EVtalk

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All Nissan dealers to become Leaf-ready

Nissan Australia has confirmed its entire national dealer network is expected to become part of the brand's Zero Emission sales and servicing strategy, including its rural showrooms.

Speaking to *EVTalk* this week at the 40kWh Leaf electric car launch in Melbourne, managing director **Stephen Lester** says every franchised Nissan dealership will be capable of selling, servicing and providing charging support for the new generation Leaf.



Stephen Lester

Lester says that of Nissan's 187 franchised dealerships, 60 are already technically prepared in service departments, with trained sales staff and charging infrastructure already in place.

"The 89 dealers already signed up to the Leaf programme roughly represent all our metro and provincial dealers across Australia, the balance is what we would classify as more 'rural' dealers," he says.

"Those dealers are typified by much smaller markets and are relatively remote," Lester explains.

He says Nissan dealers are vital to supporting the Leaf's widespread uptake.

"We need them to have the installations because going down the track we cannot deliver an experience where our customer is sacrificing when they go

Continued on page 2

INSIDE

Fast charging networks surge	3
Hydrogen a hit	6 & 8
Renault Zoe review	7
EVs power home & business	9 & 10





Australia needs more EVs: Jafari

Feebate fan **Behyad Jafari** from the Electric Vehicle Council sees Australia being left behind in the race to adopt EVs and other low-emission vehicles.

That's especially now that the New Zealand Government is proposing a "clean car" plan which includes fuel emission standards and a feebate scheme.



Behyad Jafari

What it means is that just Australia and Russia will be the only OECD countries without fuel efficiency standards.

And that could lead to more high emission vehicles being dumped in Australia.

A feebate scheme offers discounts or rebates on EVs and other zero or low emission producing vehicles while penalising polluting vehicles with higher fees.

"Feebate schemes are in my mind the gold standard for elegant public policy design for promoting vehicle efficiency and reducing both fuel consumption and CO2 emissions."

Commenting on latest Department of Industry, Innovation and Science figures showing Australians "are stuck paying more for petrol without fuel efficiency standards", Jafari says the data shows the same cars cost more to run in Australia.

Continued on page 10

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All Nissan dealers to become Leaf-ready

Continued from page 1

into a dealership," he explains.

"We have been very clear with the network, the requirements are – we are not going to deliver a sub-standard customer experience with the Leaf," he confirms.

"We would say to metro or provincial dealer you are going to be a Leaf dealer because with this opt-in-opt-out idea, we're so convinced of the trajectory for EVs that as a brand we can't afford to have one dealer saying they're not doing it and giving a dissatisfaction to the customer," he reveals.



Western Plains Nissan. Image: Google Maps

"The plan will be to on-board rural dealers as we go, those who want to start early can do so and we'll give them all the benefits."

Lester says the market in Australia's more remote regions will actually be a long-term target customer for the benefits of the $50,000 electric car.

"In our expansion plans we've gone out to all those rural dealers and said you're welcome to be a hand-raiser and we'll provide cars, but we still need you to do the basics, to send your people for training, and we need technical training," he continues.

"Tools, the EV service campaigns, and charging stations to ensure owners can receive the same level as service as a metro dealer."

Lester says Nissan hasn't encouraged the rural network as being part of a "push strategy" and says it was actually on a more voluntary basis.

"They have raised hands and come to us which is why we've being saying we'll see about 89, maybe 90 by the time we go on-sale, with charger installs within August, and many who are a bit further down the track," he says.

Nissan says regional dealers in interesting locations such as tourism destinations, larger populated provincial cities and towns are seeing the strong benefits of having electric vehicle preparations in place.

Customers in rural areas, Lester explains, have "predictable traffic patterns" which are also buoyed by living with renewable energy access such as in-home solar.

"There route is usually pretty specific and being beholden to a petrol station is no longer necessary.

"You need a vehicle to go into town, do grocery shopping, take kids to school – all tasks the Leaf can easily complete."

Citing Morgan Stanley Research, Nissan global director of EVs **Nic Thomas** says the amount of carbon dioxide and oxides of nitrogen produced from compliance of internal combustion drivetrain development will also rise.


Nic Thomas

The drivetrain costs of CO2 and NOx compliance for electric vehicles versus internal combustion keeps rising, with a crossover period, accounting for real-world driving emissions (RDE), expected around 2024.

Where current compliance costs sit at around $250 per kWh for an EV, it's expected to drop below $100 per kWh by 2025, in the same two-year bracket when internal combustion is predicted to go from $175/kWh to $225/kWh.

"The costs of those conventional engines will go up," Thomas says.

"These are the costs to us as a company of building traditional [internal combustion] engines in the way we always have," he concedes.

"There will be a crossover very soon where a battery car will cost less than a petrol or diesel car," Thomas highlights.

A bidirectional charging capability allows it to power a home, known as vehicle-to-home (V2H), which means that, in future, Nissan Leaf customers in Australia will be able to use the vehicle to share energy stored in its battery with their home, business or even community.

Plugging into a Chademo rapid charger gets from alert to 80% charge in around an hour.

