compares with about 16-18 hours charging on a normal household plug overnight when EV owners usually opt for cheaper power rates.

Hyundai is set to make a further splash here in 2018.

Taking advantage of the growing popularity in SUVs and electrics, the Hyundai Kona SUV is expected in New Zealand towards the end of this year. It's reported to have a battery pack exceeding 50kWh with a real-world range of more than 350km.

Visit **www.hyundai.co.nz/IONIQ** for more information. ■

EV training in the frame

Official training standards for technicians working on electric vehicles are being developed by MITO.

A $95,000 grant from the Government's Low Emission Vehicles Contestable Fund will help pay for the development of a qualification framework for the safe inspection, servicing and repair of EVs in New Zealand.

"MITO is absolutely delighted to have received this funding," chief executive Janet Lane says.

"The fund encourages innovation and investment to accelerate the uptake of EV and low-emission vehicles in New Zealand.

"Critical to this is developing the human infrastructure required for the safe inspection, servicing and repair of EV vehicles, balancing the required physical infrastructure.

"We are sincerely grateful for this co-investment."

The framework, which MITO is required to co-fund, will enable industry-wide access to training provision and qualifications for EVs by 2019.

"This project will benefit the public," Lane says.

"It will ensure consumers have choice when purchasing inspection, servicing and repair services for their EV which in turn will drive value for money and increase consumer confidence."

In total, $3.74 million has been given out by the Government for the 20 EV projects it decided to fund.

The successful applicants will also spend more the $4 million funding their half of the projects. ■

Pet taxi up and running

It's not just humans getting a taxi ride with Green Cabs in Wellington.

The latest addition to the electric fleet has been taking people and their furry friends silently and smoothly all over the region for the past month.

Carey Packer

They range from quick trips to the vet to a couple who decided not to drive after visiting friends for Christmas drinks but forgot dog leads for their pets. They were wondering how to get home when a friend let them know of the Green Cabs "pet friendly" van.

The idea for the pet taxi came from an animal-loving friend of Green Cabs who saw a need for both people and pets to have the option of safely travelling together.

He ordered a Nissan e-NV200 100% electric van from Japan and introduced it into the Green Cabs fleet for a year's trial.

Green Cabs paid for the fit-out as a taxi with all the latest safety equipment, cameras and GPS tracking, then the search was on for the ideal driver.

Carey Packer showed a passion right from the start. He loves both driving the van and spreading the word about the new initiative.

Human and animal passengers enjoy the smooth, quiet ride the van delivers.

Green Cabs has a mission to reduce emissions for two and four-legged inhabitants of the planet so the e-NV200 van was the obvious choice for the service.

It's the seventh EV introduced into the Green Cabs fleet, joining other full electrics such as the Nissan Leaf and Hyundai Ioniq.

While the e-NV200 van is slightly more expensive to run than the Leaf on which it is based, running and maintenance costs should be less than a quarter of the diesel van equivalent, with the benefit of no nasty fumes, the company says.

Green Cabs believes it is the first 100% electric pet friendly taxi service in New Zealand.

No doubt it's a forerunner. ■

Pet taxi passengers ready for a quiet ride in Wellington.

Green Cabs' "pet friendly" transport, a Nissan e-NV200 all-electric van, could be the first of its kind in New Zealand.

EV era on the way

China is leading the charge on electric vehicles (EVs) and new players in the market predict huge changes will come quickly.

"The era of electric vehicles is on the way," is how **Steven Yao** of FDG Electric Vehicles describes it.

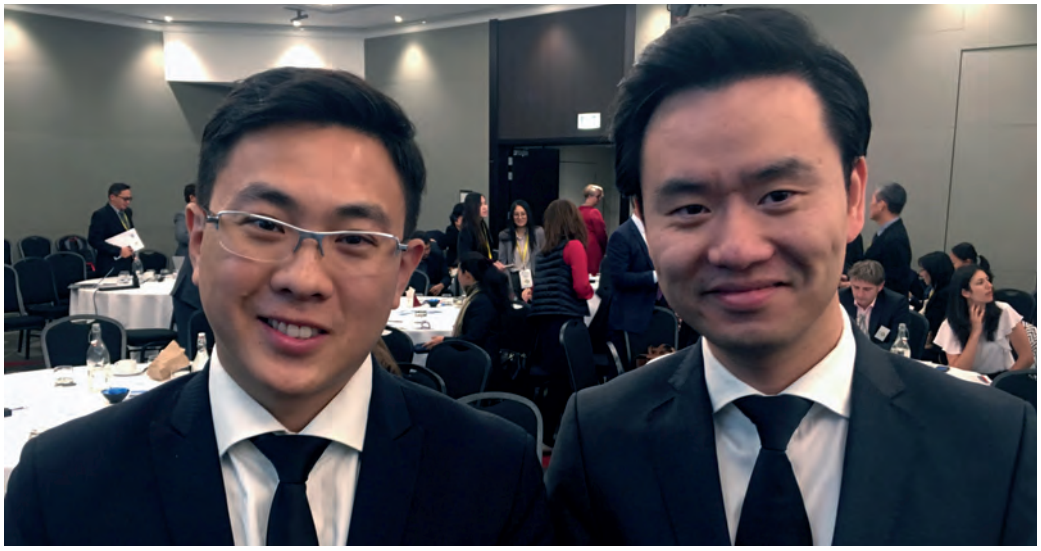
EVs will go from infiltration to replacement in the automotive market in just a few years, he says.

Policies to encourage EV development and uptake began in China around 2013.

The FDG executive says in 2015 different regions were producing their own policies, especially where there was heavy urban congestion and pollution.

Subsidies that helped EV makers to control costs will go by 2019-20 with a "Dual-Credit Scheme" coming into force around 2019, Yao says.

The scheme will provide credits for new energy vehicles and for average fuel consumption. Enterprises showing positive credits will be able to exchange credits with those having negative credit until the latter improve.



Steven Yao, left, and fellow FDG associate Fred Shang.

Yao says the scheme will increase relative production costs for traditional OEMs, motivating them to produce EVs in China.

It will also expand the EV industry chain, increase the economic scale of EVs and lay the foundation for the "EV ecosystem".

FDG's example of the ecosystem provides an "all-in-one solution" around charging facilities, power reserve facilities, fleet management and the financial sector, he says.

The scheme should stimulate the development of batteries producing more power and greater range, and possibly other power modes.

Yao also produced figures at November's APEC's EV and hydrogen technology policy workshop in Wellington showing huge jumps in EV monthly production and sales in China.

He likened the trend to the smartphone development which went from market infiltration to replacement within a few years.

FDG is also working on a "last mile" solution to provide vans (panel and shuttle), a box truck, mini shuttle bus and a city bus.

Meanwhile, the company recently signed a strategic framework agreement with COSCO Shipping Lines to tap into the commercial EV market. Both parties have agreed to establishing long-term strategic partnerships in areas such as shipping, logistics and overseas development.

Visit **www.fdgev.com/en** for more information. ■

Funding boost for commercial EVs

Support for heavy and light commercial EVs have featured prominently in the latest round of grants from the Energy Efficiency and Conservation Authority (EECA).

Twenty organisations will receive funding from EECA's Low Emission Vehicles Contestable Fund for projects that support the uptake of EVs, on the condition that they match or exceed EECA's contribution.

Coda Group has received $500,000 to build an electric freight shuttle to transport dairy products from Fonterra's Te Rapa dairy factory to its Crawford St freight hub in Hamilton.

It will be able to transport 58 tonnes and operate seven days a week during peak season.

"Projects like this are vital to show others in the heavy logistics and transport industry that electric trucks are not only viable but have very low running costs," energy and resources minister **Megan Woods** says.

Tranzit Group will receive $397,500 for the installation of a permanent fast-charge unit that allows buses to "drive through" fast-charge stations for buses at the Wellington Railway Station bus interchange.

Four buses will be able to

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EVolution is gathering speed

BY DRIVE ELECTRIC CHAIRMAN MARK GILBERT

The numbers count but was it good enough?

We now have more than 6000 EVs on our roads. That's quite incredible - hockey stick growth, in fact, even if you strip out the NZ Post Paxters.

The former National Government's target was 64,000 units by 2021 so there's still a big challenge facing those that set the target.

But with four full years to go and most OEM car makers signalling a strong shift to electric propulsion of some sort, it's definitely do-able.

Would we predict the new Government will be bolder with its expectations?

Mark Gilbert

Many companies that have put their corporate toe into the electric current will hopefully also be looking at total cost of ownership models, which should favour an EV over its fossil-fuelled equivalent.

Fleets are expected to change to EVs if the 64,000 target is to be achieved. And if they do, that target will be obliterated.

In fact, I think it will be achieved earlier - I base this not so much on the **Tony Seba** modelling but on the fact that a lot of work has been done by the Energy Efficiency and Conservation Authority (EECA) and Drive Electric to educate fleet managers and company executives about the benefits and opportunities of EVs.

This education has resulted in low volume uptake but we believe it will accelerate over the next two years.

The mere fact the new Government has issued instructions that the Government fleet must be primarily electric by 2025 should push those with the fleet responsibility to get on the wave early.

Why wait? Mercury Energy's fleet is 70% electric now.

Transitioning New Zealand's light vehicle fleet to electric vehicles won't happen overnight but the change is already underway and the country needs to be prepared for it.

That involves investigating how to deal with issues that will disrupt the status quo. For example, the changes in terms of place-making in our cities.

There is talk around this but no clear or consistent action – apart, perhaps, from Christchurch which is about to roll out charging infrastructure on a commercial basis.

Commercial charging - be it rapid, fast or slow - needs to become more visible around our cities and highways. Destination charging also needs to be managed.

It's all happening in a very ad hoc manner at the moment, and is usually based on funding from the EECA low emission vehicles contestable fund. Not the best way to get the best outcomes - geographically at least.

Some leadership from our main cities and the NZ Transport Agency in getting a few charging infrastructure public-private partnerships underway could help the country really advance its charging network.

A number of private businesses are up for this opportunity so hopefully it's seized on

And making sure people's homes are safe for EV charging is a must. This opportunity needs to be included in all housing developments – future-proofing new houses for the wave of EVs they will garage.

WorkSafe has a role in making sure that charging infrastructure installed in New Zealand houses and commercial buildings is compliant and, ideally, smart. Some are, most are not - this is a scary space and needs to be addressed sooner rather than later.

New Zealand is a technology taker so it also needs to look at the bigger global picture. Many other countries, such as the United Kingdom, France, Germany and Japan, have indicated they will reduce fossil fuel use by 2030 (China even earlier, it appears).

New Zealand needs to take a stance so the automotive industry can plan for the future and consumers don't get caught with vehicles that have lost most of their value.

