E.V.S & BEYOND

MAY 2020

Welcome to the first issue of *EVs and Beyond* - the new name for EVtalk which broadens our website and magazine's news coverage BEYOND EVs.

EVs will remain our primary focus but all aspects of renewable energy such as solar will be incorporated too.

So many EV owners tell us that the next thought after ownership of an EV is "now, how do I charge my EV to run on sunshine"?

We'll attempt to answer that question in the weeks and months ahead, and in the process unlock other associated questions such as:

* How do I store the solar energy I produce?
* Can I use my EV as a 'battery' to store and feedback surplus energy into my home?
* Is my home suitable for a solar installation?
* What is the cost today of a small solar starter pack? Can I add to this in coming years?

Andy Booth, founder of installer Solar City estimates that there are 1.3 million houses in NZ that are suitable for solar installations - out of the 1.84 million homes (2017) in the country.

He also estimates that there have been 3000 solar installations on NZ homes in the last three years, but the pace is rapidly picking up and the greatest limitation is now suitably trained staff to do the work.

WHAT OUR COVID-19 FUTURE MEANS FOR EVS

For EV owners the last few weeks have been pure bliss - peaceful and largely non-polluting - with little poisonous pollution from dirty diesels and ICE (internal combustion engines).

Even non-EV owners have commented on being able to see "for miles" as the haze from ICE has gradually drifted away.

But will this phenomena still exist in a post-lockdown world intent on finding "shovel-ready" projects to boost employment.

There are two schools of thought:

1. The optimists. Now that tens of thousands of city dwellers have seen for themselves and appreciated the 'power without pollution' rationale of EVs, there will be a rush on EV sales as we emerge from lockdown.
2. The realists. In our headlong rush to save what's left of the economy, millions of Kiwis will tighten their purse strings, endorse old fashioned shovel-ready projects and put aside thoughts of owning an EV till another year.

The Government has not done one thing to boost the uptake of EVs in almost three years - in fact it has hindered the sale of EVs in proposing a "feebate" scheme (Julie Anne Genter's idea) which involved penalising the rural sector's gas guzzlers, an idea that was never going to fly.

The next result of this muddled thinking is that many would-be EV buyers are still waiting for the subsidies to arrive before they buy.

It would have been better if the government had said nothing about EVs until it had a plan that all Coalition parties could sign off on.

This brings us to David Crawford, of the new vehicle industry, last week saying that the government should instead put in place straight subsidies for nil or low pollution EVs and PHEVs and ensure that the government's own fleet of cars be converted to EVs as soon as possible, starting NOW.

But the 2020 budget has zip, nothing, zero in it to boost EV's, So much for Julie Annes grand vision.

EVs and Beyond could not agree more.

Vern Whitehead

PUBLISHER

BUYING AN EV AT LEVEL 3&2

EV dealerships have generally been able to operate within COVID-19 level three constraints, but buyers are in short supply.

Whether that will improve under level two and lower is "crystal ball gazing", according to some.

A sudden rush of buyers under level two restrictions isn't anticipated though.

Indeed, some EV dealerships expect the real situation won't really be known for several months.

Most people are waiting to see what happens, Autolink Cars' **Henry Schmidt** and Harwood Cars' **Martin Harwood** say.

"People will hang on to their money," says Schmidt, who has continued running his business with EV marketing and sales manager **Sarah Ryan**.

He believes many in fields such as the hospitality industry, airline sector and tourism-related areas such as rental cars won't have the money – or perhaps even their jobs – to afford a vehicle.

"I'm playing it day by day," says Harwood, who has kept his Auckland EV business open with wife and manager **Lorna Harwood**.

Schmidt says he has been working mainly online and arranged a few contactless test drives by having the potential customer pick up the keys from the car left outside his Auckland yard and follow his instructions.

But Schmidt says he didn't really sell any EVs during the level four lockdown. "Of the 11 used EVs recorded registered in New Zealand during April, I sold four before the lockdown but we couldn't deliver them until later.

"I doubt any EVs were sold during April."

Harwood says many people remain "shell-shocked" by the COVID-19 crisis, both men saying there's still "too much uncertainty".

Schmidt believes some thinking about buying a vehicle, whether an EV or not, will put that on hold, possibly until the economy improves.

He says supply delays may also occur, especially in obtaining used EVs from Japan where auction houses are not expected to resume properly until about mid-May because of pandemic restrictions and national holidays.

"People cannot go into auctions yet to check EV batteries' state of health, for instance," Schmidt says.

"This [pandemic] has never happened before so there's uncertainly because of the unknown."

GVI general manager **Hayden Johnston** is optimistic EV purchases will pick up under level two.

"We had reasonable enquiries about EVs during the lockdown and supplied a number to essential services workers for essential service use, but the majority of enquiries

were from people who had the time and were starting their EV research journey," he says.

"We have been pleasantly surprised with trading under level three and are sitting at about 50% of normal volumes. People are understanding and co-operative with our contactless procedures."

Johnston says GVI is very thankful for the support given to all dealers by the Japanese agents, shipping/logistics providers, and also for the support packages offered across the board by T*rade Me, AutoTrader, AutoPlay, Motorcentral* and others.

"The industry has been united and the support has been wonderful," he says.

Johnston adds that the Imported Motor Vehicle Industry Association (VIA), Motor Trade Association (MTA), Motor Industry Association of New Zealand (MIA) and task-force members worked tirelessly behind the scenes during level four to ensure the industry's operation during level three.

"It was great to work closely with the MTA and MIA and this coalition delivered huge benefits, not just to the association members but the industry as a whole."

Meanwhile, more EV enquiries are anticipated by dealers like Johnston who expects many potential EV buyers have seen or heard about the improved air quality in and around cities during the lockdown and will be weighing up their own environmental impact.

EV buyers will still be able to go online to order their vehicles, and stepped up hygiene, social distancing and contact tracing have been adopted by dealers for showroom and yard visitors along with those doing test drives.

That's certainly the case with Auckland City Electric Vehicles (ACEV), with general manager Hadley Hargadon saying procedures are in place for the business under level two.

"Level three has been difficult and I think people have been holding off for level two when they can get out and about and enjoy the experience of buying a car."

Hargadon expects EV enquiries and dealer visits to bounce back now.

EV RENTALS

MOVE TO DELIVERIES

Many vehicle rental/share firms such as Zilch, Mevo and Europcar Mobility Group, plan to do deliveries for cafes, restaurants and some other food outlets during the COVID-19 alert level two restrictions.

Zero-emission car sharing scheme Zilch says it can operate as a fully contactless service.

Zilch EVs are available to drive from all Auckland and Christchurch locations, the company saying it has tightened cleaning protocol, undertaking regular, thorough cleaning of all Zilch cars. Cleaning kits also remain inside cars for use during trips.

It also has a YouTube video suggesting EVs can help cities reduce emissions and other pollution. "While we've stayed at home our cities have been peaceful. Fewer gas guzzlers on the road have meant less air pollution and less noise pollution. Let's keep it that way."

Mevo car share already has an app called Regulr which allows Wellingtonians to order food from local eateries.

It comes with $10 free Mevo credit so people can pick up their order and maintain social distancing, and it's gifting Regulr's restaurant partners with a $30 Mevo credit to use during this busy time.

"We're helping New Zealand restaurants get food to customers safely," Mevo chief executive Erik Zydervelt says.

While it's in Wellington initially, Zydervelt says Mevo may consider what else to do with the service in future.

It's available for a fixed price "rather than a hefty commission", Zydervelt says.

That means restaurants pay $30 a night per car and can grab up to 10 cars (at $30 each) if they are run off their feet, having the cars for as long as they need them, he adds.

About 45 Wellington area restaurants have signed up, and Zydervelt says the service will help restaurants recover and will support the local economy.

Mevo includes the Audi e-tron PHEV in its service.

Snap Rentals is setting up Snap Delivery, which includes using some of its Tesla Model S EVs – its story featuring in this issue.

Europcar Mobility Group provides car and driver bundle services to help cafes and restaurants get back in business – offering its electric BMW i3s as well.

It launched the "Together" programme in late March to support the mobility of essential services in light of the COVID-19 crisis, providing healthcare personnel and other essential services with access to discounted short, medium and long-term rental solutions for their staff.

As part of this, the group's car rental brand in New Zealand, Europcar, will work in partnership with the hospitality and food retailer industries to offer a rental service of vehicles with drivers, to help meet the increased demand for delivery services during level three restrictions.

The car rental bundles include the vehicle, fuel and a driver for four hours, eight hours or daily.

A tailored solution can be arranged, with weekly and monthly packages also available with or without a driver and fuel.

PHOTOS ABOVE, CLOCKWISE FROM LEFT

1. ZILCH IS PROVIDING ITS ZERO EMISSION VEHICLES FOR DELIVERIES. **2.** MEVO'S AUDI E-TRON.
3. ERIK ZYDERVELT

"The initiative will support small business owners in launching a delivery service while avoiding the huge commissions payable to well-known food delivery operators and at the same time, using the existing Europcar workforce to keep as many employees in work as possible."

"We're really pleased to be able to offer this solution to those small business owners who have been doing it tough the last month or so", Europcar sales manager Melissa Carter says.

"We really hope it helps get them back on their feet especially for those who have never offered a food delivery service in the past."

Furthermore, at selected locations customers can rent the electric BMW i3 to save on fuel costs.

Any vehicle used in the delivery schemes will be subject to rigorous cleaning and disinfecting measures after each rental, as well as "zero contact" policy applying with employees.

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Printed by: Alpine Printers.

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GET MORE EVS, MIA SAYS

DAVID CRAWFORD

"Buy more EVs" is the Motor Industry Association's message to government departments.

MIA's call to switch government department fleets to include more EVs is among three moves it suggests the government can do to assist the New Zealand automotive industry, noting these offer some big wins for a relatively small amount of money.

Another is for the "feebate" scheme to be implemented, but with the government funding the incentives rather than charging buyers of high-emission vehicles.

The association also wants a scrappage scheme introduced.

The industry is already hurting, with sales cut by 90% in April. With the market for new and used vehicle imports understood to be worth more than $8 billion annually, that is a potential $450 million hit.

For the year, the association is expecting to drop around 40-45% - with arguably a corresponding drop in revenue for both dealers and distributors.

"If there's a 40% drop for the year, there's about $4 billion turnover taken out of the economy," MIA chief executive **David Crawford** says. "That's got to have a ripple-on effect."

Asked why the government should be assisting large, mostly foreign-owned distributors, Crawford notes: "We do not have a New Zealand alternative. And all of those distributors, well 95% of them, are New Zealand-based and New Zealand companies - albeit with some foreign ownership.

"But if you look down the chain, almost all of the franchise dealers are New Zealand owned," Crawford says.

He says the key is that the government has the opportunity to assist while also turning the fleet over, achieving its goals of having newer, safer, cleaner cars on the road.

And such support would save jobs.

"We have already seen redundancies, some at a distributor level, but I understand quite a lot through the dealer networks," he says. "Then there's the flow-on effects too - through the certifiers, transport and service and repair trade."

So how would the assistance work? With the electric vehicle - including plug-in hybrid (PHEV) purchases - the association is calling for government departments' budgets to be expanded to allow for buying additional vehicles.

"If you leave them with the same budget and say, buy more electric cars, or more plug-in hybrid electric cars, all that happens is they buy less cars," Crawford says.

"To make that a more meaningful uptake, or to accelerate the uptake of fuel-efficient vehicles, then the departmental votes [budget] for vehicles needs to increase."

Another advantage with fleet EVs is that these eventually come onto the second-hand market at an affordable price.

With the feebate scheme, the government would foot the bill for energy-efficient vehicle purchase subsidies. Crawford acknowledges this would cost millions, but would offer good value in terms of environmental and safety improvements, as well as saving jobs, compared to the packages likely to go to other sectors of the economy.

Our quick calculations note that for the cost of the government's media bailout package, the government could subsidise the purchase of more than 8300 battery electric vehicles (BEVs) on to the road at $6000 each.