A collaboration with Jet Charge will assist customers with home charging infrastructure needs.

Charging across Australia

Fast charging networks are storming across Australia in preparation for the coming electric vehicle surge.

One of Australia's largest electric vehicle charging networks will be established under a newly announced partnership involving California-based EV Connect and the St Baker Energy Innovation Fund - backed Australian Evie Networks.

They are building an ultra-fast highway charging network aimed at connecting Australia's major capital cities.

Chargefox will meanwhile have more than 100 DC fast chargers operating by the end of 2019, aiming for thousands of chargers in the years ahead.

It is also partnering with Yurika to manage 17 fast-charging sites that make up the Queensland Electric Super Highway.

Tasmania has now joined in the EV fast charging network's rapid growth.

The Government's investment there of more than half a million dollars into a state-wide fast-charging network will stimulate a total spend of over $2.5 million.

Not only will drivers be able to access 14 new charging stations at 12 different locations, but they will be able to charge up in a matter of minutes at several sites with the rollout of ultra-fast charging stations.

The fast-charging network will be supplemented by the state's destination charging stations at businesses, carparks and visitor destinations, in which the Hodgman Liberal Government has already invested $50,000 in.

EVs powered by Tasmanian renewable energy have enormous potential to significantly improve the state's vehicle fleet through reduced costs and reduced greenhouse gas emissions, environment, parks and heritage minister **Peter Gutwein** says.



Owners of the 2019 Nissan Leaf will get discounted charging

"Tasmania was the first jurisdiction in Australia to achieve zero net emissions, and we are on target to deliver full self-sufficiency in renewables by 2022.

"Through the Government's Electric Vehicle ChargeSmart Grants – Fast Charging programme we are empowering more Tasmanians to take up electric vehicle ownership and reduce their carbon footprint."

Tasmanian environment minister **Elise Archer** helped launch the project.

Visit **www.climatechange.tas.gov.au** for more information on Tasmanian charging locations.

Meanwhile, Evie Networks will use EV Connect's EV Cloud platform to deploy and manage a network of 42 sites and more than 80 new ultra-fast Tritium charging stations in their first phase network.

The Evie network will leverage the company's EV charger deployment experience and EV Connect's charging data analytics and station uptime management to enable drivers, fleet owners, distributors, and retailers to go electric.

"EV Connect is the most experienced charging software developer in the market, and we are putting that expertise and the EV Connect platform to work with our partners to build a clean, safe, convenient, and dependable EV charging network across the cities, towns, and highways of Australia," Evie Networks chief executive officer **Chris Mills** says.

"Based in one of the most mature EV markets in the world, EV Connect brings the experience and capability to reliably connect with a wide range of charging stations and vehicle models. We saw this as critical to providing the dependable charging experience that we want for Australian drivers and partners."

EV Connect provides a cloud-based software platform for managing networks of EV charging stations, their interaction with utilities, and the driver experience. The collaboration with Evie Networks in Australia will help set up a seamless highway network of city-to-city transport for EV drivers and EV fleet operators by increasing the number of chargers in Australia exactly where they are needed.



Elise Archer



Tritium chargers will be used on the highway network

The EV Connect platform allows network operators like Evie Networks to manage everything from a single EV charging site to networks of hundreds of site operators with many thousands of sites and ports under management.

"For Australia to fully realise all the benefits of EVs, we have to reduce range and charging anxiety by giving drivers access to charging and information about chargers, no matter where they travel," EV Connect founder and chief executive officer **Jordan Ramer** says.

The ultra-fast chargers will be at select highway locations across Australia and give EV drivers a charging experience similar to that of refuelling a conventional internal combustion engine (ICE) vehicle.

Visit **www.goevie.com.au/** for more information.

Chargefox is partnering with Yurika to manage the 17 fast-charging sites that make up the Queensland Electric Super Highway.

These chargers are capable of delivering up to 60km of range for 15 minutes of charge, and Chargefox users can find, charge and pay for charging sessions at any charger on the highway.

Continued on page 5



Autonomous carmakers must collaborate

Telstra says automotive manufacturers who want to connect their vehicles in the future in pursuit of autonomy will need to work together.

Speaking to *AutoTalk* for the launch of the connected vehicle trials program in partnership with Lexus, VicRoads and the Transport Accident Commission, Telstra group executive for networks and IT, Nikos Katinakis, says carmakers like Tesla can't stay rogue forever.

He agrees with University of New South Wales artificial intelligence professor **Toby Walsh**, who has told *AutoTalk* previously that carmakers, including Tesla, will eventually have to collaborate in developing a mature autonomous vehicle network as regulatory systems are put in place. In fact, Katinakis says it's irrefutable.

"When companies diverge and start creating their own technology, that's when things start going wrong, so absolutely, they have to collaborate," he says.

"There needs to be cross-collaboration and the good thing about these programs is V2X (vehicle to infrastructure) is a standard," Katinakis explains.

"As long as people and companies come together around these standards, we're all okay."