For example, electric autonomous vehicles (AVs) are likely to be running in London from 2021. And as the UK is a right-hand drive market, it won't take long for them to arrive in New Zealand.

So the Ministry of Transport has some work to do to lay out a road map, for both industry and consumers, to avoid the vaporising of the value of every Kiwi's first or second major purchase-their car.

Not-for-profit group Drive Electric recently outlined five key priorities it is encouraging the Government to support as New Zealand moves towards an EV future.

They are:

Project Switch: It encourages the Government to offer companies fringe benefit tax relief on new EVs for a period to accelerate uptake in corporate fleets.

Home charging infrastructure: Regulations or requirements around safety ratings for car chargers being installed in homes (WorkSafe approval programme); checking also the charging capability (home warrant of fitness) to ensure future-proofing of home

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*The 20% discount is applied against your standard Mercury variable electricity price between 11pm – 7am (standard electricity prices will apply during other hours). See full terms at mercury.co.nz/ev.

Energy made Wonderful | Mercury

East Cape - or bust?

Can you travel in an electric vehicle (EV) around one of the most beautiful, remote and rarely visited areas in the North Island, the historic East Cape?

It's a 369km journey from Whakatane to Gisborne and another 216km if you want to continue on to Napier - 585km in all.

The roads are great and the scenery absolutely stunning but what about "range anxiety" in the average EV? Can it be done now?

The answer is a typically Kiwi: "yeah, nah".

"Yeah" because it can be done now if you're prepared to top up your charge at one of the motorcamps along the way.

"Nah" because although it might be a bit challenging now, in a few months Eastland Group will have completed the installation of another three chargers. With the four it already has in place, that will make the 585km a doddle.

Eastland Group is the Eastland Community Trust-owned company that runs facilities such as Gisborne Airport, Eastland Port and Eastland Network, the region's electricity lines company.

As part of its commitment to EVs, Eastland Group recently opened Electric Village, the region's one-stop-shop for information and advice about all things electric.

Eastland is determined to make the remote East Cape part of its region accessible to EVs to boost tourism and encourage local uptake.

There are two ways to travel by car from Opotiki to Gisborne.

The quick way is a 142km trip via the Waioeka Gorge with fast-charging facilities available at Matawai - the halfway point - thanks to Eastland Group.

But the REAL Opotiki-to-Gisborne route is the 326km scenic coastal road around the East Cape.

When *EVtalk's* publisher and business manager drove this route over five days recently, they didn't use an EV because of the amount of gear they needed to lug around. Instead, they left the Nissan Leaf EV safely tucked up in its home on Waiheke Island.

But they were able to confirm that when Eastland Group has its new 25kWh charger operating at Te Araroa, the whole spectacular journey will be very do-able in a bog-standard EV.

EV chargers around the East Coast, installed by Unison and the Eastland Group.

Distance between chargers (excluding motorcamps) will then be:

- Whakatane to Opotiki: 43km
- Opotiki to Te Kaha: 67km
- Te Kaha to Te Araroa: 92km
- Te Araroa to Tolaga Bay: 114km
- Tolaga Bay to Gisborne: 54km
- Gisborne to Wairoa: 98km (and there will soon be another Eastland Group 25kWh charger at Morere, some 41km before Wairoa)
- Wairoa to Napier: 118 km (again, another charger is coming at Putorino, around 58km out of Wairoa).

Few Kiwis seem to have ever been around the East Cape - a great pity.

Now that they will soon be able to enjoy this remote region in a quiet, comfortable EV, there's no excuse for not making the "trip of a lifetime". ■

Publisher Vern Whitehead and business manager Rachel Hadfield of EVtalk at the Wairoa charger.

Is Nissan's new Leaf a game-changer?

There is no argument that the first Nissan Leaf - both "gen 1" and "gen 2" - have done more for the shift to electric vehicles than any other model out there.

Tesla might be the hero of the EV fleet but Nissan has more bums on seats than anyone else.

Why? It might not have groundbreaking range but it is arguably affordable, reliable, practical and acceptable – fundamentally, it is a simple family hatchback that doesn't scare buyers as much as the unique BMW i3.

Nissan revealed the new model - dubbed "ZE1" - late last year.

And although the distributor is showing no signs of getting back into the New Zealand EV market on its own, ever-resourceful import traders have already jumped into the game.

The first went on sale on Trade Me this month and the second - imported from Japan by Taupo-based Drive EV managing director **Steve Greenwood** - quickly followed.

Drive EV's car has not headed straight for sale. In a market-building exercise, Greenwood has had it signwritten and has driven it around the North Island to be checked out by enthusiasts.

He already has a handful of the cars on order for customers. Prices are in the mid-$60,000 range.

"The reason for the tour was to promote Drive EV, give the tech people in the EV community the upper hand to learn about this model early on, and promote EV awareness and uptake to newcomers."

He also threw the keys - before he had driven it himself - to the team at *EVtalk*.

More battery, more power, more technology

Let's run the numbers.

The battery pack grows in size to 40kWh, increasing the range to between 240km and 400km depending on what you read.

Pushing the Leaf reasonably hard, we averaged 7.5km per kW, making 300km entirely feasible.

A 60kWh battery pack option is likely to be released later this year should you need more range but it will come at a higher price.

Power output is up as well, rising from 80kW to 110kW, and 280Nm to 380Nm.

The transmission shifter remains the same ball-and-button style owners of the existing Leaf love.

The change in driving comes in the form of the e-Pedal system, which drastically increases regenerative braking when you lift off the throttle.

Similar to the standard setup in the i3, this encourages one-foot driving and avoids the use of the energy-sapping brake pedal.

The onboard charger is now 6.6kW as standard and a quick run on a ChargeNet

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The Hong Kong series was the first top three finish for Evans and his team.

Charged up for electric racing

Mitch Evans has a motor racing pedigree stretching back to grandfather Laurie and including dad Owen and brother Simon.

But Mitch is setting the pace in a new field – Formula E or electric car racing.

The 23-year-old Kiwi finished third in the recent Hong Kong series and his goal is to win at least one.

Evans was selected for the Jaguar Racing Team in 2016 and has signed on for the 2018 season. He thinks the electric cars are far more competitive than last time.

Living in London close to the team's headquarters since 2011, Evans was back in New Zealand until January, visiting his parents in Lynfield, West Auckland, and fulfilling media and other commitments.

He'll return for a fortnight's holiday in February, probably his last visit here for the rest of the year – unless a Formula E round comes to New Zealand in that time, as suggested.

Racing events like the third E-Prix of the season on January 13 in Marrakech, simulator training and a multitude of other racing related work mean there's little downtime for Evans.

Mitch Evans

Why Formula E?

Evans was racing in GP2 events but says reaching the top echelon can be "brutal" and involves a lot of hard work and money. There's a fair amount of politics too.

"There's a lot of hurdles."

Family and Giltrap Group support have helped him to get where he is now.

Evans sees a big future in electric car racing. It's growing rapidly in popularity and likely to increase as EVs become more mainstream, he says.

"Soon nearly everyone will be driving them," he says.

He himself hopes to be driving a Jaguar I-Pace this year.

He's the first Kiwi driver to switch to Formula E, something he didn't really expect.

It took a while to adapt to the lack of noise and a different style of racing where drivers have to conserve battery energy to last the distance.

They also swap to a second fully charged car half-way through each race. Braking and coasting help conserve energy and information on energy use is fed to the driver throughout.

An extra 20kW of power can be provided for about five seconds to the top three drivers in their second car as a result of FanBoost voting - where spectators vote for their preferred drivers on social media. It's unlikely to greatly affect a race outcome but it's early days.

Formula E racing in the new season will see McLaren supplying batteries that should have enough power to last a full race.

The electric series is also getting support from several of the world's biggest automotive brands like BMW, Mercedes-Benz and Porsche, with more coming on board.

Evans has an interesting family background. The name is Welsh, of course, with his paternal ancestors coming from there and the United Kingdom. Dad **Owen** is a second-generation Kiwi.

Mum **Tracee** has Croatian/Maori/Welsh/English heritage and relatives on that side of the family include rugby league legend **Stacey Jones** and MP **Shane Jones**.

Evans' grandfather Laurie passed his passion for motorsport on to Owen who established some major achievements.

The managing director of Evans European quality panel and paint repairs in Onehunga, Auckland, Owen drove Porsches and saloons and even qualified for Le Mans in 1996.

He won the 1993 Nissan Mobil 500 Wellington street race in a Porsche 911 Carrera RS and was second that year in the Pukekohe 300.

He had 21 podium finishes in 37 races.

A crash while setting a 349kmh land speed record in New Zealand in 1996 nearly ended his life.

Mitch's brother **Simon** raced V8s and is now involved in endurance racing.

"So I had no choice really," Mitch laughs.

Owen's "very proud" of

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Mitch's achievements and follows both sons' racing when he can, often travelling to their events.

Driving for automotive manufacturers is "full on", virtually a 24/7 job, Owen says.

Like many top racers, Mitch started in karting at the age of 10 and quickly climbed the rankings.

He went to Formula First in 2007 and contested the full New Zealand championship in 2007-8.

It was during his time in the winter Formula Ford series that Owen really recognised Mitch's motorsport potential.

Mitch had done well in qualifying but a transponder failed so he started from the back of the grid.

"I said to him 'don't worry about it, it's probably better to start at the back'. Then, bugger me, he won the race, against some of the top Formula Ford drivers too.

"I said to Richard Giltrap (also watching), 'I think he's got the goods for motorsport'."

Mitch went on to win seven out of 12 events and take the championship, at just 13 years old.

Panasonic Jaguar Racing drivers Nelson Piquet Jnr, left, and Mitch Evans.

In 2009 he contested the Australian Formula Ford championship, coming second in the Victoria state championship. He became the youngest round winner at Sandown Raceway and scored victories in other events too.

Drafted into the BRM team in Australian Formula 3, Evans again proved his worth. He competed there and in New Zealand before being signed in 2011 to race in Europe in GP3, then moving to GP2 where he continued until signing to Formula E.

"Mitch is very dedicated," says Owen, who also believes electric racing is the future.

"In four or five years many companies won't want to be associated with Formula 1 because they want to look green.

"They cannot afford to sponsor anything that is not helping the environment."

Owen's attended several Formula E events and says they are developing a huge following.

"It's a whole new audience. Electric racing engages people, with fans able to be involved (like FanBoost). So many things that they do bring people to the events."

Owen is interested in electric cars himself and is devoting part of his business to them.

"We're geared up for electric. This is the way the world is going."

Formula E events test electric cars to allow manufacturers to improve their road versions, he says.

Meanwhile, Mitch will have more chances to test his mettle after the Marrakech race with Formula E events at Santiago, Mexico City, Punta del Este, Rome, Paris, Berlin, Zurich, New York and the final event in Montreal on July 28 and 29.