On the scrappage scheme - a political football that has been discussed, debated and tested before – Crawford is calling for an industry-wide working group to be formed with the government to develop it.

Scrappage schemes would likely benefit the used market more than the new, but Crawford notes that doesn't matter - as all the assistance suggestions would have flow-on effects for the entire trade.

"It is not really something that necessarily immediately assists the new vehicle trade, but it certainly has overall flow on affects for everyone."

SNAP

DELIVERY ADDING EVS

JAMIE BENNETT, RIGHT AND PATRICK BROADBENT

Snap Rather than wither away with the loss of tourist trade, car hire firm Snap Rentals reinvented itself to provide delivery of groceries and other essential items during the COVID-19 restrictions.

And the newly named Snap Delivery service uses Tesla Model S EVs in its rental fleet and intends to use others. Snaps Rentals co-founders **Jamie Bennett** and **Patrick Broadbent** came up with the diversification plan after watching their largely tourism-based programme "fall off a cliff" when the pandemic hit the industry.

Bennett says the idea came while seeing their rentals return en masse and bookings cancel.

He wanted some way to keep business ticking over so they could retain and use nearly 30 staff spread between Auckland, Christchurch and Queenstown, even though the company had applied for a government wage subsidy.

Reckoning he could get essential deliveries done faster and better under the lockdown restrictions, Bennett also sees potential once those restrictions are lifted, especially for "last mile" solutions.

A "Snap Delivery" should be ready shortly to help customers track deliveries, similar to Uber Eats. Currently customers can track their delivery through the web app.

A "Personal Shopper" will ensure everything the customer wants is packed ready at the store and will notify a Snap Delivery driver when it's ready to go. If an item on the list is unavailable the customer will be contacted to determine if an alternative can be provided.

Bennett is keen to see the hospitality industry added to the service as well and is working with various establishments on this.

The company has four Tesla Model S vehicles it is using and is on the lookout for Model 3s to grow the electric side of the fleet.

It also has three LDV EV80 vans for airport shuttles, but Bennett says these are parked in the meantime and he'll do a cost analysis to see if the service can be extended to include electric vans.

He says EV batteries are improving all the time and he's keen to incorporate more EVs into the service, especially for first and last mile deliveries to which he believes EVs are well suited, especially if they have sufficient range to avoid any lengthy charge-ups during the day.

"We can charge them at night or top up on the run if need be – I can't see a better opportunity for EVs than that – especially when people see a delivery turn up in an EV."

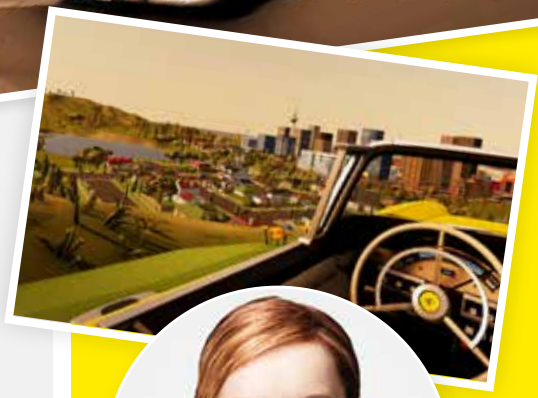
The Snap Delivery service has its first runs in Auckland, and Bennett expects it to include Christchurch and Queenstown shortly.

He says Snap is also involved with Mercury's Drive EV service and is studying potential uses of that.

Bennett says working on Snap Delivery has taken "a couple of weeks to build it and long hours", but he's confident it can provide a vital service to those in need, especially those who cannot leave their homes.

Snap Delivery is evolving daily – from new suppliers to new tech integrations.

SWITCHING ON KIDS IN THE LOCKDOWN AND LATER



Boredom Busters from Mercury is a way for it to support customers and their families during the COVID-19 alert levels four and three.

While sorting out a "free hour of power" daily until April 28 for customers in lockdown and considering other ways of helping, Mercury's marketing team hit on a home solution for kids (and parents) to encourage education around renewable energy and power generation.

It comes in two versions based initially on Mercury's Evie 1957 Ford Fairlane conversion to electric.

"A lot of families working for Mercury were probably becoming bored with endless board games," Mercury marketing manager **Julia Jack** explains.

Her team's first idea for the Boredom Busters project was to turn the Evie virtual reality drive popular, with visitors flocking to see Evie at past shows into a virtual drive through some recognisable parts of Auckland (like Quay Street) and out to explore renewable energy producers like a dam and geothermal power station.

Four safe science experiments were then added to further educate children (and adults) about renewable energy sources dubbed "the awesome foursome" – solar, wind, geothermal and water.

Mercury's team picked the most popular such science projects online then narrowed down the numbers by testing them, especially to see if they could be done at home.

The geothermal steam experiment uses boiling water so requires an adult to be present at all times and to supervise or handle the project.

The solar one involves using cups and different shades of paper to see how they react in sunlight, while a pin wheel is made for the wind project.

A water experiment proved the most difficult for some, requiring a cork to be fashioned into a turbine in a water-wheel type scenario.

An Evie activity book was added, the first round of Boredom Busters proving so popular a second has now been provided.

The second round is also designed especially for those confined under level three restrictions – described by some as "level 3.8" or "level four with KFC".

The Boredom Busters 2 includes 360-degree videos, like the Starship Forest app based on the Starship Children's Hospital which Mercury and its customers support.

The hospital's outpatient's department walls are like a forest, and by using a smartphone or tablet you can see thing moving in the forest, Jack says.

Users can take bees to flowers to feed, for instance.

"It's a fun thing for the team to do as well," Jack says.

Boredom Busters has also been a good way to continue getting Mercury's message across, particularly as people are unable at this stage to visit the energy company's Newmarket head office and participate in the active displays in its foyer.

About 150,000 emails were initially sent for the first round and Jack say click views will be checked later.

"We're keen to get some guidance as we're not assuming all will return to work under level two," Jack says.

Meanwhile, she's impressed how her team has been able to work from home and still support customers.

PHOTOS FROM TOP-TO-BOTTOM

- TAKE AN EVIE ROAD TRIP – IN VIRTUAL REALITY ANYWAY.
- ESCAPE LEVEL THREE RESTRICTIONS ON AN EVIE DRIVE.
- JULIA JACK
- MERCURY'S BOREDOM BUSTERS EDUCATIONAL TASKS ARE PROVING A HIT. YOU'LL BE A-MAZED ABOUT THE MANY ACTIVITIES OFFERED.

Visit ***www.mercury.co.nz/why-mercury/learning-made-wonderful*** to view Boredom Busters.

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e is for electric revolution.

New Zealanders everywhere are joining the electric revolution, and now's the perfect time for you to get on board too. Mercury Drive's innovative subscription service means you can now subscribe to an EV without leaving your couch.

Choose from a large range including the magnificent new 2020 Volkswagen E-Golf* for a fixed monthly fee of $1499/month.

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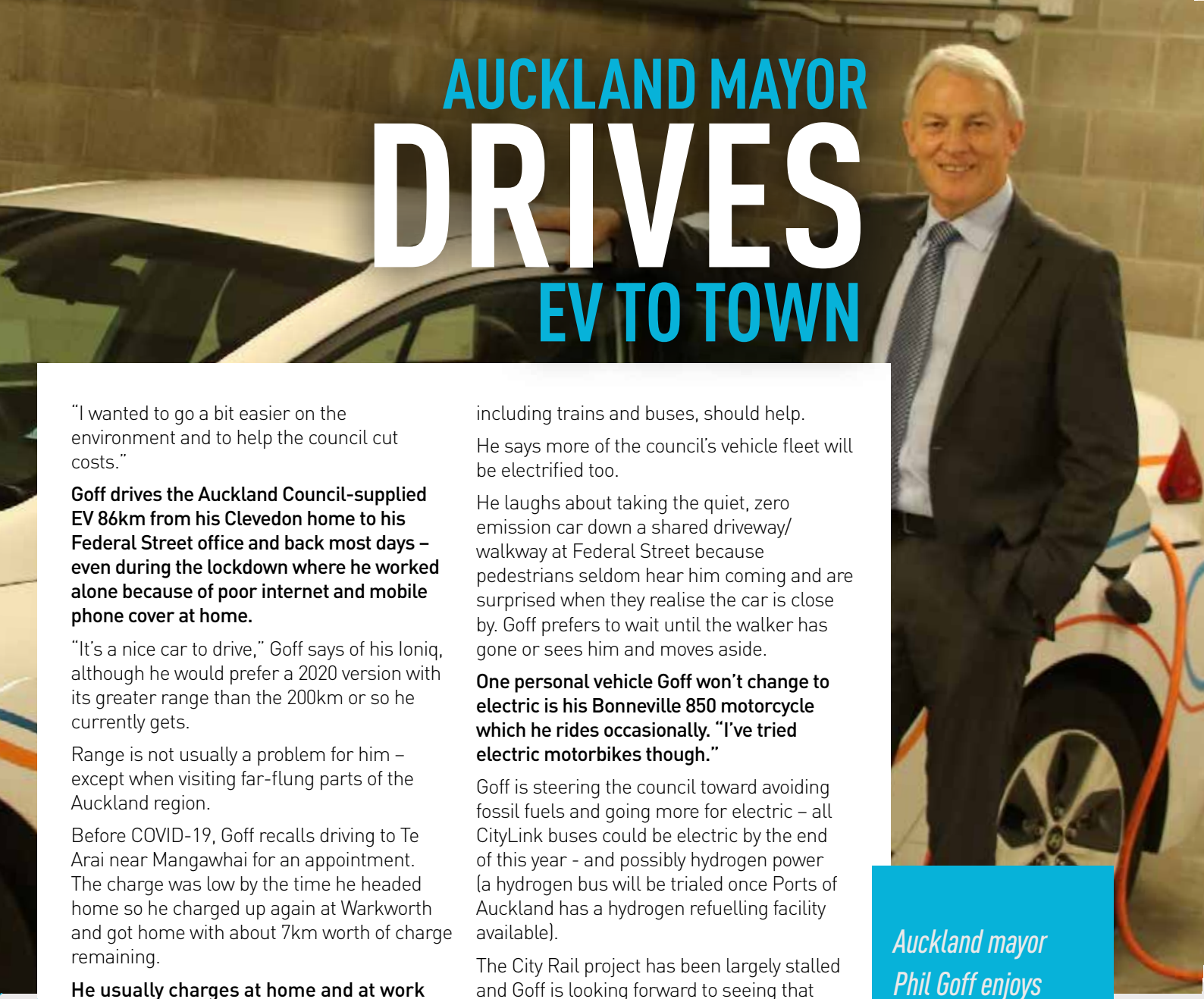
AUCKLAND MAYOR DRIVES EV TO TOWN



"I wanted to go a bit easier on the environment and to help the council cut costs."

Goff drives the Auckland Council-supplied EV 86km from his Clevedon home to his Federal Street office and back most days – even during the lockdown where he worked alone because of poor internet and mobile phone cover at home.

"It's a nice car to drive," Goff says of his Ioniq, although he would prefer a 2020 version with its greater range than the 200km or so he currently gets.

Range is not usually a problem for him – except when visiting far-flung parts of the Auckland region.

Before COVID-19, Goff recalls driving to Te Arai near Mangawhai for an appointment. The charge was low by the time he headed home so he charged up again at Warkworth and got home with about 7km worth of charge remaining.

He usually charges at home and at work as well, and if going to a function outside central Auckland he ensures there is sufficient charge.

Goff also uses the Ioniq for occasional visits to the family's Orere Point bach, paying about $4000 a year for the privilege of using it privately.

"I've just got solar power at the bach but can't charge up the car there," he says, adding the panels are to help reduce his carbon footprint and that he hopes to install them at home too.

During the past two years, Goff reckons he's done about 56,000km in the Ioniq – more than proving its worth in cost savings and carbon dioxide reduction.

"It's cheaper to run and I do big mileage, he explains.

Goff has noticed the absence of traffic and the air quality improvements during his lockdown drives and says greater electrification, including trains and buses, should help.

He says more of the council's vehicle fleet will be electrified too.