Katinakis says troubleshooting future problems and faults in the autonomy sector within automotive, has largely already begun with the rise of smartphones, tablets and human-operated devices.

"We already have smartphones everywhere, they're in cars, very fast-moving cars, even Formula One cars, and they work – meaning the technology is fast enough to manage handovers between towers, the latency is low enough to manage this kind of speed.


Nikos Katinakis

"So, when something happens, we already have a lot of technology to troubleshoot this device and understand why it's dropping out or what the problem may be; embed this in a car and it's much the same thing, except the communication between cars is much faster," Katinakis continues.

He agrees that the beta testing phase of smartphones and connectivity has already been done in the last 20 years.

"It's quite sophisticated, the ability to manage the reactions to the other car, so I think it's this part of the technology that will require careful tuning around how it interacts with the human.

"If you get too many warnings for example, that could be distracting in itself, so it's about finding a balance.

"Instead of having human to human, now you have machine to machine – so the next step in improvements is trying to make it even faster, to the point of being seamless – but the basic, core troubleshooting capabilities are already there – we know what's going on," he adds.

The two-year connected vehicle trial is one of many global exercises, but Katinakis says Australia's tendency to be patient in the rollout of such a transformative technology will pay dividends.

"Compared to the rest of the world, Australia is actually very far ahead," he says.

"We are quite advanced, and Telstra punches far above its weight, and globally it's very well known what our companies can do and what our technological capabilities are.

"Telstra's list of global firsts, Asian firsts and Australian firsts, it's a testament to how far advanced we are. Compared to the US, we –Australia and Telstra - have better coverage, with excellent, robust networks, especially if you compare speeds and feeds to the network," he explains.

"Australia is also very well placed for autonomous vehicles because our base [network technology] is already quite solid," Katinakis says.

The trial is currently operating on Telstra's 4G network and will provide the data and practice needed to switch over to the impending 5G network. Katinakis says, with the new high-speed 5G network, which is vastly improved than its predecessor network, vehicles could become part of a subscription or package deal.

"If no use-case ever materialises, which is highly unlikely as we know, if nothing else, it's about cost-per-bit delivered, which in 5G is significantly less than 4G going back," he explains.

"Because of all the low-latency characteristics, it allows for use cases like this where the monetisation is very different from the way we pay for con-

Continued on page 5

Autonomous carmakers must collaborate

Continued from page 4

nection now.

"It's a very, very different domain."

The 5G network promises extremely low latency, which is the millisecond delay between an instruction given to download or receive information and when that transfer of data actually begins. In 5G's case, as little as four milliseconds could be as long as you wait. The technology is expected to be able to support vehicle-to-vehicle and V2X connectivity, and potentially wide-scale vehicular autonomy.



However, technology innovators, Katinakis suggests, need to be careful as they progress toward vehicle autonomy and connectivity.

"It's about not pushing the envelope too far, causing damage, because they haven't thought about all the possible outcomes," he says.

"Ultimately, this technology is playing with human lives and thinking that machines can do everything today; it's not good.

"We're not there yet, and thinking something is ready when it hasn't been tested slowly, progressively in more and more challenging environments, something is going to happen."

Katinakis suggests companies like Tesla, as well as being innovative and disruptive to the automotive and pioneering an autonomous vehicle market, need to keep safety and regulations within their remit.

"For autonomous driving, every manufacturer has their own secret sauce and they can do whatever they want because it's all contained within the car, but as the cars now begin to interact with their environment and with other cars, in the absence of standards, those cars may not be very nice to each other," Katinakis concedes.

"Today, you can run Microsoft software on an Apple, and that's exactly how everybody wins [in vehicle autonomy]."

While it might be easy to suggest carmaker brands work co-operatively in developing vehicle autonomy, the question for a telecommunications giant like Telstra, is whether it too can play nicely in the sandpit.

"As an industry, in telecommunications everything is standard-spaced, so 5G to 5G is standardised," he says.

"An Optus phone or Optus car will work the same as a Telstra car or Telstra phone, it's a standardised industry."

When it comes to humans entering the new realm of autonomy and artificial intelligence more broadly, Katinakis says the evolution of machines requires "small steps".

"In the beginning it's all about helping the human by providing as much information as possible in order to make decisions, and as we go into AI making decisions, there are still many questions needing answers about the ethics, the choices, how we value and make judgements."

"It's important that we allow AI to evolve as we answer these questions, otherwise, we'll be in a big mess." ■

Charging across Australia

Continued from page 3

Chargefox has more than 170 public chargers operating, including 40 DC fast chargers.

The public network includes five ultra-rapid Chargefox charging sites already open, and another 17 in development. All 22 sites will be completed by the end of 2019.

The chargers on the highway charge up to 350kW and can deliver up to 400km of charge in 15 minutes, powered by 100% renewable energy and featuring solar panels and batteries on site to facilitate charging via solar energy wherever possible.

EV drivers will be able to drive from Adelaide to Cairns without lengthy charging stops with the Chargefox public network.