Then there's the December 2018 start of the Jaguar I-Pace eTrophy race series.

The first Jaguar team for its new global electric racing series now includes Rahal Letterman Lanigan Racing, led by team principal and racing legend Bobby Rahal, a three-time **IndyCar** Champion and Indianapolis 500 winner.

The world's first production-based electric vehicle race series starts in December this year and is a support series to the FIA Formula E Championship.

It's the first to be based on a street-legal production battery electric vehicle. Races will take place the same weekend and on the same city street circuits throughout the 2018-19 season.

The series will feature 20 Jaguar I-Pace eTrophy race cars and offers teams the chance to showcase their driving talent and electric performance while competing on the world stage in zero-emissions motorsport.

Jaguar Land Rover's commitment to electric racing is in line with its strategy that from 2020 all new Jaguar Land Rover vehicles will have an electrified/electric powertrain.

Mitch Evans in the Jaguar I-Type 2 all-electric Formula E race car.

Funding boost for commercial EVs

Continued from page 5

be charged simultaneously.

Tranzit is introducing ten battery electric buses to central Wellington routes in the middle of this year, with 22 more over the following three years.

On the light commercial front, Tourism Holdings has received funding to build an electric campervan.

Funding awarded to Wellington's Zealandia Karori Sanctuary Trust will go towards developing EV visitor shuttles.

Kaitake Farm in Taranaki intends using its funding to purchase an electric van for delivering organic vegetables in the area.

"The projects we are funding show there's an EV for almost every job or use in New Zealand, be it delivering fruit and veg or taking a holiday," Woods says.

Other initiatives include a raft of charging projects and $95,000 for MITO to develop an EV servicing and repair qualifications framework.

Projects such as Foodstuff's plan to put chargers at its New World and Pak' n Save supermarkets aim to fill gaps in the charging network.

Locations like **Kawerau**, **Matamata**, **National Park**, and **Pirongia** in the north and **Hokitika**, **Motueka**, **Westport**, **Reefton** and **Blenheim** in the south will benefit.

POWER DEALS FOR EV USERS

Company	Energy Deals	Where	Cost to charge LEAF*
meridian	**Electric Car Plan:** Super-low night rates that start at the earlier time of 9pm, until 7am daily. Available for your entire home's electricity needs. Guaranteed for 3 years and includes 15% PPD.	Auckland Wellington Christchurch	$4.49 $3.79 $2.55
Mercury	**Plug-in Vehicle Fuel Package:** Includes 20% off your entire home's electricity costs between 11pm – 7am every day, one year fixed term, 10% PPD is included in these calculations.	Auckland Wellington Christchurch	$5.21 $5.08 $5.03
Contact Energy	**Freedom plan:** Excellent night rates, no fixed term, 20% PPD has been included, check if the matching daytime kWh rate will affect your overall bill.	Auckland Wellington Christchurch	$5.33 $4.44 $3.10
Ecotricity	**Low Solar:** Low Usage plan for EVs & can buy back solar energy, no fixed term	Auckland Wellington Christchurch	$6.15 $4.39 $5.34
Electric Kiwi	**One Plan with Hour of Power:** Free hour of off-peak power daily – included and calculated to be 2 kWh for charging at 8 amps. Note: this could be different depending on your designated Hour of Power.	Auckland Wellington Christchurch	$5.82 $5.85 $6.05
Flick Electric	**Wholesale rates plus their Flick Fee:** No fixed term, EV rate in Wellington. Calculated using an average spot price of 5.7c per kWh.	Auckland Wellington Christchurch	$5.26 # $3.23 # $3.62 #
Genesis Energy	**Classic plan:** Excellent night rates, no fixed term, 10% PPD has been included, check if the matching daytime kWh rate will affect your overall bill.	Auckland Wellington Christchurch	$6.01 $3.73 $3.29
Paua to the People	**Cheap As Plan with EV night rates:** No fixed term. Calculated using an average spot price of 5.7c per kWh	Wellington	$2.96 #

*Approximate cost for a full charge of a 24kWh LEAF in the 3 largest centres of NZ.

Please note that rates vary around New Zealand – the above costs were from Mt Wellington in Auckland, Northland in Wellington and Linwood in Christchurch. They can also depend on your meter type & the company you use. Prices vary at the different times of the day eg charging during the day may have higher costs. Flick Electric in Christchurch has higher daytime rates in Winter due to variable pricing from the lines company. The rates we have used above were calculated in July 2017 using a low user cost, overnight rates, includes prompt payment discounts (PPD) if available and GST, excludes daily charge. Please note that prices were correct at time of publishing and are subject to change. Please contact us if you would like any clarification.

Spot prices can go up and down as they are affected by demand in energy and weather conditions. We have calculated these prices using the average spot price of 5.7c per kWh at night over the last 7 years, however this is no guarantee of current or future prices.

Find your new EVs here!

EV FRANCHISE DEALER LIST

BMW

AUCKLAND CITY BMW
7-15 Great South Road
Newmarket Auckland 1051

WINGER BMW
138 Hutt Road, Kaiwharawhara,
Wellington 6035

CHRISTCHURCH BMW
30 Manchester St, Christchurch
Central, Christchurch 8011

MITSUBISHI

ARCHIBALD MOTORS
143 Commerce Street, KAITAIA

PACIFIC MOTOR GROUP
70 Porowini Avenue,
WHANGAREI

SIMON LUCAS NORTH SHORE
Cnr Wairau & Target Road,
Takapuna, AUCKLAND

ANDREW SIMMS MITSUBISHI
500 Broadway, Newmarket,
AUCKLAND

AUCKLAND MOTORS MITSUBISHI
686 Great South Road,
MANUKAU CITY

ROGER GILL MITSUBISHI
Corner Manukau & Kitchener
Roads, Pukekohe, AUCKLAND

SAUNDERS MITSUBISHI
201 Pollen Street, THAMES

INGHAM MITSUBISHI
450 Te Rapa Road, HAMILTON

BAY CITY MITSUBISHI
140 Cameron Road, TAURANGA

PIAKO MITSUBISHI
254-256 Fenton Street,
ROTORUA

WINGS & WHEELS
85 Heu Heu Street, TAUPO

W R PHILLIPS
156-158 Devon Street West,
New Plymouth

WAYNE KIRK MITSUBISHI
19 Thackeray St, NAPIER

MCVERRY CRAWFORD MITSUBISHI
29 Kimbolton Road, FEILDING

MCVERRY CRAWFORD MITSUBISHI
2 Princess Street,
Palmerston North

WAIRARAPA MITSUBISHI
313 Queen Street, MASTERTON

BRENDAN FOOT MITSUBISHI
10 Railway Avenue, HUTT CITY

WELLINGTON MITSUBISHI
75-78 Cambridge Terrace,
WELLINGTON

HOUSTON MITSUBISHI
168 Rutherford Street, NELSON

HOUSTON MOTORS
42 Scott Street, BLENHEIM

CHRISTCHURCH MITSUBISHI
Cnr St Asaph & Montreal Streets,
CHRISTCHURCH

CAROLINE MITSUBISHI
23-27 Barnard Street,
TIMARU 7910

STEPHEN DUFF MOTORS
280 Andersons Bay Rd, South
Dunedin, Dunedin 9012

BALCLUTHA MITSUBISHI
79 Clyde St, Balclutha 9230

SOUTHERN MITSUBISHI
209-221 Dee Street, Invercargill
176 Dee Street, Invercargill

NEW EV CAR TYPES

MAKE	MODEL	TYPE	PRICING RRP est.	APPROX RANGE KMS
Tesla	Model S	BEV	$121,395	350 - 540 km
	Model X	BEV	$129,145	380 - 475 km
Renault	Zoe 22 kwh	BEV	$68,900	220 km
	Zoe 40 kWh	BEV	$68,900	300 km
	Kangoo van	BEV	$74,990	160 km
Hyundai	Ioniq	BEV	$59,990	220 km
	Ioniq Elite	BEV	$65,990	220 km
Volkswagen	e-Golf	BEV	$61,990	220 km
BMW	i3 - Full Electric	BEV	$76,900	200 km
	i3s	BEV	$84,300	200 km
	i3 - Range Extender	PHEV	$84,500	200 km + 130 km
	i3s - REX	PHEV	$91,900	200 km + 130 km
	i8	PHEV	$281,200	37 km + 400 km
	225xe	PHEV	$69,800	41 km + 550 km
	330e	PHEV	$91,600	40 km + 550 km
	530e	PHEV	$136,400	50 km + 600 km
	740e	PHEV	$202,700	48 km + 550 km
	X5 xDrive40e	PHEV	$152,700	30 km + 800 km
Mini	Countryman	PHEV	$59,900	30km + 500 km
Mitsubishi	Outlander	PHEV	$60,990	50 km + 500 km
Audi	A3 Sportback e-tron	PHEV	$69,900	45 km + 600 km
	Q7 e-tron	PHEV	$158,400	54 km + 800 km
Mercedes Benz	C350 e Sedan	PHEV	$96,400	31 km + 700 km
	C350 e Estate	PHEV	$99,400	31 km + 700 km
	E350 e Sedan	PHEV	$143,500	30 km + 600 km
	GLE500 e	PHEV	$149,900	30 km + 700 km
	S500 e	PHEV	$255,000	30 km + 700 km
Porsche	Cayenne S e-hybrid	PHEV	$177,800	20 km + 750 km
	Panamera Turbo S e-hybrid	PHEV	$428,400	30 km + 750 km
Volvo	XC90 T8	PHEV	$134,900	44 km + 600 km
	XC60	PHEV	$94,900	45 km + 600 km