He laughs about taking the quiet, zero emission car down a shared driveway/ walkway at Federal Street because pedestrians seldom hear him coming and are surprised when they realise the car is close by. Goff prefers to wait until the walker has gone or sees him and moves aside.

One personal vehicle Goff won't change to electric is his Bonneville 850 motorcycle which he rides occasionally. "I've tried electric motorbikes though."

Goff is steering the council toward avoiding fossil fuels and going more for electric – all CityLink buses could be electric by the end of this year - and possibly hydrogen power (a hydrogen bus will be trialed once Ports of Auckland has a hydrogen refuelling facility available).

The City Rail project has been largely stalled and Goff is looking forward to seeing that electric rail link back in full swing, along with a rail extension to Pukekohe.

He is facing a "big challenge" from the COVID-19 pandemic restrictions, however.

"The council may have lost up to $650 million revenue a year, which means we have to look at cutting our expenditure by the same amount."

Goff says a rate rise of around 2.5% (or even 3.5%) is proposed which equates to about an extra $1.35 a week for the average ratepayer.

So the council will have a lot on its plate over coming months, but Goff is determined to honour the C40 Fossil Fuel Free Streets declaration he signed to have only zero-emission buses from 2025 and to make Auckland's city centre emissions free by 2030.

Auckland mayor Phil Goff enjoys driving his Hyundai Ioniq around.

"I got one three years ago," he explains, adding it was replaced with a newer model in 2018.

PHOTOS CLOCK-WISE FROM TOP-TO-BOTTOM

- THE MINI ELECTRIC HATCH.
- THE MINI EV IS DUE HERE IN THREE MONTHS.
- REAR VIEW.
- BRETT WAUDBY

MINI ELECTRIC HATCH FIRST EDITION HERE AUGUST

The all-electric Mini is due to arrive in New Zealand later this year, selling for about $59,900 excluding on-road and delivery costs.

A limited number of launch special First Edition variants will arrive in New Zealand dealerships from August, the front wheel drive Mini Electric Hatch sporting a 32.6kWh battery providing 233km range.

Based on the three-door petrol Mini Cooper S design, the Mini e-Hatch has unique exterior accents to indicate it is electric.

Four colours are available at launch, paired with two wheel combinations to endow the car with a sporty yet futuristic look.

Built in Britain at Mini Plant Oxford, the EV can get to 100km/h in 7.3 seconds, generating 135kW of power and 270Nm torque.

Geared for metropolitan dwellers and intra-city commutes, it can be charged to 80% in 35 minutes using a 50kW DC public charger.

The e-Hatch retains the brand's "go-kart" driving feel by positioning powertrain components low and near the centre of the car in a T-shape, coupled with suspension tuning for a low centre of gravity that produces sharp, responsive handling, parent company the BMW Group says.

Those interested can now select from four specifications of the Mini Electric Hatch and make an online deposit with the Mini dealer of their choice without leaving home.

"The arrival of the Mini Electric Hatch in New Zealand heralds a new chapter for the brand - a charge into the future of electromobility without compromising the marque's core values of creativity, vibrancy and smart urbanity," Mini Australia and New Zealand general manager **Brett Waudby** says.

"It is wonderful to see such a positive response we are getting to the car. Our dealers are extremely excited to add this model to our customer offering, which is sure to be an absolute thrill to drive."

Highlights include 17-inch Mini Electric Power Spoke wheels paired to White Silver and Midnight Black, 17-inch Mini Tentacle Spoke wheels paired to Chili Red and British Racing Green, adaptive LED headlights, leather cross punch sports seats with seat heating for the driver and front passenger, a head-up display, digital dash display and Harman Kardon Hi-Fi sound system.

Customers should contact their nearest Mini Garage for all pricing enquiries.

ROEWE A MARVEL

WRITTEN BY: Richard Edwards

China is rapidly growing as a vehicle-producing nation, and it is beginning to take the lead on the development of electric vehicles. EV's and Beyond managing editor ***Richard Edwards*** *got to be the first journalist to outside of its high-tech offerings on local roads.*

The NZ EV Owners Facebook group do not miss a lot. If a new electric vehicle is on the road in New Zealand, it doesn't take them too long to find it.

EVs and Beyond was the first media outlet in New Zealand to drive the Roewe Marvel X on local roads, and just two days after we picked it up, images of it charging at a roadside location in Mangawhai, north of Auckland, were up for discussion.

Dozens commented, eager to see the vehicle hit New Zealand roads. "Can't wait for RHD export models from China. They are today the world leaders in electric cars, not Musk," says one member. "Was gonna say looks Chinese from the inside. And European on the outside. If the price is good, it will sell like hotcakes," indicated another.

In some ways, those commenters would be disappointed, as while the Marvel X has landed here, it is not going on sale. This one, left-hand drive, Shanghai-registered vehicle was brought here for a limited time to demonstrate to New Zealand and Australian dealers what Roewe's parent company, SAIC Motor, is capable of and its technological ability.

The dealers - and buyers - are set to see some of the same technology when sister-brand MG launches the ZS EV SUV here later this year.

The Marvel X should be seen as more than a technological showcase, as it is a fundamentally great vehicle in its own right. In China, Roewe pitches at the premium end of the market.

Pricing comparisons are complicated, but the Marvel X retails for around twice the price of the ZS EV in its home market.

The Marvel X is, however, bigger. The closest vehicle in the market to it in size and format is the Audi Q5 - though it is slightly lower and wider. It is a handsome looking vehicle, though the brash chrome grille looks

0-100KM

4.8 SEC

POWER

222 kW

TORQUE

665 Nm

BATTERY

52.5

WEIGHT

1870 kg

The interior colour scheme may not be to kiwi tastes, but the quality is excellent

somewhat odd on an EV. The wheels are 20-inch, while there is a sea of the exterior, welcoming lights - even the front badge glows when charging.

There is a small trunk - under the bonnet covered by a plastic lid.

Inside, the brown-on-brown trim is a little questionable, but the quality is not. Leather dash trim, suede/Alcantara seats, chrome, plush carpets - it all feels of a high standard. Cover the Roewe badge, and you could probably convince a few the car is European. It feels spacious and light - helped by a massive glass sunroof. The front seats are very comfortable, the rear is as well, but the bulky front units intrude a little on space.

IMPRESSIVE TECH

A near-20-inch screen dominates the Marvel's interior, occupying most of the raked centre console. The display uses an operating system co-developed with Chinese e-commerce giant Alibaba, dubbed AliOS.

We would love to tell you how it all works, but to function, it needs to be paired with a Chinese mobile phone and number – which we do not have. What we understand is it is highly internet-connected, allowing for upgrades, the reservation of carparks and restaurant tables.

It also has augmented reality features, for example, overlaying navigation information on live images from the cameras placed around the vehicle.

The Marvel is also capable of self-parking. Not the parallel parking assistance we are used to, but a Tesla-like ability to drive through a carpark and park with no one onboard - called AI Pilot. SAIC Motor has already sold over 700,000 cars with AliOS internet-connected systems.

What our restricted access to the system allowed us to do was adjust the air vents - which must be done through the screen rather than manually - and air-conditioning (a heat pump), control the windows - there are traditional buttons for that too - as well as change settings for the various assistance and convenience systems through a mix of guessing what I was up to from the graphics, and live Google Translate.

It all looks slick, and the screen is responsive, but the experience was a little too restricted for me to accurately judge its full benefit.

The dash cluster itself is an LCD as well, and one of the best I have seen - the graphics are well laid out, and the image appears to be of a higher resolution than most. It would be nice to get mapping on here as well - and I suspect it is capable of it - but other than that it is top-notch.

The Marvel X is loaded with driver assistance features as well, including a lane departure system, lane change assist, autonomous emergency braking, adaptive cruise and blind-spot monitoring.

On Auckland's motorways, the lane keep and adaptive cruise was very smooth and intelligent, up there with the best Level 2 autonomy features on offer - and that was despite the car operating effectively on the wrong side of the road.

THREE BETTER THAN TWO

In China, the Marvel X is available in two models: A standard front-wheel-drive version with 137kW of power on offer, and the Pro - as tested - with 222kW and massive 665kW coming from three motors going to all four wheels.

The motors are arranged with a motor for the front axle and two in the rear, though not one per wheel. The main rear unit is 85kW and is for low and medium-speed driving - either on its own or in conjunction with the front motor.

When higher-speed or performance kicks in a secondary 55kW motor can also kick in. In a further twist, the rear pair drive through a two-step transmission for efficiency.

Performance is excellent. Hit the accelerator in any of the three drive modes - Essentially Sport, Normal and Eco and the Model X jumps away from the line on its way to a 4.8 second 0-100km/h sprint.

There is a slight lump in power delivery around 65km/h, only when doing such hard acceleration runs, which I guess is either the transmission shifting or the third motor kicking in. I oddly liked that slight variation from the linear power delivery of most fast EVs - call it the caveman transmission lover in me.

I thought initially that the drivetrain was a little noisier than I am used to in a BEV. Do not get me wrong, it is very, very quiet, but there's the odd buzz and whirr.

It was pointed out to me that it could be down to the Roewe's stereo not functioning in New Zealand - remember from earlier, no Chinese phone - and that is likely right. Other vehicle noises were hushed, wind and tyre roar, in particular, adding to the experience.

The large screens are driven by impressive audios

You can leave regenerative braking to the car to manage, or manually adjust it through a dash button through three levels.

Aside from the stellar build quality, the other surprising thing about the Marvel X was how dynamically sorted it is.

The steering does not offer a lot of feel but has a pleasing weight to it, the brakes feel right, cornering is flat with plenty of grip - this is a car that feels comfortable and engaging to drive through corners. It does feel a little heavy, which is odd as in the scheme of things its 1870kg weight is not out of the ordinary - on par with an Audi Q5, and 100kg lighter than a Tesla Model Y.

A RANGE PROBLEM

The biggest issue facing the Marvel X, should it come to New Zealand, is range. With an NEDC figure of 370km, it sounds like it has enough, but in the real world - and context of the market - it doesn't. But that is not Roewe's fault.

This car is specified for the Chinese market, where it will likely spend all its time travelling at a relatively slow pace through vast cities. Hence it has "only" a 52kWh battery - that is all it needs in its home market. Here, we are used to our premium EVs having 80, 90 or 100kWh units. Pop an 80kWh in the Roewe, and it would be a completely different story.

As it stands, the car is fit more for around 250km in the real world.

Currently, the car is relatively hamstrung in how it can operate here as well. It has the Chinese-standard GB/T charging, so on one side of the vehicle you get a type-2 look-a-like port feeding a 7.6kW onboard unit, and on the other a Chademo-look-alike port for DC charging. We ran the car using a GB/T to type-2 adaptor.

The MG ZS EV when it arrives won't have the same issue - it is fitted with a type-2 combo port, which I imagine the Marvel X, or future MG models, would get if they ever came here officially.

Interestingly, the cars operating system can interact wirelessly with chargers, which could allow for some smart features around timing and energy pricing. Even more advanced is the car's ability to wirelessly charge.

COULD THE FUTURE BE CHINESE?

Could the future of the electric vehicle market be Chinese? If it is, that is no bad thing.

Gone are the days where vehicles from the massive tech-powerhouse are necessarily cheap and of low quality and performance. The Marvel X, and other SAIC and MG product I have checked out so far is pretty darn impressive.

It also bodes well for how the MG ZS EV should work when it finally arrives - my expectations have just risen.

POWERING UP ON SUNSHINE

The idea of generating your own electricity through a rooftop solar installation is very appealing to Kiwi home owners. But is it simply a matter of outlaying a few thousand dollars? ***Vern Whitehead*** *investigates and finds there are some opportunities and challenges along the way.*

Phone any solar installer and they will happily visit your home and provide a quote for installing your own energy generation unit on the roof of your home.

Great - but what happens to any surplus electricity produced? Can it be stored? Can you sell it back to the grid?

And what if thousands of others decide to do what you're doing and pump surplus rooftop solar photovoltaic (PV) energy into a grid that was never designed for this purpose?