"Extending the Chargefox network to Cairns is a step forward for EV drivers in Queensland and across Australia. It provides further reassurance that EV ownership is a real option for new car buyers, and the connection simplifies charging dramatically for existing EV drivers," Chargefox chief executive **Marty Andrews** says.

Chargefox is an official partner of Jaguar Australia, having signed an agreement to provide five years free, unlimited charging on the Chargefox ultra-rapid charging network for drivers of Jaguars like the electric I-Pace.

In another partnership, 2019 Nissan Leaf owners will get discounts at Chargefox fast charging stations nationally.

Nissan Australia announced the deal after the Leaf launch in Melbourne on July 9.

"Nissan is considering every aspect of electric vehicle ownership and reducing the cost of charging makes the Nissan Leaf even more enticing," Nissan Australia managing director **Stephen Lester** says of the Chargefox partnership.

Nissan hopes its support will continue to inspire federal, state and local government, plus private industry, to invest further in charging infrastructure and support Chargefox's work in expanding the EV charging network. ■


Moreland's hydrogen garbage truck project is still a chance



Council finally goes hydrogen

Moreland City Council is running two fuel cell Toyota Mirai as part of a two-month fleet trial.

Moreland says the trial will continue the council's commitment to reducing its emissions footprint with 14 Nissan Leaf EVs already racking up the kilometres and a network of fast-chargers installed across the municipality.

In 2013 Moreland installed Victoria's first electric vehicle rapid charge station in partnership with the Victorian government, which is entirely free to use, as well as the well-publicised pioneering effort to replace its fleet of diesel garbage trucks with fuel cell versions, powered by on-site produced renewable hydrogen.

The Mirai trial is mayor councillor **Natalie Abboud's** latest attempt to curb the council's emissions footprint.

She says a resource-responsible path to a zero-emissions transport future will likely see battery electric vehicles fill much of the personal transport space, and fuel cell electric vehicles much of the commercial and public transport space.

As well as the Nissan Leaf fleet and 10 charging stations within council bounds, on-site charging from JetCharge and dedicated parking spaces are available to encourage staff use.

"Council sees battery electric and fuel cell electric vehicles filling specific roles in a zero-emissions transport future and supports them as equally important technologies," the council adds.

The municipality was the first in Australia to adopt a "Fossil Fuel Divestment" process in 2015 and began investigating "options for renewable hydrogen generation for transport in Moreland" in 2016. It later announced it was planning a small pilot project fleet of hydrogen fuel cell garbage trucks as part of a collaboration with IVECO (CNH Industries), hydrogen technology suppliers H2U and a series of other companies.

AutoTalk understands the garbage truck project may not be completed, but that the council is doubling down on its promise to pursue its renewable energy and emission-free goals.

Toyota Australia's advanced technology vehicles manager **Matt MacLeod** says: "Moreland City Council [members] are strong advocates of zero emissions solutions and we look forward to seeing how they use the in-demand Mirai."

Toyota Australia's $7.4 million hydrogen education and refuelling centre in Altona is also heavily into the construction phase to repurpose the defunct manufacturing plant, and is set to open in December and be "fully operational by late 2020".

The Victorian government is developing a Hydrogen Investment Program (HIP) to understand the long-term viability of what's referred to as a "hydrogen economy".

According to the Hazer Group, cited by the Victorian government's (HIP) statements, global hydrogen production in 2014 was worth the equivalent of $132 billion dollars courtesy of 64 billion tonnes produced – just as Hyundai was introducing the world's first mass-produced fuel cell vehicle.

The investment programme's submissions intake which closed in February, aims to provide funding for hydrogen research, trials, pilots and demonstrations in order to develop "a strong base of industry knowledge, skills and seed funding".

Energy Networks Australia, which says its members "provide energy to almost every household and business in Australia", claims to have already tipped significant funding into hydrogen, and notes its potential use as a commercial fuel.


Andrew Dillon

"More than $150m has been allocated towards hydrogen research, development and pilot projects," ENA chief executive Andrew Dillon says in a statement.

"There is also a significant amount of work addressing the role of hydrogen as a transport fuel which is not covered in our submission [to the Hydrogen Investment Program]," he says.

"Victoria has a unique advantage to produce hydrogen from both renewable and fossil fuel resources, and to export this," Dillon continues.

"We are supportive of the Victorian government developing a strategy and implementing policy to identify the opportunities hydrogen can create for the state," he adds.

Moreland council tells *AutoTalk* it has lodged a submission to the Victorian Hydrogen Investment Program which is currently in a discussion period. A funding round will open again later this year which Moreland says it intends to apply for.

Meanwhile, a source tells us the still-born Moreland fuel cell garbage truck project, which was discontinued due to "unsuitable commercial terms", has not been dropped despite setbacks, because "the reasons we embarked on the original project have not changed".


Moreland: a seasoned alt-fuel fleet



Business modelling

The Renault Zoe Z.E. leaves one in a quandary - fortunately it has nothing to do with its abilities as an electric car.

Buying breakfast cereal from the supermarket seems a fairly elementary task, particularly when you're not buying that over-processed, added-sugar, unknown rubbish thrown in all the allegedly healthy trimmings.