BEV - Battery Electric Vehicle
PHEV - Plug-in Hybrid Electric Vehicle

Find your

USED EV CAR TYPES

MAKE	MODEL	TYPE	PRICING RRP EST.	APPROX RANGE KMS
Nissan	LEAF Generation 1	BEV	$8.7k - $16k	120 km
	LEAF Gen 2 - 24 kWh battery	BEV	$15.5k - $28k	135 km
	LEAF Gen 2 - 30 kWh battery	BEV	$27K - $41k	180 km
	LEAF Gen 3 - 40 kWh battery	BEV	$65k	250 km
	e-NV200 van	BEV	$18.5k - $32k	140 km
BMW	i3 Full Electric	BEV	$38k - $88k	200 km
Mitsubishi	i-Miev	BEV	$8.5k - $15k	100 km
	B-Miev Van	BEV	$11k	100 km
Renault	Zoe 22 kWh	BEV	$30k - $38k	220 km
	Zoe 40 kWh	BEV	$40k - $48k	300 km
Hyundai	Ioniq	BEV	$51k - $57k	220 km
	Ioniq Elite	BEV	$51k - $66k	220 km
Kia	Soul EV	BEV	$37k - $38k	150 km
Volkswagon	e-Golf (2017)	BEV	$61k - $63k	200 km
Tesla	S 75	BEV	$118k	350 km
	S P85	BEV	$115k	350 km
	S 90D	BEV	$169k	420 km
	X 90D	BEV	$170k	410 km
Smart	Fortwo	BEV	$20k	100 km
Mercedes Benz	B250 e	BEV	$48k - $53k	140 km
	C350 e Sedan	PHEV	$65k	31 km + 700 km
	GLE500	PHEV	$150k	30 km + 700 km
	E350 e	PHEV	$120k	30 km + 600 km
	S500 e	PHEV	$135k	30 km + 700 km
Toyota	Plug-in Prius	PHEV	$17k - $36k	26 km + 800 km
Audi	A3 Sportback E-Tron	PHEV	$55k - $65k	45 km + 600 km
	Q7 e-tron	PHEV	$148k	54 km + 800 km
Mini	Countryman Cooper SE	PHEV	$63k	30km + 500 km
BMW	i3 REX	PHEV	$40k - $68k	200 km + 150 km
	225xe	PHEV	$55k	41 km + 550 km
	330e	PHEV	$60k	37 km + 550 km
	X5 xDrive40e	PHEV	$140k	30 km + 800 km
	i8	PHEV	$127k	37 km + 400 km
Mitsubishi	Outlander	PHEV	$30k - $68k	50 km + 500 km
Volvo	XC90 T8	PHEV	$130k	44 km + 600 km

BEV - Battery Electric Vehicle
PHEV - Plug-in Hybrid Electric Vehicle

USED DEALERS LIST

NAME	CITY
Cash Back Cars	Whangarei
Autolink Cars | 09 378 9090 autolinkcarsltd@gmail.com	**Auckland**
GVI Electric 09 216 7106 | ev@gvi.kiwi	**Auckland**
Wholesale Autos | 0800 405 065 info@wholesaleautos.co.nz	**Auckland**
Harwood Cars | 027 492 2218 www.harwoodcars.com	**Auckland**
PlugN Drive NZ	Auckland
Volt Vehicles	Auckland
Farmer Auto Village	Tauranga
EV Central | 021 184 2157 inquiries@evcentral.co.nz	**Taupo**
Drive EV 027 521 0429 | 07 378 0082 steve@driveev.co.nz	**Taupo**
The Car Man	New Plymouth
Coventry Cars Hybrid & Electric 04 384 4536 salesteam@coventrycars.co.nz	**Wellington**
Gazley	Wellington
Cooper Auto Company	Wellington
The Car Company Nelson	Nelson
HVS Motors	Timaru
Hopmans QEII Quality Cars 0800 HOPMAN (467 626) sales@hopmans.co.nz	**Christchurch**
Metro Christchurch	Christchurch
Stadium Cars	Christchurch
HVS Motors	Gore
Auto Court | 03 455 3000 info@autocourt.net.nz	**Dunedin**
Gilmour Automotive	Dunedin
HVS Motors	Dunedin

Quality used EVs here!

E-bike etiquette

If you got an electric bike for Christmas, here's a few tips for getting around safely - and without offending other road or shared pathway users.

Having ridden both an electric bike and my normal road cycle on Auckland's roads and bike paths (shared with pedestrians), it's soon apparent what upsets people.

One of the worst cases was an e-bike rider attempting to pass two cyclists on a narrow road overbridge on Auckland's northwestern cycleway. He hit the rails and risked pitching himself on to the busy road below.

The cyclist had to pass a rider struggling with the incline, which left little room for the e-cyclist's passing attempt.

First off, like the other two riders, I hadn't heard the e-cyclist approaching at speed from behind - and some of them really motor.

Sounding a bell or even just a loud hail "rider coming" or similar would help.

I yell "rider right (or left)" when I'm nearing anyone from behind and preparing to pass.

Some cyclists and pedestrians have earphones in, listening to music or talking on their smartphones, so they won't necessarily hear you. Yell louder – it's better to give some a fright than risk a nasty collision.

Many people thank me for warning them as I pass and I thank them for heeding my call.

Courtesy never hurts on a bike.

After nearly 40 years of riding around Auckland, either commuting or for recreation and fitness, I've learned a few lessons the hard way.

Although it's legal, riding two abreast on the road isn't the best and can annoy motorists when the road is narrow.

Stay hard left if possible but watch for drains, glass, debris and other items.

Parked vehicles can be an issue so check behind before swinging around. Allow enough room in case someone in the vehicle decides to open their door.

Wear easily seen clothing, reflectors or other gear. Have some bright lights front and rear, regardless of weather and light. You can get yellow bag covers too.

Signal your intentions even if you think no one is behind. Road rules for cyclists apply to e-bike riders as well so don't run red crossing lights (the city cycleways have bike signs that turn green when it's safe to cross).

While riding with others, those in front usually signal there's a person or obstacle ahead, putting their left arm behind their back and finger pointing to the right.

Riders will point to the ground too if there's glass or other obstacles, often calling a warning.

My Livall smart helmet allows hands-free smartphone use while riding and has flashing rear lights which can also be used to indicate when turning right or left. But I use hand signals too.

I've heard reports of cyclists who are unhappy about sharing pathways with e-bikes, possibly because of their speed and some e-bike riders' ignorance of cycling rules and etiquette.

However, in months of riding the Auckland city and northwestern pathways I've never encountered any animosity from conventional cyclists about e-bikes, even when chatting to them about it.

Most feel anything that encourages people to get on a bike is good.

And riding an e-bike is not "cheating" as the rider still has to pedal to unleash the power (pedal assist).

As one e-bike rider says, "It's controlled exercise".

Riding them improves fitness, to the point in my case that after recovering from illness and a lack of fitness I was able to get back on my non-electric bike within a few weeks.

E-bikes are very helpful too for climbing hills and beating into head winds, and for the days when you feel off-colour like I did.

I read that an e-bike rider who also uses the northwestern cycleway wasn't terribly happy about cyclists like me sitting close behind them.

EVtalk editor Geoff Dobson tests an e-bike on Auckland's Quay St cycleway.

It's called drafting, using the slipstream of the cyclist in front to conserve energy, and is common practice among cyclists, especially in cycle races.

The e-bike rider suggests it's unnerving and that it would be polite to ask first.

E-bikes are great for slipstreaming because the rider sits upright and can power into the wind.

But first, a rider has to catch up with one and by the time an e-bike has passed by that's often difficult to do that. It also makes it hard to ride alongside and ask permission (I'd be out of breath and could hardly talk).

If you do slipstream, don't overlap your front tyre with the back wheel of the other bike or you risk a crash if the front rider veers off course.

Riders often take turns at drafting, giving the front one a break - not so applicable to e-bike riders.

When charging your e-bike at work or a friend's place, ask first or even offer to pay to cover electricity costs.

Email **geoff@automediagroup.co.nz** if you have some suggestions. □

MICRO EVS

E-bike support required

More support is needed for the electric bike industry, Drive Electric says.

E-bikes have the potential to revolutionise urban travel but more needs to be done to support their uptake, the not-for-profit group says.

Drive Electric's e-bike expert **James Munro** says sales of e-bikes are taking off around the country, with possibly 20,000 being purchased by consumers last year alone.

"E-bikes are opening up cycling to a whole bunch of people who otherwise wouldn't be cycling."

But more urban infrastructure is needed to help New Zealand take full advantage of the global trend, he says.

"Councils are moving in the right direction but it would be fantastic, particularly in Auckland, to see more being done, faster.

"This would help reduce the critical levels of congestion, reduce pollution and improve productivity and quality of urban life."

Napier, for example, has done a fantastic job with the design and layout of its existing streets and public spaces to accommodate a wonderful network of urban cycleways, Munro says.

A director of electrify.nz, one of New Zealand's leading importers/distributors of e-bikes, Munro helped transition Mercury's vehicle fleet to EVs in a former role.


James Munro

He says New Zealand can look to Europe for infrastructure inspiration.

"Countries like New Zealand, Australia, the US and UK fell in love with the car, while the likes of Germany and the Netherlands kept on expanding urban cycling infrastructure."

Munro says it is positive the NZ Transport Agency is considering changes to current regulations and giving thought to a speed limit on e-bike motor output.

"The rational answer is very simple here - regulate on speed, not on power output of the motor which is a far more technical and difficult area to police and also irrelevant if a speed limit on output is in place."

He suggests taking the best international standards to produce a contemporary standard for New Zealand.

"A speed limit on output of 32kmh, like California, for standard e-bikes and a separate speed-bike category of up to 45kmh for road-only riding, like Switzerland and Germany, would make a lot of sense."

The speed-bike category overseas also requires a higher standard for helmet and lights.

Munro wants product standards introduced so people have all the information at hand and confidence when buying e-bikes.

"A simple filter that could be applied would require all importers to produce independent test reports to show their product meets a required standard before it is allowed into the country.

"There is an existing European standard for e-bikes, covering all aspects of the construction and electrical systems, that could be adapted with ease for New Zealand use."

Smart helmet adds extra

A smart helmet well suited to electric bikes is the Livall.

It has flashing rear lights, including indicators, and a variety of other functions to help the rider stay safe.

They include the ability to use a smartphone hands-free.

How? Well there's a small device easily fitted to the handlebars which controls the indicators by pushing left or right buttons, and another button for answering or calling on your smartphone via Bluetooth.

Speakers are set into the helmet rim base so you can hear the cellphone – or listen to music if you prefer.

A button under the helmet turns everything on or off and the helmet can operate off a single charge for several days.

I've been using it as I cycle to and from work more than 40km each day and the charge easily lasts three to four days. A simple cable charger provided with the helmet tops it up in a few hours.

I prefer keeping my ears open to detect other road or cycle path users

Continued on page 28

ITS a matter of fact

What are intelligent transport systems (ITS)?

The Ministry of Transport defines ITS as applying information, data processing, communication and sensor technologies to vehicles (including cars, trucks, trains, aircraft and ships), transport infrastructure and transport users to increase the effectiveness, environmental performance, safety, resilience and efficiency of the transport system.

In other words, smarter use of transport networks.

New Zealand already has many examples of ITS operating, including real-time systems to tell public transport users when their buses or trains are expected to arrive; variable message signs and ramp signalling on motorways; parking and blind spot warning systems in cars; and systems to help aircraft follow safe routes.

ITS also incorporates automatic number plate recognition (used on toll roads) and can integrate live feedback from various sources.

As computer technology becomes cheaper and more powerful, more ITS technologies will be deployed.

The Government is preparing for these technologies, future-proofing regulation to ensure New Zealand doesn't miss out on the benefits ITS can provide. Examples include autonomous car, truck and aircraft technologies.