This is where aptly named Distributed Energy Resources (DER) have a profound affect - smaller scale systems that can either use, generate or store electricity and form a part of the local distribution network.

As well as generating and storing electricity, DERs can also charge electric vehicles (EVs) and include technology to manage demand. They are a great opportunity but also a great challenge.

Take the situation in Western Australia where energy distributor, South West Inter-connected Systems (SWIS), is coping with a huge surge in rooftop PV solar. Almost one in three households in the SWIS area have a rooftop solar installation and 2000 households add a new system each month. Fantastic figures.

However, the speed and uptake of Distributed Energy Resources is presenting serious risks to the power system.

If not properly managed, high levels of DER will erode the security and reliability of the power supply. Because of solar energy, daytime electricity demand will fall to levels that mean the stability of SWIS will be compromised - and the growth in DERs is such that this is forecast to occur around 2022, only one or two years away.

New Zealand is way behind this level of solar, but Kiwi energy companies such as Vector are already conducting trials in various parts of Auckland to measure the effect of EV charging and solarvoltaic PV energy on its network.

So when you start out to power your EV and home on sunshine, your actions will have a small but cumulative effect on the electricity supply system.

THE COST OF A SIMPLE SOLAR SYSTEM

THE COST OF A SIMPLE ROOFTOP 5KW SOLAR INSTALLATION, SUITABLE FOR CHARGING AN EV AT HOME, IS ABOUT **$14,845,** ACCORDING TO MERCURY SOLAR, INCLUSIVE OF GST.

A SIMILAR INSTALLATION PLUS A 13.5KWH BATTERY STORAGE UNIT WOULD COST SOME **$31,645**, INCLUSIVE OF GST. BOTH SYSTEMS INCLUDE AN EV CHARGER.

MERCURY SOLAR SAYS THESE ARE INDICATIVE PRICES ONLY, FOR AUCKLAND INSTALLATIONS.ITS AMERICA

You don't need bright sun, as in Western Australia, to generate energy - but obviously more power is produced on a sunny rather than an overcast day, so don't let this put you off investigating rooftop solar.

In this new energy section of renamed *EVs and Beyond*, we take a look at how several companies are rising to the challenges of solar power in particular, whether or not their customers have already switched to an EV for their "kind to the environment" transport solution.

** You can read more about DERs at brighterenergyfuture.wa.govt.au*

SOLAR ON THE RISE

Jasmine Roxborough, YHI Energy sales operations and project manager, and Tamara Potts, YHI Energy marketing specialist , look at the operation of a major supplier to the solar installation market. YHI Energy is a division of YHI (New Zealand) Ltd - a renowned distributor in the New Zealand automotive industry for almost 25 years.

Since YHI Energy started distributing solar products close to a decade ago, the demand for solar installations in New Zealand has been on the rise with the plummeting cost of solar power.

Both residential and commercial solar are becoming increasingly popular.

Aside from the clearer conscience that the renewable energy of solar power systems brings to their owners, solar power in residential applications can be used to support the entire home, or be directly integrated with other systems like heat pumps and underfloor heating.

An ever-increasing trend is the integration of a storage battery to a solar system. While most homes sporting solar panels on their roofs and inverters bolted to their walls rely on drawing electricity from the grid when the sun sets, those with storage batteries are more self-sufficient, thriving on energy completely harvested by their own solar system.

This addition of a storage battery means that when system owners' panels are producing more electricity than their home requires, the excess is sent through their inverter to their storage battery (instead of straight to the grid), where energy sits for later use. When the storage battery is fully charged, the surplus energy can also be sold back to the grid.

Over time, the economic viability of solar energy in New Zealand's commercial market has grown, and so has the uptake in solar power systems due to the myriad of uses and benefits these larger structures provide.

For most, the biggest reason for installing solar is for financial gains, and, especially in the commercial world, there are big gains to be had.

For A&G Price, a historical foundry in Thames, their 315kW system (1016 x individual 310W panels) has provided them with not only extensive potential savings, but also an opportunity to give back to their community.

General manager **Peter Yates** believes that their installation could reduce the foundry's yearly power bill by $100,000 – with whatever they don't use going back to the grid for the community.

This will be especially helpful during Christmas time and the holiday seasons when there is a huge strain on the power network.

Since the company is usually shut for maintenance, unused power can be harvested then sent straight back out to top up the network.

As more and more businesses make the decision to electrify part, or their entire vehicle fleets, inadequate mains supply for charging these vehicles can be a very real issue.

With exorbitant vehicle upgrade costs in most cases, solar becomes an attractive option, providing scalable, sustainable, distributed generation as the demand increases and the electric fleet grows.

An emerging alternative to a typical building-mounted solar system, and one that lends itself incredibly well to EVs, is solar as its own structure – be it a solar carport or covered parking.

With solar panels today being manufactured to withstand the beatings of wind, rain and even targeted force, they provide a doubly beneficial use, strong enough to provide adequate shelter while mounted in a useful formation.

Such structures can take advantage of the inverter technology on hand and be grid-tied, or for the bold, completely off-grid with the use of an energy storage system providing a safety net when generation is low or absent.

As solar, energy storage and EV charging evolves, so do the synergies between them.

Take vehicle to home/vehicle to grid (V2X).

Imagine utilising your EV's battery to power your home, not being phased during an outage and then charging up again overnight while power is cheap, and waking up the next day with a full charge to set about your day.

The possibilities with V2X extend further than just the home, think transportable power for disaster recovery, events and other temporary sites – a virtual power plant if you will.

So, what is New Zealand in for over the next few years in the ever-important renewables space?

Undeniably, PV module density is improving, with a 500W panel by Trina Solar due in Q4, 2020.

New Zealand tested and certified V2X units in both residential and commercial variations are coming, along with some exciting new additions to YHI Energy's DC charging range.

With solar penetration in New Zealand relatively low and the consumer and corporate market more conscious than ever of their carbon footprint, huge growth, exciting projects and thriving partnerships are expected.

As the largest solar, battery and EV charging distributor in the country, YHI Energy specialises in an array of energy products and services.

It boasts a distribution network of eight branches, with 90 staff nationwide.

YHI Energy makes trading as convenient as possible, with easy access to top-quality and NZ-certified products by world-renowned brands; Trina Solar, SMA, SolaX, Trojan, Neuton Power, Delta and Rolec, to name a few.

Through local warehousing, a dedicated team of specialists with a wealth of product and industry knowledge and a comprehensive product portfolio.

YHI Energy is ready to support the success of its installation partners, resellers and strategic customers across New Zealand and the Pacific Islands.

SOLAR CAR PORTS POWER UP EVS

A partnership between Solar Car Parks (SCP) and Schletter Australia sees SCP launch the Heliopark range of solar car ports in New Zealand, Australia, and Asia.

By incorporating Schletter's world-class racking solution into SCP's premium range of functional and aesthetically pleasing solar structures, SCP aims to expand solar car parks throughout Australia and New Zealand.

That's particularly in shopping centres to prepare for increasing demand from a growing number of EVs.

SCP is exploring new opportunities with a strategic partner in New Zealand, and is also looking for other opportunities to expand this exciting solar solution throughout Australasia.

The Heliopark system is designed for Australian conditions and provides both shading and power production, benefitting shoppers and EV charging.

But solar car shade construction isn't always straightforward.

Complex foundation requirements and building certification are needed.

SCP simplifies and removes risks from the process by providing detailed analysis of all preliminary engineering stages.

Solar car parking creates significant clean energy on-site, can expand on an existing rooftop solar system, provides a strong visual impact around sustainable action for the businesses involved, provides a more comfortable parking experience for customers and employees, heavily reduces CO2 emissions and improves the National Australian Built Environment Rating System (NABERS) which measures buildings' environmental performance.

The solar car parking can also provide an additional income stream for the property that can be capitalised, increases asset value, reduces peak demand costs, future proofs EV charging demand and provides about 2.8kW of solar footprint per car space.

Annual solar generation per 100kW/36 spaces equals 140MW and the solar car port can give more than 25 years of solar energy generation.

The return on investment (ROI) is typically around five to seven years, including the structure.

All solar panel types are accepted, and the structure is engineered for all wind regions and is ground mount or multi-storey slab compatible.

That means solar car shades are suitable for a wide variety of uses and structures, whether malls, council buildings or sports facilities and parks.

Extra light reflected off cars can be absorbed by bifacial solar panels which

SOLAR CAR PARKS

"Car park solar shading is huge throughout Europe and is gaining traction in other parts of the globe like the US and Asia,"

PHOTOS CLOCKWISE FROM TOPLEFT

• The Heliopark Pro solar structure. • A solar powered EV charger at the City of Newcastle. • Paul Nealgrove • Solar Car Parks not only provide power and shade but can prepare shopping centres like this at Elizabeth City Centre in Adelaide for more EVs.

also increases system performance and the design is able to support single row or nose-to-nose parking.

The Heliopark system offsets energy consumption by feeding clean energy produced by the solar car park back to the main switch board, reducing the need for grid fed energy, Solar Car Parks project developer **Paul Nealgrove** says.

Various reports note that the cost difference between rooftop solar and solar car ports is reducing, especially as more commercial users make the most of the renewable power source to improve energy reliability and often reduce reliance on the national grid.

Solar Car Parks studies the site orientation, determines appropriate product selection, establishes the optimum cost efficiency, energy density, and sets installation parameters.

More than 30,000 square metres of solar car shades have been established around Australia.

These include a 4.4MW combined system in Castle Plaza and Elizabeth Shopping Centre in Adelaide, the Leichhardt Marketplace 330kW system in Sydney and a new solar car park in Melbourne's City of Brimbank.

"Car park solar shading is huge throughout Europe and is gaining traction in other parts of the globe like the US and Asia," the company says.

"We feel it is only a matter of time before all large commercial organisations in Australia take advantage of both the space and the sun available in this country to not only reduce costs but to be more beneficial to our environment."

The advantages of solar car parks are quickly evident.

They provide shade and keep the car and visitors cool on a hot summer's day and the rain off, allow customers to charge their EVs while shopping, and provide the business involved with "green" credentials.

It also ensures social distancing in a post pandemic world.

Solar Car Parks provides three levels of charging capability, including DC fast charging.

Various financial options are available to fund the solar and car shade structures, such as using a capital works budget, leasing the system, chattel mortgages, Power Purchase Agreements (just paying for solar power created), lease generation models or roof rental options.

Visit http://www.solarcarparks.com.au or email hello@solarcarparks.com.au for more information.

THE CASE FOR DISTRIBUTED GENERATION IN NEW ZEALAND

New Zealand is well known for its renewable energy and most New Zealanders believe that we are 80% renewable. However Geothermal makes up 15% of this "renewable" target and is a high carbon emitter.

The case for distributed generation is based on the need to address climate change, reduce emissions from electricity for business and transportation, and to increase the resilience of New Zealand's electricity network. More renewable energy on the grid drives down the cost of electricity as the fuel is free and not subject to the cost of carbon. It also provides New Zealand with a competitive advantage marketing our products and services to the world.

Hydro makes up around 57% of New Zealand's electricity supply and has zero carbon dioxide emissions. However, there is currently little public appetite for more large-scale hydro dams and so most new hydro electricity generation is run of the river.

Wind and solar are relatively new on the scene and supply a small fraction of the electricity that New Zealanders need. Wind accounts for around 5% of generation and Solar is less than 1%. In recent months, this percentage has been increasing.

There is currently 3000MW of wind consented in New Zealand and three new wind farms are scheduled to be built within the year to account for growing electricity demand.

Wind has the lowest carbon footprint of all types of electricity generation and is easier to predict than rainfall. Wind generation is the cheapest form of electricity generation and can be used to conserve water in the country's hydro reservoirs.

As a result of a reduction in the price of Solar generation and historically high

electricity prices, solar is now becoming more popular with the consumer.

A well-designed solar system with batteries enables the individual to arbitrage the energy market to gain the best price for electricity. They also have the added advantage of being able to charge their vehicle and cover their energy requirements for their transport needs as well as for their house. In the result of a power outage their system can remain operational for a period before the grid is back up and running.