The only three items you should be touching in the cereal aisle are raw, unprocessed oats, cornflakes and Weet-Bix. None of that flavoured stuff with dried fruit or anything inserted into the simplest of foods, because that's where they get you, on price and contents.

What you notice about buying these three simple cereals, essential for a healthy diet, is the rise of what was once called "home brand" equivalents. The house-brand version of cornflakes is immediately a better buy.

Look at the price tag and clearly the home brand option is the smarter one, so naturally it leaves the shelves quicker. But the box is smaller, meaning you'll be back for more much sooner than if you'd gone for the original, big-box, crushed-and-cooked corn.

Let's get one thing clear from the outset. This is, from the front, the prettiest electric car on the market, narrowly beating the Jaguar I-Pace. The rear lights look a bit too splayed to be pretty, per se, but they do look cool, like they're from an F-Zero video game race car (look it up, kids).

Unlike most electric cars, even models released much later than Zoe which is a couple of years old in Australia now, the Zoe's boot is joyously deep. Perfect for expansive shopping sprees through Chadstone, or wherever women conduct their clothing acquisition ceremonies these days.

If you're looking for a cut-price Tesla Ludicrous experience, you're in the wrong place. Zoe is not about pulling brains back inside their skulls, and nor is it supposed to make Mustangs look like Shetland ponies.

Acceleration is agonisingly sluggish if you drive thus, with throttle mapping designed for optimal take-off with range-conservative enthusiasm in your deployment of 66kW and 220Nm. Once you're up to speed, Zoe will gladly scurry along at pace, but is completely outgunned by anything even mildly sporty.

Brakes lack feel but they will stop you with genuine confidence.

It's also important at this point to highlight the crucial safety and efficiency factors involved with running correct tyre pressures. Eco tyres on an electric car sitting at just 20psi is not only like asking the battery to drop anchor but is grossly unsafe in the event of an emergency stop or sudden swerve. The bloke in the V8 Audi, also sharing the servo's poorly maintained air pump, enjoyed gawping at Zoe while I waited.

When you fire up (sorry, flick on) the $50k Zoe, the whirring and Hollywood-style sound effects of things powering up is enjoyable, and a nice touch is two varied-size cup holders to account for both a woodgrain-styled drink bottle or your keep-cupped small, skinny flat white.

It needs to be said that the R-Link infotainment system is fiddly to use. Connecting a phone means having to manually tell the system to be "visible" in a separate menu, despite having already tried to push "Connect a new device" in another menu. Seems strange to expect several people will want to connect to your Zoe at the same time as you.

Also weird is the speed-sensitive radio volume, which is distracting and annoying, likewise the placement of cruise control switch beside the driver's right knee and volume controls behind the steering wheel, ala paddleshifts.

On a one-week loan period courtesy of Renault Australia, Zoe's claimed range of 300km courtesy of a 40kWh battery is pretty-well on-point, and the use of a 10amp 240v wall plug for

Continued on page 8



Zoe is lovely but isn't for everyone



I like big boots, I cannot lie



CRAWFORD'S CASE

Why Hydrogen?

David Crawford,
CEO of the Motor Industry Association, NZ

In recent months I have been asked several times about the place of hydrogen as a transport fuel. My response has been an enthusiastic "you betcha!" There are many reasons why I see hydrogen as a must and the important role it will play as a transport fuel in coming years. More on that later.

However, what I was not expecting when providing my views was the strength of opposition to hydrogen-powered vehicles. Some of this opposition came, in my view, from surprising places.

I am a member of the NZ Government's Electric Vehicle Programme Leadership Group. The subject has come up several times in recent meetings and some of the members almost go apoplectic at why anyone would want to talk about hydrogen as a transport fuel source, especially for light vehicles.

In the last month I attended a presentation by a visiting consultant who was hosted by Z Energy and Deloitte, who I hasten to add don't necessarily support the views of the presenter. What was puzzling was that while the presenter gave a very good explanation of the need to decarbonise transport, when speaking about hydrogen he was downright dismissive.

His views on the rate of electrification of the fleet match more closely what we in industry believe, which is not as bullish as many governments here and abroad believe and certainly not as bullish as the figures in the ICCC report to our Government.

He had me nodding my head in agreement with him until he clarified his view on hydrogen. His view was the inefficiencies in converting electricity to hydrogen to run a fuel cell where electricity is generated to drive the electric motors is not great.

Yes, it is an inefficient process. No one is saying it is not, you simply cannot ignore thermodynamics.

However, the point of hydrogen as a transport fuel is not about inefficiencies, it is about lowering or eliminating CO2 emissions from the transport task. This point seems to be lost on some of my colleagues on the EV Leadership Group too.

Currently the long run marginal cost of wind generation is about NZ $90 to NZ $105 per MWh - this compares to the average retail price of electricity at NZ $170 MWh. As we move to generating more renewable electricity the cost of new wind generation is getting cheaper. Some expect this cost to reduce to about $70 to $80 per MWh within the next few years and possible to about $50 per MWH by 2030.