Changeable road signs are an example of intelligent transport systems. *Image: HMI Technologies*

Three main high-level government documents feature ITS:

The **Intelligent Transport Systems Technology Action Plan** outlines the strategic context, the Government's commitment, its thinking on its role and approach and a programme of actions to encourage and enable the deployment of ITS in New Zealand.

For land transport and ITS in New Zealand, the *Position Statement on Intelligent Transport Systems - responding to the opportunities* was released in 2014 by the NZ Transport Agency. It outlines the agency's views on intelligent transport systems, the opportunities they offer and how the agency sees its role in making ITS an integral part of New Zealand's transport system.

For aviation and ITS in New Zealand, the **New Southern Sky** website and the June 2014 **National Airspace and Air Navigation Plan** outline what is planned for air traffic management infrastructure.

ITS can use various forms of wireless communications, depending on range and other factors. Vehicles now have fewer but more capable computer processors, allowing more sophisticated software.

One of the most important areas for ITS is artificial intelligence (AI) and data can often be derived from GPS, smartphones, Bluetooth and other devices.

So-called "floating car" data technology is cheaper than sensors or cameras, has wide coverage, is faster to establish, requires less maintenance and works in all weather.

Sensing technologies also play an increasing role with many also able to be installed in the road network or around it. Data from the different sensing technologies can be combined in intelligent ways to determine the state of traffic accurately.

Intelligent Transportation Systems (Inc) commonly known as ITS NZ, provides leadership in the promotion, development and facilitation of ITS in New Zealand to achieve a sustainable, effective, efficient, safe and environmentally friendly transportation system. Visit **www.itsnz.org** for more information.

Smarter cars need smarter changes

Autonomous vehicles represent a revolution in transport. But on their own they won't be a panacea for our traffic safety, congestion and transport sustainability woes.

A lot has to change but change is coming and we at ohmio are spearheading the change.

Driverless vehicles are commonly thought of as a new futuristic model to our existing vehicles. That is unsurprising as changes to road transport modes have been incremental by contrast, with new vehicles sometimes being little more than design facelift.

Readers of *EVtalk* already know electric vehicles represent a significant change for the better, even if some obstacles still exist.

Autonomous vehicles are going to elicit a revolution, possibly even flipping car ownership models on their head.

But the revolution is about far more than just the vehicles.

Human error contributes to more than 90% of motor-related accidents and injury and the economic cost of this has been assessed at more than $3.7 billion a year in New Zealand.

New technology will substantially reduce that cost. Annual vehicle insurance would likely halve.

The potential to reinvent transport without deaths, without traffic jams, all while reducing pollution is what motivates us at ohmio.

Electric and autonomous vehicles offer this three-fold opportunity but it's not just a matter of upgrading the fleet - there is much more that must evolve.

For those unfamiliar with ohmio, we launched in Christchurch in September 2017, demonstrating the technology with test vehicles, and have exhibited the prototype designs at the Intelligent Transport Systems World Congress in Montreal.

The vehicles we're building are level four automation, meaning they can operate on a programmed route without human input. Identifying obstacles and hazards, their artificial intelligence (AI) capability means they are continually learning to adapt to their environment.

In some deployments the ohmio smart shuttles will be individuals, in others more like a localised light rail tram without the tracks and wires.

They can tether wirelessly in a space-saving convoy, sometimes referred to as "platooning".

They are unlikely to be private vehicles - instead they are designed as a last-mile solution with potential to become a scalable, relocatable, cost-effective public transport solution.

The agencies responsible for developing and managing transport networks will need advanced intelligent transport systems (ITS) for managing the disruptive transition to a combination of human and computer drivers.

ITS is the extensive ecosystem of technologies that support our roads and all transport networks so, as you can imagine, there are many exciting developments in this space too, with increasing computer processing power, AI, big data, network speeds as well as sensor, radar, and camera advancement.

Consider how a driverless vehicle will learn about accidents ahead or roadworks causing lane closures, when special events will create congestion, or when road conditions become dangerous, such as with ice or surface flooding.

Authorities now use electronic and static road signs, and media including social media. So both the authorities and the vehicles will need evolved means of communication.

HMI, the parent company of ohmio, has for 15 years provided ITS solutions to clients, most of whom are government agencies, so they intimately understand the challenges they face.

HMI is already developing next-generation systems that can integrate with traffic management systems and communicate with both human drivers and vehicle computers.

Transport authorities will also need to consider where the vehicles can operate and when they can go on public roads, how are they likely to act and who will be responsible for their actions.

Make no mistake, they will be far better drivers than humans, not distracted, drunk, tired or emotional, able to process decisions much faster than us. But there are still critical decisions to be made.

Governments and organisations everywhere are running trials and again HMI Technologies is working in this space, managing trials in Christchurch, Sydney and Melbourne and also sharing information with the Singapore government and the GoMentum Station testing facility outside San Francisco.

The timeline might be debateable but the scale of the change ahead is revolutionary and beyond what most can currently imagine so for that reason we are very keen for trials to involve the public too.

The status quo needs to change and that will challenge the public, government and commercial sectors.

Already instances of negative publicity and false information are easily found - even the expressions "driverless" "robot cars" create scary imagery for some.

This will be familiar territory for the EV community and we look forward to taking it on.

Stephen Matthews is the chief executive of ohmio Automotion which is developing a range of connected, automated vehicles which will be electric. He was formerly chief executive of HMI Technologies and the MTA.

Introducing our new series on autonomous vehicles (AVs)

Disruption ahead for automotive finance companies

Traditional car ownership is being challenged by new transport options such as ride-sharing and the inevitable introduction of autonomous vehicles.

So how are businesses associated with the industry, like finance companies, planning for the massive changes ahead?

Financial Services Federation (FSF) executive director **Lyn McMorran** says it's something the industry association's automotive members are definitely starting to think about.

"It's the biggest change since the invention of the vehicle," she says.

Some statistics show a car sits in the garage for 95% of its life, which makes ride-sharing quite compelling, she says.

"Overseas, people are doing it a lot but they often don't have garages where they can park their car like we do here.

"For motor vehicle finance providers and manufacturers, it could mean fewer cars on the road."

That means huge challenges and potential opportunities for her organisation's members.

"If there's fewer cars to finance, it's going to make a difference. If there is a way cars could be used more frequently, from 5% of the time to 50% of the time, it would mean greater turnover as they would wear out quicker.

"That could be a positive. There could be more opportunities for service and parts, that sort of thing. Maybe finance companies will be funding repairs rather than new vehicles on the road.

"The more technology that is put into vehicles, the more costly it is to maintain them."

Most of the FSF's members are attached to brands that originate in countries such as Japan and Germany which are focused on issues like ride-sharing because of their big cities and concentrated populations.

Lyn McMorran

"They're turning their minds to how to make a buck if things are going to change that dramatically.

"They can't pretend it's not happening because it is. Motor vehicle dealers and finance companies have got to start thinking about it as it will make a difference in the way they operate."

However, in New Zealand's case, McMorran predicts motorists will still need to own cars.

There might be critical mass for ride-sharing and autonomous vehicles in Auckland, Wellington and Christchurch but that's unlikely in the regions.

"Self-driven and autonomous vehicles can co-exist. In a country like New Zealand, it's likely that will be the model."

Honda Financial Services manager **Joe Bond** is another who expects a big shake-up as a result of ride-sharing and autonomous vehicles.

"It will be exciting to see who does well. Will it even be a car marque that in-

Continued on page 21

Mobileye mapping key to AV deployment

Technology company Mobileye has announced a series of partnerships that will see city streets mapped by Mobileye 8 Connect in thousands of for-hire cars, trucks and other vehicles.

The partnerships, which will pave the way for autonomous vehicles (AVs) to hit the road, were announced at the CES technology conference in Las Vegas.

Those collaborating with Mobileye include on-demand mobility company Gett, which will equip about 500 London black cabs with the technology.

The city of Dűsseldorf will place Mobileye 8 Connect in 750 vehicles and Berkshire Hathaway Guard Insurance is also expected to give between 1000 and 2000 trucks the technology in a bid to reduce damage and claims costs.

"We not only find data everywhere today but it will be the creative force behind the innovations of the future.


Brian Krzanich

Spain's Directorate General of Traffic will also join forces with the company in order to enhance road safety and prepare Spain's infrastructure and regulatory policy for AVs.

Meanwhile, Mobileye's parent company - global tech giant Intel – continues to work with major traditional automakers to support the eventual deployment of AVs.

Its partners are BMW, Nissan, Volkswagen and SAIC Motor.

BMW, Nissan and Volkswagen will all use Mobileye Road Experience Management (REM) technology to crowdsource data that will enable it to build low-cost, scalable high-definition maps.

And SAIC Motor is to develop level 3, 4 and 5 cars in China based on Mobileye technology.

Intel chief executive **Brian Krzanich** says gathering data is the key to making the partnerships work.

"Data is going to introduce social and economic changes that we see perhaps once or twice in a century," he says.

"We not only find data everywhere today but it will be the creative force behind the innovations of the future.

"Data is going to redefine how we experience life – in our work, in our homes, how we travel and how we enjoy sports and entertainment." ■

Continued from page 20

novates the app that links everything together?"

One of the major changes for finance companies will be how lending decisions are made, Bond says.

"In the past when decisions are made to lend to someone, the finance company would have a good understanding of what the intended use would be.

"Even Uber has been a disruptor in that regard - people have a day job they use on the application for credit but work nights driving for Uber.

"It can violate contract terms saying that a car may not be used for paid service or that the mileage will be considerably higher than a traditional private car."

Part of Honda's ambition is to enable a personal car, with assistance from autonomous driving, to drop the owner off at work and then drive other people around, earning money, Bond says.

In terms of the opportunities and challenges disruption will bring for automotive finance companies, Bond says they first have to decide whether they want to be in the game or not.

"Having worked for two large automotive brands in the financial services fields I can see that, even down to the hardware in the cars and the protection of precious customer data, some brands want to share and others are doing everything they can to keep their customer data and not share.

"That will be a huge risk with either great rewards or maybe the opposite."

Change will come once enough people decide they are comfortable with giving up vehicle ownership, Bond says.

"We will see small gains made by it along the way - early adopters in terms of people that move to this model. Then it will be the norm before we know it.

"I asked my team not long ago whether they would prefer to have the car drive them to work or themselves. Only 25% wanted the car to do the driving.

"So that same split will be around with people not wanting to give up ownership of their own car to make use of these concepts we are discussing today." ■

Is Nissan's new Leaf a game-changer?

Continued from page 9

station showed the car drew 44kW of the 50kW on offer.

Optional on other models but standard on our G review vehicle is ProPilot, Nissan's driver assistance package.

It includes adaptive cruise control - one of our favourite technologies - alongside lane keeping assist and autonomous emergency braking.

Hit the blue ProPilot button on the wheel while you're on a well-marked road and the Leaf will stick to its lane and essentially follow anything in front of it.