Solar is an easy option to promote and install. It is financed by the individual. It does not require a resource consent and the supporting structure is often already built and solar ready. All this, without the requirement to further encroach on the natural environment.

Critics to solar and wind energy will argue about issues with respect to the intermittency of supply and critics of hydro mention dry year shocks. There will undoubtably need to be more distributed generation and more hydro storage to meet these challenges. Hydro generation can be used like a liquid battery to handle the volatility of renewable supply from solar and wind generation. While solar and wind generation enable the country to conserve water. It's a perfect combination.

From a countrywide perspective the more distributed generation the better. These clean energy sources enable water to be conserved in our hydro dams and stop the requirement to burn fossil fuels to keep our economy running.

Add in promising new technological developments like electric vehicles, smart battery systems and demand side management and the future for renewables like Wind, Solar and Hydro is exciting.

As a country New Zealand spends over 16 billion dollars a year on the importation of oil. Now is the best time for New Zealand to ditch its over reliance on oil and gas and to go electric. Wind and Solar, in conjunction with Hydro as a liquid battery, and electric vehicles are a big part of the answer to a reliable, cheap, and clean energy future for New Zealand.

Ecotricity provide a variety of solar and EV friendly price plans. We do not install solar ourselves, but we can direct people to excellent solar providers. Many of Ecotricity's customers have solar and our systems are state of the art.

As well as excellent and fair prices and quick meter upgrades Ecotricity are New Zealand's only 100% Toitu carbonzero certified electricity retailer. Which means we offset the lifecycle carbon emissions of the electricity that we sell. In this way Ecotricity customers can feel good in their purchase of electricity from us and know that they are helping the country and themselves without costing the Earth.

THE SECRET TO HEALTHY PUBLIC CHARGING INFRASTRUCTURE

An ABB white paper suggests a business model approach to EV charging infrastructure.

Leave the "project" mentality behind and give it business model vision is the answer to healthy public charging infrastructure.

The critical path to healthy infrastructure is planning for all aspects of experience and operation, hardware manufacturer ABB says in a white paper. Most unforeseen challenges can be overcome with the right formula from the start.

Charging infrastructure should never be viewed as just a procurement and installation project; and healthy public charging infrastructure planning should always be viewed through a business model lens. With the right planning and vision, it can be a great enterprise, but it demands attention to some key success ingredients.

How EV drivers need to engage with charging infrastructure, beyond the delivery of electrons to batteries at varied rates, shouldn't be a secret. Fortunately, ABB is several years into many EV infrastructure deployments around the world, and we have learned some very key things along the way.

It may sound odd coming from a large hardware manufacturer like ABB that charging infrastructure is much more than hardware, but we absolutely see it that way. The adage that "the whole is greater than the sum of its parts" holds extremely true when it comes to EV charging infrastructure.

Don't misunderstand, choosing the best hardware is the first foot forward. Bias notwithstanding, ABB makes fantastic, future-proof equipment and we have crafted intelligent software for the most advanced, connected DC fast charging technology available anywhere in the world.

But no equipment nor software will do well with unengaged site hosts, or non-solvent, reactive network operators; nor will it be as healthy on closed, proprietary networks that lock-in owners and sites with no flexibility to choose the best possible solutions.

We've seen projects that start with a "build it and they will come" planning philosophy. The good news is that yes, they will come. EV drivers are increasing every month with hockey stick projections over the coming years. But when they arrive, what will they find?

A station that is well managed on a healthy, player-engaged network with a 24/7/365 philosophy for driver satisfaction? Or a station managed by a host who figures out that he or she doesn't want to deal with a 24/7/365 business? Or a network operator that only cares about collecting payments, while relying solely on warranties rather than proactive planning, maintenance, parts and systemic operations?

EXAMINE 360 DEGREES AROUND THE CHARGER

WHAT'S ALL PART OF THAT 360 DEGREES?

It's the overall business vision, siting, connectivity, reliability, user experience, services, maintenance, site engagement and partner solvency. All these aspects stack up and equate to a positive driver

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experience. These pieces of the puzzle will draw in multiple entities working harmoniously to achieve the same positive outcome:

- The hardware manufacturer who engineers the charging technology and connectivity solution.
- The network operator who will be the face to the consumer, enabling the payment interface and perhaps membership plans.
- The charging equipment owner, who may sometimes also be the network operator and sometimes the site host.
- The automaker who works closely with hardware and technology providers to ensure compatibilities; and may work with dealers and networks to promote consumer engagement.
- The local utility is a critical partner for connecting charging stations to the grid, but may also support the installation and work closely with owners and sites on issues of managing demand; the utility may also be an owner and/or operator in markets where utilities may engage that business model.
- The maintenance and service team(s) who may be affiliated with any of the aforementioned players; or a contracted specialist of the owner; either model can be equally effective.
- The site host who may support all these companies with the location's administrative support, as well as general consumer and driver specific engagement.

INTEROPERABILITY MEANS CHOICE

Interoperability is a major key to infrastructure health, especially in the DCFC deployment game. One should never agree to be locked into a single vendor or a single technology.

Industry accepted best practice protocols such as OCPP, allow deployment planning that can leverage the best fit among hardware, networks, back-office systems, consumer payment experiences, data ownership philosophies and site management options.

Any company that says: "We can do it all for you but we choose everything for you", is not a futureproof partner for infrastructure planning. Beware of the company that claims to be good at everything, as the list of players in the charging infrastructure value chain comprises varying disciplines and specialties. For example, being the best at charging technology, safe, grid connected systems and device connectivity does not make a hardware company good at developing consumer-facing payment systems. Likewise, the experts on back office accounting systems, app development or consumer membership engagement are rarely going to be electrical engineering powerhouses.

Even the most ubiquitous real estate entities may not have the on-site staff at every location for maintaining sophisticated electrical equipment.

This is not to say that there can't be areas of specialty overlap with potential. When an owner is also an operator, we have seen very successful models where capital investment and operational plans are intrinsically tied to consumer engagement and success.

Still, the principle of interoperability among all these layers of value gives rise to the most market choice, as well as the most future-proof, competitive and healthiest systems seen in the market.

HEALTHY VERSUS UNHEALTHY PUBLIC CHARGING

There are key issues in the public EV charging space that are of high interest.

Sometimes they are heatedly debated for a reason, because they really do impact EV drivers and consequently, EV adoption.

These points of consideration that point to best EV charging deployment practice include:

- Hardware
- Business models
- Deployment philosophy
- User experience
- Data management
- Service model

RECIPES FOR SUCCESS

There's no single, precise recipe that will hand anyone an automatic win, guaranteeing that session revenue will roll in without any operational cares in the world.

Yet understanding what should be embraced and what can be avoided early on will give infrastructure developers a significant head start against the worst outcomes.

Successful charging enterprises then also benefit the whole EV industry.

As EV adoption grows, drivers will rely more and more heavily on public infrastructure for range enablement and consumer confidence.

Done the right way, everyone can benefit from a bigger and more economically sound electrified transportation future ahead.

Visit www.abb.co.nz or contact Debbie van der Schyff on debbie.vanderschyff@nz.abb.com for more information.

FIND YOUR NEW EVS HERE!

NEW EV CAR TYPES				
MAKE	MODEL	TYPE	PRICING RRPest.	APPROX RANGE kms
Audi	e-tron	BEV	$148,500	417 km
BMW	i3	BEV	$77,200	200 km
	i3s	BEV	$85,900	200 km
Hyundai	Ioniq	BEV	$65,900	300 km
	Ioniq Elite	BEV	$71,990	300 km
	Kona	BEV	$77,990	449 km
	Kona Elite	BEV	$83,990	449 km
Jaguar	I-Pace S	BEV	$144,900	470 km
	I-Pace SE	BEV	$154,900	470 km
	I-Pace HSE	BEV	$164,900	470 km
Kia	Niro EX289 (39 kWh)	BEV	$68,990	289 km
	Niro EX455 (64 kWh)	BEV	$75,990	455 km
LDV	EV80	BEV	$80,489	180 km
Nissan	LEAF	BEV	$59.990	270 km
Renault	Zoe 40 kWh	BEV	$68,990	300 km
	Kangoo van	BEV	$74,990	200 km
Tesla	S - Standard Range	BEV	$129,700	520 km
	S - Long Range	BEV	$149,900	610 km
	S - Performance	BEV	$181,900	593 km
	X - Standard Range	BEV	$139,200	375km
	X - Long Range	BEV	$159,900	507 km
	X - Performance	BEV	$190,900	487 km
	3 - Standard Range Plus	BEV	$75,900	460km
	3 - Long Range	BEV	$95,900	620km
	3 - Performance	BEV	$105,200	560km
Volkswagen	e-Golf	BEV	$69,490	220 km
Audi	A3 Sportback e-tron	PHEV	$71,500	45 km + 600 km
	Q7 e-tron	PHEV	$158,400	54 km + 800 km
BMW	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
	i8 2018 Coupe	PHEV	$286,200	55 km + 400 km
	i8 2018 Roadster	PHEV	$309,900	53 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	$155,500	30 km + 800 km
Hyundai	Ioniq Plug-in	PHEV	$53,990	63 km + 1040 km
	Ioniq Plug-in Elite	PHEV	$59,990	63 km + 1040 km
Kia	Niro	PHEV	$55,990	55 km + 850 km
Mini	Countryman	PHEV	$59,900	30km + 500 km
Mitsubishi	Outlander	PHEV	$55,990	50 km + 500 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
Toyota	Prius Prime	PHEV	$48,490	50 km + 1000 km
Volvo	S90 T8	PHEV	$125,900	34 km + 600 km
	XC90 T8	PHEV	$134,900	44 km + 600 km
	XC60 T8	PHEV	$94,900	40 km + 600 km

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

EV FRANCHISE DEALER LIST	
NAME	
AUDI / HYUNDAI / VOLKSWAGEN	
Farmer Auto Village 07 578 6017 info@farmerautovillage.co.nz 116 Hewletts Road, Mt Maunganui	Mt Maunganui
HYUNDAI	
Energy Motors 06 759 8070 | hyundai@energymotors.co.nz Cnr Gill & Eliot Streets, New Plymouth	New Plymouth

FIND YOUR QUALITY USED EVS HERE!

USED EV CAR TYPES				
MAKE	MODEL	TYPE	PRICING RRP EST.	APPROX RANGE KMS
BMW	i3 - 22 kWh	BEV	$33k - $45k	120 km
	i3 - 33 kWh	BEV	$52k - $86k	200 km
Hyundai	Ioniq	BEV	$47k - $55k	220 km
	Ioniq Elite	BEV	$57k - $66k	220 km
	Kona	BEV	$69k - 83k	400 km
Kia	Soul EV	BEV	$30k	150 km
Mercedes Benz	B250 e	BEV	$44k - $47k	140 km
Mitsubishi	i-Miev	BEV	$8k - $13k	100 km
	B-Miev Van	BEV	$16k	100 km
Nissan	LEAF Generation 1	BEV	$9k - $16k	120 km
	LEAF Gen 2 - 24 kWh	BEV	$13k - $34k	135 km
	LEAF Gen 2 - 30 kWh	BEV	$26k - $36k	180 km
	LEAF ZE1 - 40 kWh	BEV	$43k - $63k	250 km
	e-NV200 - 24 kWh	BEV	$27k	140 km
	e-NV200 - 40 kWh	BEV	$60k	200 km
Renault	Zoe 40 kWh	BEV	$29k - $60k	300 km
	Kangoo ZE Van	BEV	$42k - $46k	160 km
Smart	Fortwo	BEV	$20k	100 km
Tesla	S P85D	BEV	$95k - $120k	330 km
	S 90D	BEV	$125k	420 km
	X 75D	BEV	$109k	340 km
	X 90D	BEV	$129k	410 km
	X 100D	BEV	$149k	480 km
	X P100D	BEV	$230k	460 km
Volkswagon	e-Golf - 36kWh	BEV	$49k - $69k	220 km
Audi	A3 Sportback E-Tron	PHEV	$41k - $50k	45 km + 600 km
	Q7 e-tron	PHEV	$125k	54 km + 800 km
BMW	i3 REX - 22 kWh	PHEV	$33k - $50k	120 km + 120 km
	i3 REX - 33 kWh	PHEV	$50k - $68k	200 km + 120 km
	225xe	PHEV	$42k	41 km + 550 km
	330e	PHEV	$50k - $76k	37 km + 550 km
	530e	PHEV	$140k	50 km + 600 km
	X5 xDrive40e	PHEV	$140k	30 km + 800 km
	i8	PHEV	$94k - $140k	37 km + 400 km
Hyundai	Ioniq	PHEV	$46	63 km + 1040 km
Mercedes Benz	C350 e Sedan	PHEV	$63k - $75k	31 km + 700 km
	GLE500	PHEV	$130k	30 km + 700 km
	E350 e	PHEV	$120k	30 km + 600 km
	S500 e	PHEV	$96k	30 km + 700 km
Mini	Countryman Cooper SE	PHEV	$68k	30km + 500 km
Mitsubishi	Outlander	PHEV	$22k - $58k	50 km + 500 km
Porsche	Cayenne S e-hybrid	PHEV	$129k	20 km + 750 km
Toyota	Plug-in Prius	PHEV	$11k - $20k	26 km + 800 km
Volvo	XC60 T8	PHEV	$115k	40 km + 600 km
	XC90 T8	PHEV	$115k	44 km + 600 km