All this is to say generating electricity from wind is getting cheaper. Solar power is also getting cheaper by the year and more efficient. You do not need bright sunlight for it to work either, just daylight.

As the country heads to a greater proportion of its generation from renewable sources, more wind power generating capacity will need to be installed. The thing is, with our combination of wind, hydro and geothermal (the latter which is not carbon neutral), wind generation gets turned on and off, which makes the current economics of wind less exciting.

Now imagine a world where wind generation stays on all the time (that there is wind blowing) and when it is not needed for general electricity generation it instead makes hydrogen. It is entirely plausible. In this example, from a transport perspective we don't care about efficiency, just that hydrogen is made from renewable sources.

Hydrogen absolutely makes sense for heavy vehicles. The weight of the fuel cell is miniscule compared to the weight of a large battery pack for heavy vehicles and the range from a fuel cell is impressive. It even makes sense for light vehicles once the cost of the hydrogen fuel becomes more economical and it will.

And this is where I differ from the naysayers. I find it interesting that the EV evangelical brigade are gloating when noting that only a decade ago saying full electric vehicles will dominate our vehicle mix would generate guffaws of disbelief? A decade on who is laughing now?

They have a gall to laugh at those of us who have open minds and are technology agnostic. The truth is, we will need all types of carbon-free transport options, including hydrogen, to reach our 2050 goals legislated by Government. ■

Business modelling

Continued from page 7

at-home trickle charging was sufficient for moderate use, in Melbourne's eastern suburbs where bugger-all charging infrastructure exists.

You won't be tearing up sports cars in Zoe, so don't even try. She's a more refined, yet simpler design. The Zoe buyer prefers the whimsical, the unorthodox, but doesn't break sweat or raise voice. Those looking for an electric car without affectation, but with unmissable, undeniable character, the unassuming Zoe brings the same essential nutrition, in a reserved packaging.

Zoe Z.E. isn't an electric revolution, but what it does, it does very well. There are faster, longer-range or better-priced EVs on the market. But they're not Zoe. ■

Dendo Drive Station - Powercuts as part of the sales process?



The Japanese know a little about natural disasters. The devastating Tohuku earthquake of 2001, left thousands of homes wrecked, and millions without services for weeks.

Mitsubishi Motors Japan saw a way they could assist their customers with their - at the time - relatively new electric vehicle product lineup. The first move was a unit that could be plugged into the Chademo port on the small iMiev and provide power to homes in the event of extended outages.

The next step spread the idea further. Every Japanese-sold Outlander PHEV came with a built-in inverter capable of supplying up to 1500 Watts at the Japanese-standard 110-120 volts. Again, the idea being is when the power goes out you can run home basics as long as you have battery charge or even petrol in your tank.

Those 1500 Watts will go a long way, with Mitsubishi sales staff in dealerships demonstrating that this could be enough to run a household fridge, keep devices charged, heat a jug, run a laptop and even run a microwave with a little management.

Such demonstrations are part of a Mitsubishi dealer concept called the Dendo Drive Station - a merger of vehicle charging, home technology demonstrations and civil defence operation all rolled into one. On a recent trip to Japan, *AutoTalk* took a tour of the station in Setagaya, a suburb of Tokyo, with **Taku Kawai**, manager of domestic network development for the sales and EV solution departments of Mitsubishi Motors Corporation.

Of the 591 Mitsubishi dealerships, 66 (as of the end of May), feature a drive station of some form or another. The Dendo system includes roof-top solar, DC and AC charging, a V2H unit and a demonstration "apartment" where all the technology comes together.



Overall, 501 dealers have DC fast charging units. They service a Mitsubishi plug-in fleet of 49,476 vehicles - including the Outlander, iMiev and Miev commercials.

In the apartment, specially trained staff can literally plug in and out real appliances to show the customer how much they can run off their Outlander. An artificial blackout is triggered, and then you switch to the vehicle supply and add appliances.

It's an interesting way to sell the concept, and really does break down what can be done with the vehicle's energy in an easy-to-understand way.

The building itself is partially powered by 3.3kW of solar panels, which feed either into the main building supply, or into a demonstrator Outlander parked on a V2H unit. Excess energy can be supplied to the grid. A smaller number of Hyper Energy Stations have also been build which feature more solar, up to 30kW, and a 12kWh battery storage unit.

A small colour display and control unit show how much power is coming in and where it is going - either back into the car, out of the car or in from the grid. On the day we visit the sun is shining and the dealership is taking full advantage of the solar to power itself.

The ability to be energy independent means that in the event of an emergency, the dealership can be used as a gathering point for the local communi-

Continued on page 10

Dendo Drive Station - Powercuts as part of the sales process?

Continued from page 9

ty. The main local emergency gathering point is technically in a park across the road, but working with the local government the dealership and its energy will be put to use should it be required.

In its own right, the dealership is an appealing space. Japanese dealerships are small, and tend to eschew large number of cars inside for people friendly spaces, coffee to order and even play areas for children. Full height glass walls and high ceilings give a feeling of space and light.