You need to keep your hands on the wheel and pay attention but, as we have found with past tests of this kind of technology, it sure reduces the mental and physical load of driving and commuting.

ProPilot park will also parallel or perpendicular park the car for you. Want to do it yourself? A 360-degree camera and all-around sensors help you avoid bumping into those charger posts.

Not lauded with the launch of the Leaf, and still a rare technology, is the LCD rear view mirror. Flick it back, in the same way you would dip a mirror, and it becomes a video screen showing a panoramic view of what is behind you.

A large LCD screen for the ProPilot system and vehicle control menus can also be found in the dash cluster and the centre console infotainment screen features Apple CarPlay - finally giving an English navigation option for imported Leafs.

Sharp looks

The old Leaf was soft, rounded and almost a little doughy in appearance but the new model does its best to look like a little bit of a sports car.

The look is sharp and angular at the front with aggressive headlamps and a large black, detailed panel in place of a grille.

The front spoiler is low and features LED fog lamps.

Type-1 and Chademo charging ports sit on a panel at the leading edge of the bonnet.

Similarly, the rear is sharp, which a multi-layered look and prominent taillights. The side windows appear to cut through to the back, giving the roof a partially floating look.

Inside, the rounded look has been dropped as well and the dashboard has been given a straighter, squarer look.

The seats have a sportier shape as well.

Overall, the interior feels a little more closed in and darker, which we put down to the dark surfaces and smaller windows, particularly towards the rear.

Still a Leaf

If you were expecting the Leaf to become a sports car with blinding performance to take on the Tesla Model3, you would be sorely disappointed.

The new generation remains, as per the first generation, competent and comfortable to drive, with reasonable performance.

But it is better in every area – grip is up, accelerating is significantly up and it corners flatter.

The steering still lacks a huge amount of feel but feels more solid and responsive. There is also a bit of understeer when cornering at speed although this is often a trade-off with the use of relatively narrow low-rolling resistance tyres.

There is no reach adjustment in the steering column.

The new motor makes the Leaf feel substantially quicker, with great throttle response. You can soften this, of course, with ECO mode and we found it best to leave it there for maximum range.

Putting your foot on the floor overrides the mode should you want to get away quickly.

ePedal works well but when coming up to stationary traffic you sometimes need to jump on the regular brake for a quicker stop. It feels very much like the i3, if not slightly more aggressive.

It doesn't seem to make a huge difference to the range but probably lowers your need to think about lifting off the accelerator or brake as you do in two-pedal mode.

We found ProPilot brilliant on the motorway - it's the match of most European-vehicle lane keeping systems.

It does seem slightly oversensitive to the need for steering input – keeping your hand on the wheel doesn't seem to be enough.

Where it lacks is on New Zealand's two-lane highways where it struggles to identify a lane.

A better Leaf

It is hard not to like the new Leaf - it is better in every way than the old model.

At current prices, it is cheaper than a BMW i3 and around $5000 more than a Hyundai Ioniq. And it easily trumps both on range, if not performance and dynamics.

For now, it is the one car offering a happy medium, with enough range to take a road trip, and at a price and a proven level of reliability that Tesla can't match.

*Thanks to **Steve Greenwood** at Drive EV for arranging our test drive. Visit **www.driveev.co.nz***

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First new generation Leaf lands

Continued from page 1

360-degree bird's eye reverse camera with seamless interaction between all four cameras, Apple CarPlay and Android Auto providing English on the screen, a CHAdeMO port for rapid charging at 50kW – charging up to 80% in 40 minutes - and a warrant of fitness until 2020.

It also has an e-Pedal, allowing the driver to speed up, slow down and brake with just the accelerator pedal, and ProPilot to set the speed.

Intelligent cruise control, lane intervention, auto LED headlights, fog lights, parking sensors and more are included.

EV Central has had plenty of interest in its new generation Leaf.

EV Central specialises in plug-in EVs and hybrids. It offers a considerable range and checks all the vehicles in Japan and the United Kingdom before purchase.

Henry Schmidt of Autolink Cars in Auckland says he also bid on the same Nissan Leaf but pulled out because the price was getting too high.

He says there's a shortage of the models in Japan to meet demand there, although some could be released in the UK early this year.

Call Richard Blakeney-Williams on **021 184 2157** or email **inquiries@evcentral.co.nz** for more information.

EVolution is gathering speed

Continued from page 6

charging options for customers.

Public charging infrastructure: Encouraging local government bodies to invest in and install public charging infrastructure, especially in areas where housing density means no garaging, such as inner-city Wellington and Ponsonby.

Electrified public transport: Encouraging all forms of public transport (train, bus and ferry) to be electrified as soon as possible but by 2040. This could be linked to cleaner air targets and possible emissions incentives and, where necessary, penalties for high emitters, including the public fleet.

The Strategy: Communicate that New Zealand will follow the strategy of major right-hand drive automobile markets, for example Japan and the UK, in reducing and stopping the sale of fossil fuel vehicles from 2030.

** Drive Electric is a not-for-profit group that includes many electricity, financial services/car leasing and transport industry leaders on its board. It has several functions, including undertaking research about issues affecting EVs, constructively lobbying the Government to continue setting ambitious targets for EV uptake, and helping educate the public and corporate sector about the benefits of EVs. Its goal is to mainstream EVs and for New Zealand to achieve energy independence.*

Import breakthrough for EV batteries

Continued from page 1

The Nissan Leaf is the most popular used EV import in New Zealand so the battery import issues around it have been sorted first. Other EV batteries will follow.

Battery lifespan is a key factor in issuing mechanical warranties for EVs so it will mean greater confidence for consumers, the VIA says.

"While we have been able to achieve a breakthrough, it is still not an easy process as the shipping of lithium-ion batteries is highly regulated," Yorston says.

There's "a swag of stuff" that has to be done to have the batteries ready for shipping.

The news should also encourage EV uptake among the public, he says.

Provident Insurance chief executive officer **Steve Owens** says it's encouraging news for the industry.

"**David Vinsen** and the team at VIA are to be commended for their work in developing a protocol which enables supply and shipping to meet the requirements of the Dangerous Goods Act and maintains their mandate of 'keeping the doors open for used imports'," he says.

"Whilst still early days, for the warranty and insurance industry this provides more certainty around repair and replacement of batteries and associated componentry."

The issues around imported EV batteries were highlighted in December's *EVtalk* magazine.

Contact Malcolm Yorston on **0800 VIA VIA (0800 842 842)** or email **technical@via.org.nz** for more information.

Trillion dollar-opportunities in EV world

BY IDTECHEX CHAIRMAN DR PETER HARROP

Electric vehicles will be a trillion-dollar market in about ten years.

That's according to an IDTechEx overview report, *Electric Vehicles 2018-2038: Forecasts, Analysis and Opportunities.*

It explains the coming changes in the automotive industry and predicts fuel cell and non-plug-in vehicles will be sidelined.

The report explains all this including the barely noticed new end-game of energy independent electric vehicles (EIVs). Nowadays, EIVs are announced all the time.

They will become more important than the much-discussed autonomy of navigation that many of them will employ.

EIVs will lead us to totally different key enabling technologies and different winners and losers.

The report highlights how EIV hardware will be a bigger business than autonomy hardware. It shows that if, as is likely, the new 48V mild hybrids forecasted acquire EV modes of operation within ten years, the total EV market will approach one trillion dollars.

The little-discussed 48V mild hybrids appeared for the first time in volume in 2017. But they rapidly exceed the volume sales of the much-discussed strong hybrid and pure EVs combined over many future years until we track pure electric versions dominating.

The report spells out how EVs leveraging navigational autonomy and/or energy independence will hugely assist the young, the old and emerging nations in particular.

IDTechEx has surveyed the whole EV scene (land, water and air, hybrid and pure electric) for 20 years and the next 20 will make that seem just a taster.

Industries will collapse but certain countries, companies and users will prosper.

Dr Peter Harrop

New sectors such as electric motorcycles and micro EVs (e-cycles and more) are no longer being ignored.

In this industry, nothing is quite as it seems. Car sales will peak within 15 years for many reasons that are detailed.

We identify peaks for internal combustion engines too but most industrial and commercial vehicles will see no easing of growth for reasons given in the report - they will power past 65% of the market, more than double that of cars.

Attention is turning away from the declining share of cost and function represented by batteries to the increasing share from power electronics with many new power technologies.

However, a major focus of the report is the vehicles themselves - from personal manned multi-copters to e-buses straddling traffic - and it also shows the gaps in the market.

The report includes 390 slides, new forecasts in 46 categories and 20-year technological roadmaps.

The ten-year number and value forecasts and 20-year technology roadmaps are the result of intense travel, global interviews, conference attendance and informed calculation by PhD level analysts with appropriate experience.

Attention is turning away from the declining share of cost and function represented by batteries to the increasing share from power electronics with many new power technologies.

For example, in 2017 alone we interviewed many staff at EV leader Toyota during our presentations in Japan and the United States and when speaking alongside them at conferences across the globe, including our own.

We never stop: the report is constantly updated with significant news and insights.

It prioritises commercial success factors and provides detailed statistics to support informed action plans.

Unlike some, IDTechEx is not uniformly enthusiastic about everything. Indeed, it sees certain technologies being squeezed out to become merely niche activities and looks at where, when and why.

There is a detailed executive summary and conclusions, introduction and chapters on industrial and commercial, cars and other sectors identifying key players.

A league table of the top 13 manufacturers of hybrid and pure electric EVs for land, water and air sees many famous names absent and little-known names in there, including seven companies not in the top 13 three years ago. Lessons are drawn.

The key enabling technologies for the future, covered in later chapters, are changing radically with multiple reversing motor generators and multiple energy harvesting, including electrical recuperation, among those coming to the fore.

The report takes a fresh, unbiased look at all the vehicle categories and technology options, most of which are subject to disruptive change.

For those wanting to drill down into specifics, the many new IDTechEx reports that do just that are referenced. ■

An epic EV effort

As a key infrastructure provider in New Zealand's electric vehicle industry, ChargeNet was founded in early 2015 with faith that EVs would exponentially grow in popularity.

That faith has proven well founded.

We started 2015 with 550 EVs on New Zealand's roads and we begin 2018 with 6162 – more than 11 times the growth in only three years.

To put this in perspective, let's compare that progress to the Government's target.

In May 2016, the Government announced its Electric Vehicles Programme. It target was to double the number of EVs on New Zealand roads year-on-year with a goal of reaching 64,000 by the end of 2021.

If we were just keeping up with the Government's target, we would have 4000 EVs by now. We should be proud of exceeding that by more than 50%.

The uncontested international heavyweight star of transport electrification is Norway.

It has been dubbed the New Zealand of the North by some because the two countries have similar topography, coastlines, scenery and populations. What New Zealand lacks, however, is the GDP of our Scandinavian twin.