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

USED DEALERS LIST	
NAME	CITY
Autolink Cars | 09 378 9090 | autolinkcarsltd@gmail.com	Auckland
GVI Electric | 09 216 7106 | evi@gvi.kiwi	Auckland
Harwood Cars | 027 492 2218 | www.harwoodcars.com	Auckland
Auckland City Electric Vehicles | 0800 248 9387 | www.acev.co.nz	Auckland
European Car Imports | 021 616 550 | sally@europeancarimports.co.nz	Auckland
Hamilton EV | 021 959 400 | nicholas@hamiltonev.co.nz	Hamilton
Drive EV | 027 521 0429 | 07 378 0082 | steve@driveev.co.nz	Taupo
Coventry Cars Hybrid & Electric 04 384 4536 | salesteam@coventrycars.co.nz	Wellington
EV City | 03 972 5505 | contact@evcity.kiwi	Christchurch
Metro Christchurch | 03 348 5855 | chrisn@metrochch.co.nz	Christchurch
Auto Court | 03 455 3000 | info@autocourt.net.nz	Dunedin
The Electric Motor Vehicle Company | 03 218 7130 | 027 515 8799 | info@electricmv.co.nz	Invercargill

MICHAEL TRITT WITH THREE-YEAR-OLD DAUGHTER ELLA ON HIS ELECTRIC HAIBIKE AT THE TOP OF MOUNT ROSKILL IN AUCKLAND.

ELECTRIC BIKES

POPULAR IN LOCKDOWN AND BEYOND

Electric bikes have proved their worth during the tougher COVID-19 alert levels four and three.

And expect more on the streets and bike paths as businesses such as bike shops resume store trading under level two guidelines.

The level three and four restrictions prompted Electrify NZ founder and director Michael Tritt to share his observations and explain some of the rules about e-biking and e-scootering under those levels.

Tritt's been missing his 20km round trip on his e-bike between his Mt Roskill home and central Auckland shop at 57 Victoria Park Market – one of three associated bike shops in Auckland.

Instead, Tritt has been riding 5km up Mt Roskill and back home, often with daughter Ella on board.

"The electrical assistance gets switched down or off, to maximise the exercise benefit, given the limited distance."

Tritt says he's noticed many others out on their e-bikes as well.

During the lockdown, Tritt spread the word that it was OK to ride around your area provided bike riders stuck to a few simple rules.

"For many essential workers their bike is their 'vehicle' and of course they can keep using their bike to get to and from work."

Others using bikes to get fresh air and exercise could do so provided they kept a two-metre distance from others not in their bubble, stuck to simple outdoor exercise and avoided areas where they were likely to get injured or lost.

Further rules included staying in your neighbourhood and avoiding high risk forms of cycling.

Even at level three group rides are out and riders cannot arrange to meet others not associated with their bubble.

"Of course, there are also public health reasons why going for a regular bike ride during the lockdown and beyond is a good idea," Tritt says.

"Dr Ashley Bloomfield, the director general of health, has been an advocate of cycling, and for good reason.

"Evidence shows regular cycling reduces your risk of heart disease, diabetes and many types of cancer," Tritt says.

"Personally, I believe that a major reason I've scarcely troubled the New Zealand health system in my middle-age is the

20km of riding I do nearly every day on my e-bike."

Tritt says bikes, whether electric or regular, form an important part of many other people's exercise routine.

"By keeping up exercise routines, we can reduce our chances of burdening health services. Our mental wellbeing is also inextricably linked to regular exercise, fresh air and vitamin D exposure."

Tritt says he had to adapt his e-bike route since the lockdown.

"Our first excursion to a nearby park with shared paths revealed the park to be very busy with other riders, joggers and pedestrians - and at times this meant it was challenging to keep a two-metre separation at all times.

"So, we instead took to what is normally a fairly cycle-unfriendly section of Dominion Road to find it blissfully quiet. The streets have actually never been safer for riding. In this crisis we are seeing glimpses of what a more positive future might look like."

While Tritt believes everyone will be grateful when things can return to some kind of normality, possibly under level two, he says people should take the opportunity to consider which parts of "normal" are worth keeping.

"Cleaner air and streets which are safer for active transportation and exercise are surely worthy goals, for our own health and that of the wider world."

Tritt says the nationwide chain of nine Electrify NZ owner-operated franchise shops, including one each in Hamilton, Tauranga, Wellington, Nelson, Christchurch and Dunedin, will reopen under level two, subject to strict conditions.

Meanwhile, online trading has continued with fully assembled and safety checked bikes able to be delivered to the customer's door by vans the company already leases.

He says Electrify NZ never really did deliveries before as customers generally collected their own bikes, but it's something they had to do during levels three and four.

He hopes to see the leased vans switched to electric when these become available.

PHOTOS FROM LEFT TO RIGHT

- HE MAJOR / SCOTT RAMSAY
- MORE PEOPLE ARE CHECKING OUT E-BIKES.

ADAPTING TO CHANGE

Cool Bikes NZ owner Scott Ramsay reckons some of his customers are now preferring to work from home and selling their extra car to replace it with an electric bike as a result.

He says many business owners have consolidated, rationalised and - sadly – some have even folded during the COVID-19 crisis

"How has COVID changed your life?" he asks, noting survivors are usually the ones adapting to change the fastest.

"Sure the challenges are real, and ours started in December when China shut down. Since then we have had Chinese New Year, level four lockdown and now we head into the cooler months."

Ramsay says with lower overheads he's been able to trim up to $300 off the price of most electric bike lines and that one model – the Major – has even sold out but should be back in store about October or November.

"But stock will not last long," he warns. Pre-orders close May 31 and any doing so for the Major will get guards, rear rack and front light mesh upgrades worth $345 free.

Deliveries are contactless to the door during alert level three, with the e-bikes fully assembled for Greater Auckland, and 85% assembled and boxed for the rest of New Zealand.

Pick-ups can be arranged by appointment only and remain contactless.

Other measures are also taken by Cool Bikes to ensure staff and customer safety.

Contact Cool Bikes NZ on **09 448 5544**, email **scott@coolbikes.co.nz** or visit **www.coolbikes.co.nz** for more information.

COVID-19 TRANSPORT AND TECHNOLOGY SURVEY OPEN FOR INDUSTRY

ITS NZ is running a survey for the transport and related sectors to better understand the impact and future outlook with regard to COVID-19.

By **Simon McManus,** executive officer, Intelligent Transport Systems New Zealand Inc

The survey will remain open at least another week and we encourage those from across the sector to complete it,

Visit our homepage **www.ITSNZ.org** to do the survey.

ITS NZ board member **Armin Guttke**, a project manager at INOV8, prepared the survey and shares some early findings below.

"We have received a good number of responses across different industry verticals.

"There was a well-balanced spread across infrastructure, policy and regulation, and information technology respondents.

"The significant majority of our respondents in the transport and technology sector have been impacted negatively to a serious or moderate amount.

"It is interesting to compare this with the operating model which shows that about 50% of respondents have been able to operate as essential services to some degree or another, with another 25% or so having been able to run as a safe business under level three government guidance/ restrictions.

"Digital technology has been cited by a significant number of respondents as a key mitigator toimpacts, many citing remote and collaborative technology including cloud."

COVID-19 AND THE GOVERNMENT POLICY STATEMENT ON TRANSPORT - A CATALYST FOR BOLD TRANSPORT GOALS AND ACTION?

On May 11, the Draft Government Policy Statement (GPS) for Transport closed for feedback and submissions.

It was heralded for a record investment of $54 billion over 10 years when it was published for feedback on March 19.

Since then the COVID-19 pandemic has and continues to wreak havoc on many aspects of the world we knew.

It looks like we can be thankful the New Zealand government acted as swiftly as it did to minimise the impact here, saving many families from heartache

SELETA REYNOLDS

and those in health services from psychological trauma.

Given the impact the pandemic will still have on jobs, the economy and the way we live, there is a timely opportunity to revise the policy statement before final publication with a greater consideration on how it guides a budget which contributes to resilience, employment and New Zealand Inc.

"The GPS is how the Government guides Waka Kotahi NZ Transport Agency to invest more than $4.5 billion a year raised through the National Land Transport Fund; and how it expects them to allocate funding towards roads, rail, walking and cycling infrastructure, coastal shipping and public transport."- *(Media Release, March 19, 2020 via Beehive.govt.nz)*

ITS NZ has made a submission on behalf of our members, not in relation to COVID-19 but identifying a significant oversight when it comes to the role of and funding for innovation and technology in addressing our most pressing transport objectives.

In the past five years there have been immense disruptive changes to the transport ecosystem. We now have 20,000 EVs, at least twice as many micro-mobility vehicles and e-bikes, Uber has been joined by Ola and Zoomy, and Cityhop has several competitors in car-sharing too.

In the next five years these technologies will further embed, battery advances will continue, hydrogen options will emerge while 5G, GPS, and autonomous vehicle features will improve safety, navigation and efficiency.

Less visible, but just as important, are the advances in measurement, network planning and traffic management enabled by digital networks, GPS, AI and greater data-processing capabilities.

Opportunities such as eRUC and geo-fenced congestion charging are now very viable and Kiwi companies like EROAD are well positioned to provide the technology.

The draft GPS does not assign technology and innovation as a Strategic Priority, nor one of 11 Activity Classes, its role in outcomes or measurement is also vague.

Given the critical role technology will play in improvement and disruption of transport, we submitted that it needs greater consideration and the risks of overlooking its role could prevent us from achieving goals of safety, emissions reduction and efficiency.

T-TECH DIGITAL SPEAKER SERIES

We have announced **Seleta Reynolds**, the visionary and respected leader of the Los Angeles Department of Transport, as the first of our speakers in an ongoing series of online events.

We encourage you to register to hear from global and local experts on the future of mobility, vehicles, safety, freight and more.

EVENTS

T-TECH EXPERT SPEAKERS SERIES

MAY 25

Seleta Reynolds

GENERAL MANAGER

Los Angeles DoT on Transport Equality, New Mobility & COVID-19

TBC

Carol Schweiger

SCHWEIGER CONSULTING

on Mobility as a Service

TBC

Amy Ford

ITS AMERICA

on New Mobility & Gender Issues in Transport

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EV SALES STOPPED

APRIL EV STATS HIT BY COVID-19

April EV figures barely moved as the COVID-19 pandemic restrictions dealt a blow to EV registrations.

Only 30 more EVs were added to the previous month's total of 20,306, bringing April's total to 20,336, latest Ministry of Transport registration statistics show.

That's well down on previous months' increases of around 500 or more and means a struggle to hit the end of year target of 32,000 EVs on New Zealand roads,

April's poor showing could heavily impact on the goal of achieving 64,000 by the end of 2021, unless there's a massive pick up during the next 18 months.