Mitsubishi believes charging is a way to maintain a connection with the customer, and while most charging is AC at home, it welcomes customers to the dealership to top up.

"Yes, this is a part of the corporations for the development of EV infrastructure as a social action, and it also can be aiming for our EV customer's satisfaction," the brand said in a statement.



Taku Kawai

Kawai is working on developing the sales of V2H systems to customers, both from the perspective of including it in vehicle financing and making it more affordable.



"It is currently too expensive, we are asking for it to be cheaper," he says. He prefers to call the unit a "car conditioner" than its more technical name.

Drive station charging is not just restricted to Mitsubishi vehicles, with an e-Golf popping in for a top-up while we were at the site.

How much does charging cost? In Japan you tend to subscribe to a membership card. With Mitsubishi's, for 50kW DC you pay five Yen a minute at a dealer, up to 12 Yen a minute at non-auto branded chargers and 15 Yen a minute at other automaker's chargers. AC charging costs around 1.4 Yen per minute.

Don't just expect to be ignored when coming into charge either. When driving an electric vehicle in a rural area we pulled into a Nissan dealership just as it was opening. Sales staff waved us into the charging slot, plugged us in, lead us into the customer waiting area and offered a coffee.

Considering the charge only cost around $5 it makes for good value - and a strong bond to the brand.

Australia needs more EVs: Jafari

Continued from page 1

The department says Australian consumers won't be offered some of the most efficient variants available to consumers in other markets with fuel efficiency standards.

That may lead to automotive manufacturers selling high-emitting vehicles in countries with less rigorous standards.

"EVs can and should be mainstream," Jafari says.

And he reckons an Australian-wide highway EV charging network should top the list of government priorities.

"The biggest single impediment to Australians buying cleaner, healthier electric vehicles is a lack of fast-charging stations. Drivers quite reasonably want to know they can 'fill up' quickly when they're on the highway."

Jafari believes Australia could soon have millions of vehicles filling up on increasingly renewable Australian energy instead of imported oil and fuel, while EV prices are dropping rapidly and the range is rising faster.

EVs are also great for Australian mining, with lithium for their batteries readily available in Australian, along with copper, nickel, cobalt and rare metals needed for the EV industry, he says.

Jafari says there's also plenty of potential to rebuild Australian manufacturing around EVs, especially with British billionaire Sanjeev Gupta announcing he's finalising plans to make up to 20,000 Australian-made EVs.

"The only reason not to implement a feebate mechanism and fuel efficiency standards is political will."

Hybrids head off electrics – even diesel in one sector

Hybrids are gaining greater popularity in Australia.

They're way ahead of electrics (including plug-in hybrids or PHEVs), and also outgunning diesel in the passenger category (private and non-private), the latest VFACTs national figures show.

While still well behind petrol power in all sectors, hybrids have made huge inroads in the passenger and SUV categories.

For instance, June new car sales statistics show hybrids at 906 in the non-private passenger segment, up 168 on the same month last year (738) and nearly double that for year-to-date (6028 compared with 3893 in 2018).

In the same category, electrics and PHEVs were down nine on June 2018 with 40 recorded in June 2019 and year-to-date (YTD) figures showing a 107 drop from 260 YTD 2018 to 153 YTD this year.

It's a similar story in the private passenger market.

Here hybrids climb by nearly 100 to 524 for June 2019 compared with 425 in June 2018. YTD totals for this year show 3394 hybrids sold compared with 1944 for the same period last year – up 1450.

By comparison, electrics/PHEVs drop from 31 sold in June 2018 to 19 this past month, while they struggle to make much ground in the YTD analysis, going from 134 sold in 2018 to 163 YTD in 2019 – just 29 more.

Sales of diesel vehicles are declining in the passenger sector but still out-do electrics/PHEVS, while falling several hundred behind hybrids at 242 (private) and 610 (non-private) for June 2019. Big drops for diesel are shown in both monthly and YTD comparisons.

The tale continues to some extent in the SUV category.

Hybrid SUVs account for 610 (private) and 341 (non-private) for June 2019, both up considerably on June 2018, with YTD figures also well up. For example, private hybrids go from 356 YTD in 2018 to 1709 YTD this year – up 1353, and non-private hybrid SUVs go from 528 to 1268 – up 740 YTD.

Electric/PHEV SUVs go from 15 in June 2018 to 92 in June this year in the private segment and 28 to 49 in the non-private category. YTD figures show a rise in both private and non-private – from 69 to 352 and 202 to 602 respectively.

Diesel declines are also reflected in the SUV sector, both in month and YTD comparisons, with petrol powered vehicle sales also dropping there.

The only other sector to record electric/PHEV sales is the light commercial non-private area which fell from four to two in June comparisons and rose just two (five to seven) in YTD comparisons.

Perhaps some of the declines are reflective of the new vehicle market as a whole.

Releasing the June sales figures, the Federal Chamber of Automotive Industries (FCAI) says a 9.6% drop is shown in the Australian new vehicle market.

Sales for the month totalled 117,817 units, with YTD 2019 sales of 554,466 units.