Norway has recognised the importance of divestment from carbon, for various reasons ranging from climate change to social and health considerations.

As such, its government saw value in encouraging the uptake of electric vehicle use and being leaders in the disruptive technology.

The single most impactful decision it made was a tax break for electric vehicles.

As is the case in other Scandinavian nations, conventional cars and their fuel are punitively taxed, with EVs receiving very favourable exemptions. With this tax break, EVs are extremely cost competitive, both in upfront purchase cost and ongoing "fuel" cost.

New Zealand does not and has not had anything like this sort of incentive package. What we do have is heart, soul, a community and a pioneering number-eight wire mentality that means we are not afraid to adopt cutting edge, or even bleeding edge, technologies if we know there is a solid case for doing so.

The infrastructure is growing, people's awareness and interest in the cars is increasing and access to rides and drives around New Zealand help break down barriers and pique enthusiastic interest from people who are in the market for a new car.

Kiwis have spirit. Any of the EV owners in your social circle will likely insist on taking you for a ride if you meet them at a barbecue or dinner party. We do community so well here in this isolated South Pacific island paradise.

As a result, our EV fleet is growing at a faster rate than Norway's.

In 2017, more than 3600 EVs were registered, or more than 1% of car sales. That puts us where Norway was in 2011 for market penetration.

We are clearly far behind Norway for EV uptake but our growth story is even more impressive, with more than 150% growth in the past 12 months.

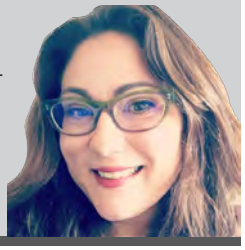
The point is New Zealand has a history of punching above its weight. We've got winning teams, world-leading business minds and we were the first country to give women the vote.

Last year has shown us that we can be - and should continue to be - a scrappy little force for good and go from being at the back of the pack to world leaders in green technology and innovation.

So, well done everyone: From the drivers, to the dealers, to the local and central government officials working to make this country energy independent through cleaner, smarter transport.

Let's REALLY get out there and win this in 2018. ■

Dee West, alongside her husband Steve, has been one of the most prominent faces in the EV enthusiast arena, starting the "Leading The Charge" movement while investing in the ChargeNet NZ private network of charging infrastructure. She is a leading sustainability communicator through her work with communications agency, SolPR, which she owns.



Jucy electric fleet for tourists

Thousands of international tourists visiting New Zealand could be driving electric campervans within two years after a new electric vehicle (EV) trial.

The trial will mark the first time an electric campervan has been rented to tourists in the market.

During their journey, two visiting French students - who came to Jucy's attention from an interview in EVtalk (link http://evtalk.co.nz/ev-adventure-for-intrepid-french-students/) - will travel thousands of kilometres through out the North Island in a prototype Jucy electric campervan.

The van is a Nissan eNV-200, converted to a camper at the firm's Helensville facility, and the tourists plan to use it to visit around 30 destinations in the North Island over a three-week period.

Jucy chief executive **Tim Alpe** says the tourism rental company aims to introduce a new category of electric vehicle to its fleet to meet growing demand from millennial tourists.

"Electric vehicles are the future of the Jucy campervan fleet and this trial is the ideal platform to test our product offering for customers.

Continued on page 27

Continued from page 26

"This market segment in particular want more environmentally sustainable travel options. At the same time, this gives our tourists more choice and cheaper running costs."

Paris Sorbonne University environmental law student Heloise de Bokay says tourism is becoming less sustainable which is why they wanted a more eco-friendly mode of transport to explore New Zealand.

"Electric cars are a more sensible solution in your country as more than 80% of your energy comes from renewable sources - compared to only 22% in France," she says.

Alpe says further expansion of the programme will need additional investment in charging infrastructure and vehicles that can travel further distances.

"Campervans are the perfect vehicle to be electrically powered as tourists tend to drive during the day and can then recharge overnight at their campground.

"One of the biggest barriers we will face in the short term is lack of infrastructure

to support EV charging.

"We are working with camping grounds to introduce suitable facilities for overnight charging but there is also a need to bring in rapid chargers on the roads between main centres.

"At the same time, there are range limitations in the vehicles that need to be overcome to ensure tourists can travel long distances across the country without the need to constantly recharge their batteries.

"Our future as a sustainable tourist market will be short-lived if our customer experience is impacted by the range their vehicle can travel each day."

Alpe says the company plans to introduce charging stations at their branches as well as Jucy Snooze hotels across New Zealand and Australia. ■

EV DIRECTORY

The comprehensive guide to every service an EV owner or dealer could use

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Fancy a ride on the water?

Who would think of combining an electric bike with a hydrofoil to plane across water?

Torpedo7 and 1-day.co.nz founder **Guy Howard-Willis** did.

His idea was then brought to life by cycle designer **Roland Alonzo** who enjoys cutting-edge technology and design.

Alonzo and the Manta5 design team used hydrofoil and e-bike technology, coupled with a propeller, to allow riders to plane on top of the water and even relaunch the hydrofoil bike from deep water.

What began as a six-month project turned into a life-changing journey for all involved.

Waikato Management School graduate **Greg Johnston** joined the Manta5 team in 2016 and progressed to general manager, employing another six alumni to fill various roles in electronic engineering, supply chain, operations, marketing and events.

After six years in the making, the Manta5 Hydrofoil Bike won gold in the "concept" category at the 2017 New Zealand Best Design Awards.

"The whirlwind of attention we've had as a result of the awards has been all the more encouraging - especially given how far the product has developed since our prototype entry," the company says.

Manta5 now intends entering its new and improved model into the Designers Institute of New Zealand 2018 Best Awards Consumer Product category. Finalists are announced on August 6 and the awards presented on October 5.

The company's accomplishments include finding innovative ways to waterproof e-bike motors and batteries, achieving hydroplaning efficiencies at both low and high speeds, and

successfully performing the world's first underwater "submerged launch" on a pure hydrofoil bike.

"We've had so many people tell us that what we're trying to achieve can't be done," Howard-Willis says.

"I just love working with a design team who redefine what's possible - it's always great to see those people's reactions when we show them video of what we've achieved."

The company's latest model, the Manta5 Hydrofoiler XE-1, was unveiled at the Big Boys Toys show in Auckland in November last year.

An official presale launch will start at the end of February and will be limited to New Zealand buyers before the Manta5 goes out for international orders later this year.

The company is confident of selling the bikes quickly and says a pilot run of them will be delivered towards the end of 2018.

After the launch, the Manta5 team will travel around New Zealand to showcase the bikes.

Check out Manta5 on Facebook, Instagram, Twitter, or visit **www.manta5.com** and YouTube **https://goo.gl/eMb8SM** for more information. ■

Smart helmet adds extra

Continued from page 17

approaching from behind so I don't listen to music while riding. Not all cyclists, e-bike riders or others warn a rider ahead that they're overtaking.

When you switch the helmet on or off, a woman's Chinese-American accented voice tell you "power on" or off and if you're hooked up with your smartphone the voice says "connected". It will even tell you when your helmet power is running out and you need to recharge.

Perhaps there's a way of recharging from an e-bike battery but I haven't found out yet – and it's easy enough to charge the helmet up at home or work anyway.

I find the Livall helmet very comfortable to wear, particularly compared with my standard cycling lid.

Even the strap has a small foam and Velcro strip to stop it digging under your chin.

It's easily adjusted to head size too and is very light, despite the gadgetry.

I added a strap-on battery front light with flashing functions for extra safety.

The Livall smart helmet has flashing rear lights, including indicators.

The Livall does include a special SOS alert function that sends an automatic message to an emergency contact in the event the rider is knocked unconscious. Needless to say, I haven't tested that.

Interestingly, the Livall helmet was produced by Chinese national Brian Zheng after he broke an arm in a fall from his bike in New Zealand while trying to fish his phone out of his pocket.

By using the smartphone holder on the handlebars you can take photos or video on your ride. My iPhone is in a Lifeproof case, which is both water and shock resistant, something I'd recommend if using it for such a purpose.

Twelve types of helmet are available for children and adults with prices ranging from $199 to $300.

Visit **www.livall.com** or email **sanchit@livall.com** for more information.

Helmet supplied by Livall (NZ) Sports Tech business development manager ***Sanchit Mittal*** *and Bikes & Barbers.* ■

EV fleet confirmed at 6162

New Zealand's EV fleet stands at 6162, Ministry of Transport December figures show.

They confirm *EVtalk's* December 21 report that EV registrations had hit 6000, information provided by the Energy Efficiency and Conservation Authority.

Most, 3216, are used light electrics with 1265 new light pure electric and 1197 new light plug-in hybrids. There are 408 used light plug-in hybrids and 76 heavy EVs.

The 6162 is 3615 more than the 2547 EVs registered at December 2016. About 5813 were recorded in November 2017.

Auckland dominates the EV share with 3026, streets ahead of Wellington's 789 and Canterbury's 753.

Individuals still own more light EVs (new and used combined) than companies.

But businesses have stepped up new light EV ownership to 1042 (including car-share providers like Yoogo), compared with 929 new light EVs in individual ownership.

December registrations totalled 352, made up of 263 used imports and 89 new vehicles.

That was a fall for both segments on November,

though that could be down to a ship arriving with a large number of used cars early in the new year and the November registration of the Yoogo fleet for new cars.

Most popular new electric vehicle for December was the Tesla Model X with 14 registrations, ahead of the Volkswagen eGolf with 10.

The Hyundai **Ioniq** was third on eight, followed by the Tesla **Model S** on seven.

In plug-in hybrids, the Mitsubishi **Outlander** dominated with 21 registrations.

The Nissan **Leaf** was - as expected - the most popular used import EV, with 195 hitting the road in December.

The Nissan **E-NV200** and Toyota **Prius** plug-in tied for second with 12 each, followed by the Mitsubishi **Outlander** and BMW **i3** tied on 10. ■

USED IMPORTS DEC 2017

Vehicle Make	Vehicle Model	Total Vehicles
NISSAN	LEAF	195
NISSAN	E-NV200	12
TOYOTA	PRIUS	12
MITSUBISHI	OUTLANDER	10
BMW	I3	10
RENAULT	ZOE	8
HYUNDAI	IONIQ	2
MITSUBISHI	I-MIEV	2
NISSAN	NOTE	1

NEW MAKES AND MODELS DEC 2017

Make and Model	Total
ELECTRIC	
TESLA MODEL X	14
VOLKSWAGEN GOLF	10
HYUNDAI IONIQ	8
TESLA MODEL S	7
BMW I	2
PLUG-IN PETROL HYBRID	
MITSUBISHI OUTLANDER	21
BMW 2 SERIES	2
BMW 3 SERIES	2
HYUNDAI IONIQ	1
MINI COUNTRYMAN	1
VOLVO XC90	2
BMW 5 SERIES	1
ELECTRIC - PETROL EXTENDED	
BMW I	3

EV TALK DIARY

EVtalk New Zealand editor Geoff Dobson looks at the month gone by on **www.evtalk.co.nz**

December 1

EV adopters at sustainability awards

Electric vehicles were a big theme at the 2017 Sustainable Business Network Awards, featuring among many of the winners and finalists.