New light pure EVs went up the most in April, rising by 15 to reach 4292, while used light pure electrics rose 11 to 10,992.

An increase of just two was recorded for both new light plug-in hybrids (3142) and used light PHEVs (1729).

Heavy EVs at 181 registrations didn't budge from the March figures which were only one up on February.

EV OPTIMISM ABOUNDS AT TRADE ME MOTORS.

"After we saw an expected slowdown in the market during alert level four, the EV market began to pick back up in the last week of April," Trade Me Motors head **Alan Clark** says.

When compared to March, the number of EV listings were up 5% in April.

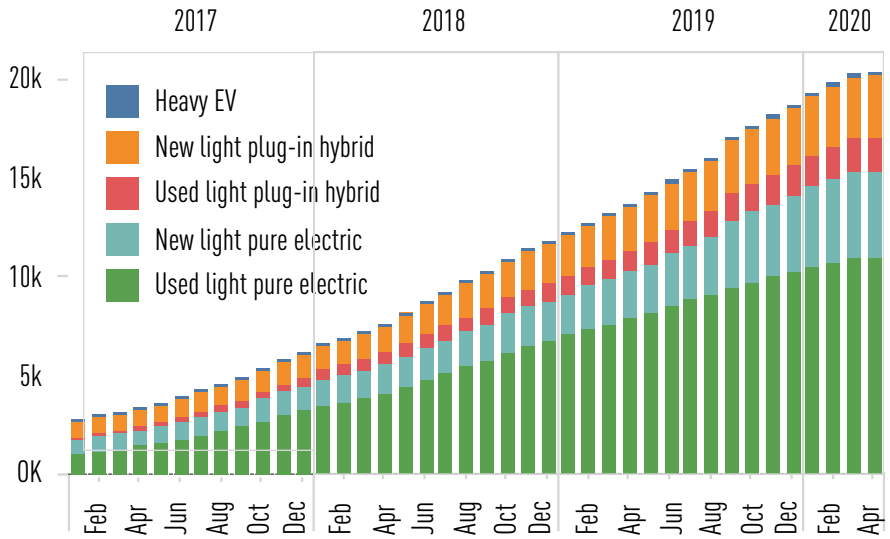
The average EV asking price was $25,498 in April, up 9% when compared to this time last year, Clark adds.

The Nissan Leaf continued to lead the pack as the most searched EV onsite, followed by the Nissan e-NV200 and BMW i3.

EV dealerships say the latest figures are no real surprise because of the restrictions.

It's whether EV sales will pick up quickly that concerns them most.

Henry Schmidt of Autolink Cars and **Martin Harwood** of Harwood Cars, both say it's difficult to forecast the outlook for EVs.



They agree it's hard to determine whether people will hold on to their money because of job security issues or spend it on an EV because they've seen how air quality improved during the lockdown.

"People are waiting to see," says Schmidt, adding there is too much uncertainty to tell.

Hadley Hargadon of Auckland City Electric Vehicles and **Hayden Johnston** of GVI, believe EV sales will bounce back.

They're expecting more will be out checking EVs under alert level two restrictions, based on the enquiries they received during levels four and three.

While the government is providing support for businesses during this time, EV sellers have yet to see any incentives for EV uptake.

And they were expecting much in the budget announcement from finance minister **Grant Robertson**.

He focusses on the more immediate response to the COVID-19 induced economic woes than on a fiscal roadmap for the next year.

Further business support is hoped for. It will be an economic recovery budget, bearing in mind the general election is still planned for September 19.

	2013	2014	2015	2016	2017	2018	2019	2020
Jan	194	235	595	1,117	2,758	6,630	12,200	19,285
Feb	194	246	625	1,153	2,986	6,918	12,725	19,838
Mar	202	286	683	1,226	3,193	7,255	13,186	20,306
Apr	202	329	716	1,319	3,377	7,632	13,659	20,336
May	204	367	745	1,405	3,661	8,200	14,229	
Jun	207	391	796	1,599	3,969	8,707	14,867	
Jul	208	418	844	1,751	4,258	9,249	15,421	
Aug	210	442	873	1,875	4,593	9,759	16,031	
Sep	213	467	917	1,989	4,926	10,255	17,026	
Oct	221	494	957	2,153	5,361	10,891	17,562	
Nov	226	527	1,002	2,374	5,840	11,380	18,186	
Dec	230	554	1,056	2,555	6,216	11,752	18,689	

EV SALES SLUMP

April lockdown EV and PHEV figures show zero sales for the most part.

Just 16 new EV sales, two new PHEV sales, and 14 used EV and PHEV sales combined are recorded in newly released Motor Industry Association and NZ Transport Agency data for the month.

The Hyundai Kona with eight and Tesla Model 3 with four comprised the bulk of new EV sales in April, the Model 3 well ahead of the pack on year-to-date (YTD) sales with 157, followed by the Kona on 92.

The only other new EV sales recorded in April were the Kia Niro with two, and the LDV EV80 van and Volkswagen e-Golf with one each.

For new PHEVs, the Hyundai Ioniq and Mitsubishi Outlander had just one sale each, the Outlander way ahead in YTD figures with 162.

YTD sales for new EVs show 428 – the Nissan Leaf, VW e-Golf, Hyundai Ioniq, Tesla Model X, Audi e-tron and Jaguar I-Pace well into double figures.

For new PHEVs the YTD stats put the Mini Countryman and Toyota Prius into the 20s and, apart from the Outlander and Porsche Cayenne (17), nothing else made double digits.

In the used EV sales category, the Nissan Leaf topped April with nine, followed by the BMW i3, Nissan e-NV200 van and Tesla Model S with one each.

In the used PHEV section, the Mitsubishi Outlander and Toyota Prius recorded one sale each.

Just how May sales figures pan out is anyone's guess at this stage.

But EV dealerships will certainly be hoping for a massive improvement.

USED IMPORTS & NEW MAKES AND MODELS

NEW MAKES AND MODELS 2020		
MAKE AND MODEL	Apr '20	TOTAL 2020
ELECTRIC		
HYUNDAI KONA	8	92
TESLA MODEL 3	4	157
KIA NIRO	2	2
LDV V80	1	1
VOLKSWAGEN GOLF	1	31
NISSAN LEAF	0	41
HYUNDAI IONIQ	0	21
JAGUAR I-PACE	0	19
TESLA MODEL X	0	17
AUDI E-TRON	0	17
BMW I	0	9
TESLA MODEL S	0	9
MERCEDES-BENZ EQC	0	5
RENAULT ZOE	0	1
RENAULT KANGOO	0	1
FACTORY BUILT EV10	0	1
LDV EV80	0	1
FACTORY BUILT SOUZHOU	0	1
TOTAL	**16**	**428**
PLUG-IN HYBRID		
HYUNDAI IONIQ	1	8
MITSUBISHI OUTLANDER	1	162
MINI COUNTRYMAN	0	26
TOYOTA PRIUS	0	21
PORSCHE CAYENNE	0	17
BMW 3 SERIES	0	4
MERCEDES-BENZ GLC	0	4
BMW I	0	3
BMW X5	0	3
VOLVO V60	0	3
VOLVO XC60	0	3
VOLVO XC90	0	3
AUDI A3	0	3
LAND ROVER RANGE ROVER	0	2
PORSCHE PANAMERA	0	1
VOLVO S60	0	1
Total (Autobase)	**2**	**263**

USED IMPORTS JANUARY 2020			
MAKE	MODEL	MAR'20	YTD'20
BEV - BATTERY ELECTRIC VEHICLE			
NISSAN	LEAF	9	703
BMW	I3	1	18
NISSAN	E-NV200	1	14
TESLA	MODEL S	1	6
	OTHER	0	16
Total		**12**	**757**
PLUG IN HYBRID			
MITSUBISHI	OUTLANDER	1	96
TOYOTA	PRIUS	1	88
	OTHER	0	32
Total		**2**	**216**

TOWARDS AN E-MOBILITY FUTURE

Shared, on demand, autonomous, connected and electric.

That's how Debono Group Malta Toyota future mobility solutions project manager **Nicoletta Moss** sees the future of transport globally.

And she holds the view that vehicle dealerships need to be fleet managers, selling access to mobility rather than selling cars, and to become more flexible in their business efforts.

She's still working on mobility projects while under COVID-19 restrictions in New Zealand with Kiwi husband **Corin Moss** who is in the transport communications field.

They have been staying on Waiheke Island with their two children, moving straight into isolation after leaving Malta just as the pandemic's impact was starting to be felt globally.

They are renting an Auckland home and plan to return to Malta in September when school resumes there.

Meanwhile, Moss has been making the most of her time here to see how New Zealand is doing in the e-mobility field and whether lessons can be shared between the two countries.

She's no stranger to New Zealand, having worked with **Mark Gilbert** (Drive Electric chairman) at BMW in 2005-2007.

Moss set up BMW's driver training programme and hopes to catch up with Gilbert with the pandemic restrictions easing.

Now she works with forward thinking and tech savvy brothers **Geoffrey** and **Michael Debono**, checking out mobility trends and preparing business plans with **Michael Debono**, establishing projects such as Malta's first on-demand ride-pooling service called "Cool".

Moss is working on EV charging infrastructure for Malta and what regulations are needed or have to be changed to allow autonomous vehicles (AVs). She aims to catch up with **Dee West** from ChargeNet NZ and is also keen to see the work Auckland-based Ohmio Automotion (led by **Dr Mahmood Hikmet**) is doing in the AV field.

While on Waiheke Island, Moss has been learning more about its drive to become the world's first residential all-electric island by 2030 through its Electric Island Waiheke campaign, led by this magazine's publisher **Vern Whitehead**.

Malta also has the island of Gozo aiming to go electric, Moss believing it doesn't really matter who in the world is first, provided they all co-operate around electric transport.

She likens Waiheke Island to Malta which has about 490,000 people and 390,000 cars. A foundation was started by the Debono Group there in 2016, named the Project Aegle Foundation, to educate and research "how to move people's mindset to alternative mobility", Moss says.

That's based on her philosophy of "shared, on demand, autonomous, connected and electric" transport.

Moss says Malta aims to have no new internal combustion engine (ICE) vehicles sold there by the end of the decade.

While some use plug-in hybrids (PHEVs) on Malta, she says many can just use a hybrid's electric drive to get around the 27km long by 15km wide island.

PHOTOS FROM LEFT

- THE GOTO MALTA SCHEME INCLUDES NIU ELECTRIC SCOOTERS.

The Maltese government is keen on electrics and aims to have about 130 public EV charging stations installed, along with 5000 EVs (including hybrids) on the island by the end of this year.

Moss says she tells people Malta is a perfect test bed as it has a small population, is not too big in size and its transport authority Transport Malta in interested in new technology with a number of forward thinking people on board.

However, Moss thinks more can be done to encourage micro e-mobility such as electric bikes and e-scooters as road widening did not really allow for such transport forms.

She believes more can also be done to encourage people out of single use cars through car sharing such as the GoTo Malta scheme.

It has about 180 Renault Zoe BEVs and is establishing some 225 EV charging stations which will eventually also be available to the public.

A fan of micro mobility, particularly electric, Moss believes the future of transport can already be seen in places like Auckland where people perhaps travel to a park and ride in their EV or use an on demand service, use electrified public transport (train, e-bus or in future an AV shuttle or electric ferry) to get to the city centre and then ride an e-scooter or e-bike they hire for the rest of the journey to work.

Now than people are perhaps more environmentally focused after the COVID-19 crisis, seeing the massive air quality improvement with the lack of traffic, for instance, Moss can see increasing moves by countries towards electric mobility.

But she believes co-operation is needed, such as sharing findings, to help achieve global transport emission reductions and move to an EV world.