New Zealand Post's big electric vehicle fleet of mainly Paxsters netted it the NZI Greatest Contribution to a Sustainable New Zealand (Supreme Award).

Hard work by the Wests netted ChargeNet the Judge's Commendation as Sustainability Superstars.

December 5

Registrations rising fast

Electric vehicle registrations continue to soar in New Zealand, with November's 465 contributing to a total national fleet size of 5804.

Used light EVs (332) make up the bulk of November registrations, latest Ministry of Transport figures show.

New light EV registrations during October and November stand at 135 and 131 respectively, the highest in this category over other months in the year.

December 7

ChargeNet NZ partners Aurora Energy

The EV charging network will be extended in Dunedin, Central Otago and Queenstown Lakes under a new partnership between ChargeNet New Zealand and Aurora Energy.

The organisations will work together to upgrade the existing charger in Filleul St, Dunedin, to a Tritium charger supplied by ChargeNet. Other sites around the Dunedin CBD are also being considered for new installations.

ChargeNet New Zealand continues to grow its nationwide charging network and the partnership will allow faster growth in the southern region.

December 8

Electric Wheels Festival a buzz

About 1000 people attended the Evolocity Electric Wheels Festival in Christchurch.

The event's growing popularity was shown in a 25% increase in EV test drives, with 202 people taking the opportunity to try an EV at the Canterbury A & P Showgrounds.

Free workshops sponsored by Orion covered a range of topics such as "the future of getting around Christchurch" via bicycle (including e-bikes) and car sharing (Yoogo).

Coromandel gets EV scenic loop

New Zealand's greenest region just got greener.

Coromandel has celebrated the opening of a "scenic touring loop" for EVs, consisting of five fast-charge stations that link up the whole peninsula.

Providing a charge up in 20 minutes, the stations have been installed at Thames, Tairua, Whitianga, Coromandel Town and Whangamata, thanks to a collaboration between the Thames-Coromandel District Council, Powerco, ChargeNet NZ and the Energy Efficiency Conservation Authority.

December 11

Charge up at The Warehouse

The Warehouse is expanding the number of its electric vehicle charging stations.

Invercargill will be the first The Warehouse South Island store to get an EV charging station.

By July, it will have added Dunedin, Blenheim, Motueka, Oamaru, Timaru, Christchurch (Riccarton), Hamilton, Matamata, Taupo, Gisborne, Levin, New Plymouth, Masterton, Te Kuiti, Hawera, Porirua and Palmerston North.

December 18

Battery import breakthrough

A breakthrough has been achieved in getting new and used EV batteries into New Zealand.

A new process that meets international dangerous goods regulations and provides documentation for some battery types has been established by the Imported Motor Vehicle Industry Association (VIA).

It will allow shipping via sea of mainly Nissan Leaf batteries from Japan. The first container load is probably due around the second quarter of this year, VIA technical manager Malcolm Yorston says.

December 19

EV owners spend less than 4c/km

New Zealand EV and plug-in hybrid owners are spending less than 4c/km on average to power their vehicles.

A survey by Flip the Fleet found owners are more likely to switch suppliers to match their car's and household's electricity demand.

While about a quarter of them enjoy a cheaper night-time electricity price that has been discounted to minimise their costs, almost half of the remainder would consider switching to night-time rate contracts if their suppliers provided the option in a way that optimises their overall household energy bill, the survey found.

Street trial for capital

A trial of up to 50 electric vehicles on-street charging points for residents who cannot charge up at home is planned in Wellington.

About one in four Wellington residents cannot charge at home, which limits the adoption of electric vehicles in the capital.

On-street residential charging has not been tried anywhere else in New Zealand so the project will help show how such an initiative can work, the Wellington City Council says.

December 20

E-bike support needed

More support is needed for the e-bike industry, Drive Electric says.

E-bikes have the potential to revolutionise urban travel but more needs to be done to support their uptake, the not-for-profit group says.

Its e-bike expert James Munro says sales of e-bikes are taking off around the country, with possibly 20,000 being purchased by consumers last year alone.

December 28

Transport future "exciting": MoT

An "exciting" transport future is expected to see massive changes during the next 25 years.

A shift from car ownership to car "usership", more driverless vehicles, reduced greenhouse gas emissions through increased electric vehicles and more fuel efficient conventional vehicles are just some scenarios summarised in the Ministry of Transport document Transport Outlook, Future Overview.

Released in November, the "GoTO" discussion document also predicts big freight growth across all modes, huge demand for transport infrastructure and new freight delivery technologies such as drones, robots and driverless vans. ■

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Max. output power: 7.36 kW
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PARKING
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EV CHARGING LOCATIONS

bought to you by AUTOHUB FORWARD TOGETHER your leading logistics team for Japanese and UK used EVs

Fast Charger Locations – North Island

Kawakawa -	4 State Highway 1
Tikipunga -	Paramount Plaza, 1 Wanaka St, Whangarei
Whangarei -	Northpower Substation,11 Alexander St
Raumanga -	McDonalds, 130 Tauroa St, Whangarei
Dargaville -	Totara St Parking, 113 Totara St
Kaiwaka -	1 Kaiwaka-Mangawhai Rd
Warkworth -	New World, 6 Percy St
Warkworth -	BP Warkworth, 67 Auckland Rd (SH1)
Silverdale -	Kings Plant Barn, 17 Hibiscus Coast Highway
Albany -	The Warehouse, 186 Don McKinnon Drive, Albany
Rosedale -	McDonalds, 14-16 Constellation Dr, Auckland
Kumeu -	Kumeu New World, 120 State Highway
Henderson -	Pak'n'Save, 224 Lincoln Rd, Auckland
Auckland -	21 Hobson St
Auckland -	Z Station, 150 Beach Rd
Newmarket -	1 Gillies Ave, Auckland
Greenlane -	McDonald's, 320/356 Great South Rd, Auckland
Pakuranga -	BP Station, 322 Pakuranga Rd, Auckland
Botany Downs -	Z Station, 550 Te Irirangi Dr, Auckland
Auckland Airport -	Airport Shopping Ctr, 400 George Bolt Memorial Dr
Auckland Airport -	Z Skyway, George Bolt Memorial Dr
Takanini Village -	30 Walters Rd, Auckland
Coromandel -	44 Woolams Rd
Whitianga -	4 Lee St
Tairua -	Tokoroa Rd Carpark, 6 Tokoroa Rd
Pukekohe -	King Street Carpark (Seddon Lane), 56-60 King St
Pukekohe -	Counties Power, 14 Glasgow Rd (Business hrs only)
Thames -	505 Mackay Street
Whangamata -	100 Hetherington Road
Te Kauwhata -	16 Wayside Rd
Te Rapa -	WEL Networks, 114 Maui St
Hamilton -	Tesla Supercharger, The Base, Te Rapa Rd & Wairere Dr
Hamilton -	Caro St Carpark, 7 Caro St
Ruakura -	Waikato Innovation Park, 9 Melody Ln, Hamilton
Raglan -	43 Bow St
Mt Maunganui -	Bayfair, 19 Girven Road, Mt Maunganui Rd
Cambridge -	73 Queen Street
Te Awamutu -	10 Scout Lane
Whakatane -	i-SITE, 30 Quay St
Opotiki -	i-Site, 70 Bridge St
Te Kaha -	Te Kaha Beach Resort, 3 Hotel Rd, SH35
Rotorua -	1134 Haupapa St
Matawai -	6522 Matawai Rd
Tolaga Bay -	43 Cook St (25kWh charger)
Te Kuiti -	New World, 39 Rora St
Taupo -	Taupo Fire Station, 1 Kaimanawa St
Taupo -	Tesla Supercharger, 1 Kaimanawa St
Gisborne -	21 Gladstone Rd, Gisborne, 4010
Rangitaiki -	Rangitaiki Lodge Café, 3281 SH5
Turangi -	1 Pihanga Rd
New Plymouth -	66 Courtenay St
Wairoa -	75 Queen St
Te Haroto -	Mc Vicar Rd, Napier-Taupo Highway, 4237 SH5
Waiouru -	State Highway One & Hassett Dr
Napier -	206 Dickens St
Hastings -	100 Queen St W
Mangaweka -	2 Koraenui St
Waipukurau -	34 Russell St
Dannevirke -	24B Gordon St
Woodville -	i-SITE, 43 Vogel St
Palmerston North -	i-SITE, 126 The Square
Palmerston North -	Tesla Supercharger, 365 Ferguson St
Otaki -	155-163 Main Hwy
Masterton -	3 Dixon St
Porirua -	2 Serlby Pl
Featherston -	SuperValue, 42 Fitzherbert St
Upper Hutt -	Rimutaka Hill
Lower Hutt -	24 Queen St, Upper Hutt
Petone -	Dowse Art Museum, 1 Stevens Grove
Te Aro -	Z Station, 60 Hutt Rd, Lower Hutt
	Z Station, 174 Vivian St, Wellington

Fast Charger Locations

Destination Charger Locations

Tesla Charger Locations

Fast Charger Locations – South Island

Takaka -	16 Willow St
Nelson -	Millers Acre Carpark, 37-39 Halifax St E
Richmond -	Tasman District Library, 11 Mcglashen Ave
Greymouth -	13 Tarapuhi Street
Kaikoura -	51 West End
Culverden -	27A Mountain View Rd
Northwood -	New World, 2 Mounter Ave, Christchurch
Addington -	Z Station, 40 Moorhouse Ave, Christchurch
Little River -	4235A Christchurch Akaroa Rd
Rakaia -	Rolleston St
Ashburton -	109 West St
Tekapo -	Lake Tekapo Tavern, State Highway 8
Fairlie -	Opposite 53 Main St
Geraldine -	Cox St Carpark, 14 Geraldine-Fairlie Highway
Twizel -	Twizel Events Centre, 61 McKenzie Dr
Timaru -	26A North St, Timaru
Omarama -	4 Sutherland Rd
Kurow -	Wynyard St
Waimate -	125 Queen Street
Oamaru -	Eden St Carpark, 3 Eden St
Ranfurly -	31 Charlemont St E
Alexandra -	9 Thompson St, Bridge Hill
Hampden -	33 Lincoln St
Dunedin -	Filleul St Carpark, 193 Moray Pl
Winton -	New World, 293 Great North Rd
Balclutha -	23 Charlotte St
Invercargill -	116 Esk St