POWER DEALS FOR EV USERS

Company	Energy Deals	Where	Cost to charge LEAF*
Meridian	**Electric Car Plan:** Super-low night rates from 9pm until 7am daily. Available for your entire home's electricity needs. Rates are fixed for 3 years. Plus get a year's worth of free EV charging on us! (bill credit of up to $300)	Auckland Wellington Christchurch	$4.91 $4.15 $2.82
Mercury	**Plug-in Vehicle Fuel Package** 20% discount on your energy bill from 9pm – 7am, available on multiple properties, guaranteed discount for 2 years from signing up to offer, 12% PPD is included in these calculations.	Auckland Wellington Christchurch	$5.75 $5.82 $5.63
ecotricity	**Low Solar:** Low Usage plan for EVs & can buy back solar energy, no fixed term	Auckland Wellington Christchurch	$7.16 $4.53 $3.20
Contact Energy	**Everyday Bonus Fixed:** Excellent night rates, no fixed term, check if the matching day-time kWh rate will affect your overall bill.	Auckland Wellington Christchurch	$5.57 $4.60 $3.28
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	$6.82 $6.86 $6.71
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	$5.80 # $5.75 # $3.46 #
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	$6.81 $4.23 $3.73
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	$4.42 #

*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 and could increase your overall bill. Flick Electric in Christchurch has higher daytime rates in Winter due to variable pricing from the lines company. The rates we have used above are calculated each month using a low user cost, overnight rates, includes 10% charging loss, 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.

PLUGGED IN!

Stay connected to the EV community with useful links below.

EECA	NZ government's EV information website **https://www.electricvehicles.govt.nz/**
Drive Electric	Advocacy group for the EV industry **https://driveelectric.org.nz/**
Better NZ Trust	A community of EV enthusiasts **www.leadingthecharge.org.nz**
Charge Net	Nationwide EV charging network **https://charge.net.nz/**
Electric Heaven	NZ electric car guide **http://www.electricheaven.nz/**
NZ EV Podcast	Monthly podcast about EVs **https://www.podcasts.nz/nz-ev-podcast/**
Flip the Fleet	EV Community data sharing project **https://flipthefleet.org/**
NZ Electric Bikes Review	Independent electric bike reviews **https://electricbikesnz.com/**

EV OWNERS FACEBOOK GROUPS – ONLINE CHAT GROUP FOR THE NZ EV COMMUNITY

Nationwide	
NZ EV Owners	**https://www.facebook.com/groupsNZEVOwners**
Regional	
Auckland EV Owners	**https://www.facebook.com/groups/291373964545996/**
Wellington EV Owners	**https://www.facebook.com/groups/WellyEV/**
Waikato EV Owners	**https://www.facebook.com/groups/WaikatoEV/**
Dunedin EV Group	**https://www.facebook.com/groups/403816650002889/**
Christchurch EV Group	**https://www.facebook.com/groups/ChristchurchEVGroup/**
EV Owners - Manawatu	**https://www.facebook.com/groups/1847252468838484/**
Nelson Tasman EV Owners	**https://www.facebook.com/groups/365895557107117/**
Northland EV Group	**https://www.facebook.com/groups/northlandEVgroup/**
Bay of Plenty EV Owners	**https://www.facebook.com/groups/BayOfPlentyEVOwners/**
Central Otago Lakes EV Owners	**https://www.facebook.com/groups/521978908249518/**
Naki EV Owners Group	**https://www.facebook.com/groups/375210949597565/**
South Canterbury EV Owners	**https://www.facebook.com/groups/southcanterburyev/**
INVER-ELECTRIC-CARGILL	**https://www.facebook.com/groups/250609535293325/**
ELECTRIC ISLAND WAIHEKE	**https://www.facebook.com/evisland**

EV CHARGING LOCATIONS

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

Fast / Super Charger Locations – North Island

Waitiki Landing	9049 Far N Rd, Te Hapua 0484
Pukenui	Houhora Fishing Club, 4126 Far Nth Rd
Coopers Beach	Four Square, 9 Coopers Dr
Kaitaia	Te Ahu, 28 South Rd
Kaitaia	Pak'nSave, 111 North Rd
Kerikeri	1 Butler Rd
Opononi	Four Square, 29 SH12
Kaikohe	Library Carpark, 14 Marino Pl
Kawakawa	4 State Highway 1
Tikipunga	Paramount Plaza, 1 Wanaka St
Whangarei	11 Alexander St
Raumanga	McDonalds, 130 Tauroa St
Dargaville	Totara St Park, 113 Totara St
Kaiwaka	1 Kaiwaka-Mangawhai Rd
Warkworth	New World, 6 Percy St
Warkworth	BP, 67 Auckland Rd (SH1)
Orewa	New World, 11 Moana Ave
Silverdale	17 Hibiscus Coast Hwy
Albany	The Warehouse, 186 Don McKinnon Dr
Rosedale	McDonalds, 14 Constellation Dr
Kumeu	New World, 110 Main Rd
Henderson	Pak'n'Save, 224 Lincoln Rd
Akld CBD	Vector, 21 Hobson St
Beach Rd	Z Station, 150 Beach Rd
K Road	Tesla, 501 Karangahape Rd
Newmarket	1 Gillies Ave
Greenlane	McDonald's, 320 Gt Sth Rd
Pakuranga	BP, 322 Pakuranga Rd
Botany Downs	Z Station, 550 Te Irirangi Dr
Akld Airport	Shopping Ctr, George Bolt Mem. Dr
Akld Airport	Z Skyway, George Bolt Mem. Dr
Takanini	30 Walters Rd
Takanini	Pak'nSave, 345 Great South Road
Coromandel	44 Woolams Rd
Whitianga	4 Lee St
Tairua	Carpark, 6 Tokoroa Rd
Pukekohe	King Street Carpark, 56 King St
Pukekohe	Counties Power, 14 Glasgow Rd (Bus hrs)
Waiuku	Kitchener Rd Carpark
Thames	505 Mackay Street
Whangamata	100 Hetherington Road
Hampton Downs	Gate 1, Motorsport Park
Te Kauwhata	16 Wayside Rd
Waihi	New World 35 Kenny St
Huntly	Countdown, 18 Tumate Mahuta Dr
Morrinsville	New World, 79/89-97 Thames St
Te Rapa	WEL Networks, 114 Maui St
Rototuna	Countdown, 160 Peachgrove Rd
Matamata	New World, 45 Waharoa Rd
Hamilton	Tesla, The Base, Te Rapa Rd
Hamilton	Countdown, 551 Anglesea St
Claudelands	Coutdown, 160 Peachgrove Rd
Hamilton	Caro St Carpark, 7 Caro St
Hamilton	Countdown, 4 Bridge St
Ruakura	Waikato Innov. Pk, 9 Melody Ln
Raglan	43 Bow St
Tirau	3 Station St
Mt Maunganui	Bayfair, 19 Girven Road
Mt Maunganui	New World, 1 Tweed St (25 kWh)
Cambridge	73 Queen Street
Pirongia	Four Square, 270 Crozier St
Te Awamutu	10 Scout Lane
Whakatane	i-Site, 30 Quay St
Opotiki	i-Site, 70 Bridge St
Te Kaha	Te Kaha Bch Res, 3 Hotel Rd
Te Araroa	22 Rata St (25 kWh)
Rotorua	1134 Haupapa St
Tokoroa	New World, 72 Bridge St
Matawai	6522 Matawai Rd
Tolaga Bay	43 Cook St (25kWh charger)
Te Kuiti	New World, 39 Rora St
Murupara	Pine Drive Car Park, Pine Dr
Taupo	Firestation, 1 Kaimanawa St
Taupo	Tesla, 1 Kaimanawa St
Gisborne	21 Gladstone Rd
Morere	Hot Pools, 3968 SH2 (25 kWh)
Rangitaiki	Lodge Café, 3281 SH5
Turangi	1 Pihanga Rd
New Plymouth	66 Courtenay St
Opunake	Business Centre, 23 Napier St
Wairoa	75 Queen St
Putorino	5466 State Highway 2
National Park	Four Square, 4354 SH4
Ohakune	New World, 30 Ayr St
Taihape	New World, 12 Huia St
Te Haroto	Mc Vicar Rd, 4237 SH5
Waiouru	Cnr SH1 & Hassett Dr
Hawera	Pak'nSave, 54 Princes St
Napier	206 Dickens St
Hastings	100 Queen St W
Mangaweka	Papa Cliff Café, 2 Koraenui St
Whanganui	Pak'nSave, 167 Glasgow St
Waipukurau	34 Russell St
Dannevirke	24B Gordon St
Woodville	i-SITE, 43 Vogel St
Palmerston Nth	i-SITE, 126 The Square
Palmerston Nth	Tesla, 365 Ferguson St
Levin	New World, 21 Bath St
Otaki	New World, 155-163 Main Hwy
Paraparaumu	Kapiti Pak'nSave, 132 Rimu Rd
Raumati	15 Raumati Rd, Paraparaumu
Paekakariki	7D Wellington Rd Paekakariki
Masterton	Queen Elizabeth Park, 3 Dixon St
Porirua	2 Serlby Pl
Featherston	SuperValue , 42 Fitzherbert St
Upper Hutt	24 Queen St
Lower Hutt	Dowse Art Museum, 1 Stevens Gr
Wellington	Grey St Parking
Petone	Z Station, 60 Hutt Rd
Te Aro	Z Station, 174 Vivian St
Te Aro	Barnett St Carpark, 11 Barnett St
Te Aro	Inglewood Parking, 68 Inglewood Pl

Fast / Super Charger Locations – South Island

Takaka	16 Willow St
Havelock	Four Square, 68 Main Rd
Motueka	New World, 271 High St
Karamea	Four Square, 103 Bridge St
Nelson	i-SITE, 81 Trafalgar St
Nelson	New World, 73 Vanguard St
Richmond	Library, 11 Mcglashen Ave
Spring Creek	2226 SH1, Blenheim 7202
Blenheim	Pak'nSave, Springlands
Ward	Flaxbourne Café, 7326 SH 1
Westport	New World, 244 Palmerston St
Reefton	Four Square (25 kWh) 47 Broadway
Greymouth	13 Tarapuhi Street
Kaikoura	51 West End
Kaikoura	New World, 124 Beach Road
Hokitika	New World, 116 Revell St
Culverden	27A Mountain View Rd
Amberley	Countdown, 123 Carters Rd
Rangiora	Pak'nSave, 2 Southbrook Rd,
Northwood	New World, 2 Mounter Ave
Harewood	Raeward Fresh, 800 Harewood Rd
Addington	Z Station, 40 Moorhouse Ave
Halswell	New World, 9 Nicholls Rd
Christchurch	Tesla, The George Hotel, 50 Park Tce
Rolleston	New World, 90 Rolleston Dr
Lincoln	New World, 77 Gerald St
Little River	4235A Christchurch Akaroa Rd
Rakaia	41 Bridge St
Ashburton	109 West St
Tekapo	Lake Tekapo Tavern, SH8
Fairlie	Opp. 53 Main St
Geraldine	Cox St Carpark, 14 Geraldine-Fairlie Hwy
Temuka	New World, 185 King St
Twizel	Events Ctr, 61 McKenzie Dr
Timaru	26A North St
Omarama	2 Sutherland Rd
Omarama	Tesla, Hot Tubs, 29 Omarama Ave
Kurow	Wynyard St
Wanaka	42 Ardmore St
Queenstown	Tesla, Remarkables Park Town
Athol St	9 Athol St, Queenstown
Frankton	Pak'nSave, 302 Hawthorn Dr
Cromwell	i-SITE, 2 The Mall
Waimate	125 Queen Street
Oamaru	Eden St Carpark, 3 Eden St
Ranfurly	31 Charlemont Street
Alexandra	9 Thompson Street
Hampden	33 Lincoln St
Nth Dunedin	University of Otago, 71 St David St
Dunedin	Filleul St Carpark, 193 Moray Pl
Mosgiel	New World, 10 Hartstonge Ave
Milton	Four Square, 207 Union St
Roxborough	22 Jedburgh St
Lumsden	Four Square, 14 Diana St
Lawrence	Four Square, 19 Ross Pl
Winton	New World, 293 Great North Rd
Gore	New World, 8 Irk St
Balclutha	23 Charlotte St
Invercargill	116 Esk St

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