FCAI chief executive **Tony Weber** says the June result reflects tough market conditions and highlights the sensitive nature of the new vehicle market.



Hybrids are increasingly favoured by new vehicle buyers.

"Over the past six months we have seen various conditions and circumstances which adversely affected the market. These include a tightening of financial lending, environmental factors such as drought and flood, and a strongly contested federal election.

"In addition, the continuing incursion of Luxury Car Tax on a federal level, and now in some cases on a state level as well, is a major disincentive. It could just be the straw that breaks the camel's back for the new car buyer."

NEW VEHICLE SALES BY BUYER TYPE AND FUEL TYPE — JUNE 2019

	Month		YTD		Variance +/- Vol. & %			
Total Market	2019	2018	2019	2018	MTH	YTD	MTH	YTD
ELECTRIC								
Passenger Private	19	31	163	134	-12	29	-38.7%	21.6%
Passenger Non-Private	40	49	153	260	-9	-107	-18.4%	-41.2%
SUV Private	92	15	352	69	77	283	513.3%	410.1%
SUV Non-Private	49	28	602	202	21	400	75.0%	198.0%
Light Commercial Non-Private	2	4	7	5	-2	2	-50.0%	40.0%
Sub Total	202	127	1,277	670	75	607	59.1%	90.6%
HYBRID								
Passenger Private	524	425	3,394	1,944	99	1,450	23.3%	74.6%
Passenger Non-Private	906	738	6,028	3,893	168	2,135	22.8%	54.8%
SUV Private	610	70	1,709	356	540	1,353	771.4%	380.1%
SUV Non-Private	341	111	1,268	528	230	740	207.2%	140.2%
Sub Total	2,381	1,344	12,399	6,721	1,037	5,678	77.2%	84.5%
TOTAL	**2,583**	**1,471**	**13,676**	**7,391**	**1,112**	**6,285**	**75.6%**	**85.0%**



Feebate plan for NZ

A "clean car" plan that will see high emitting vehicles charged up to NZ$3000 to enter the fleet – and offering up to an NZ$8000 bonus on lower emitters such as electric cars, has been announced by associate minister of transport **Julie Anne Genter**.

Consultation on the Clean Car Discount and Clean Car Standard proposal closes on August 20 and is likely to be implemented in 2021.



Julie Anne Genter

Some are calling for a trial or pilot to begin next month to lessen any impact of potential EV buyers waiting for incentives to kick in and also avoid the risk of dumping high emission vehicles.

For new or near-new plug-in cars, battery electrics would receive an $8000 rebate, plug-in hybrids $6800 and hybrids $4800 under the proposal.

No vehicles over $80,000 would receive a discount – locking out many EVs currently on offer.

While the highest penalty for a new vehicle is $3000, used import cars would sit on a different scale – with a maximum fee of $1500, and a maximum discount of $2600.

"The cars, utes and vans we use every day are also the fastest growing source of harmful climate pollution and account for nearly 70% of our transport emissions," Genter says.

"Most Kiwis want to buy a car that's good for the environment, but tell us the upfront cost and limited choice makes it a challenge.

"This is about making cleaner cars a realistic choice for more New Zealanders – by reducing the upfront cost of electric, hybrid and fuel-efficient vehicles when sold in New Zealand for the first time," Genter says.

"Discounts will be financed in the fairest way possibly – by putting a small fee on the highest polluting vehicles when they're sold in New Zealand for the first time. This means people will still have choice, while contributing to the task of cleaning up the vehicles coming into New Zealand."

The plan could sit alongside a corporate average full economy style system that would require distributors, or used car traders, to ensure the balance of vehicles they sell each year fits a CO2 average of 105 grams per km, down from the country's current 180-gram average.

If they fail to do so, they could face stiff monetary penalties; $50 per gram per vehicle per year for used imports, $1000 per gram per vehicle per year for used imports.

CO2 outputs would be weighted to mitigate the fact that larger vehicles generally emit more. Under the weighting a 150 gram ute could be rated at 141 grams instead, while a very light car could see its rate rise.

Distributors and importers could group to balance their CO2 levels – for example, the Giltrap Group could partner one of its supercar brands with a brand that predominately imports small or electric cars.

New car distributors could also essentially "borrow" future emissions cuts, a way of recognising steps in technology are made every five to 10 years.

Years where the company undercuts the average could also be banked for future years.

Distributors and used vehicle traders will be supplied an online tool to assist in calculating their levels; they will be required to submit data on the fleet the sold each year to the NZ Transport Agency for verification.

The report notes the import market should be able to hit the target as the Japanese light fleet has sat at the same level since 2014, more than a decade before implementation.

While utes make up the bulk of the new vehicle fleet, the government appears convinced this will mitigate itself over time – noting quotes from Toyota that it will be electrifying every model by 2025, and that Great Wall is set to launch an electric ute in New Zealand.

The new rules will only apply to light vehicles, with a maximum tare of 3500kg.

The system could be implemented from 2021, either staged, with a lowering limit until 105 grams in 2025 or applying to a percentage of the distributor or importers fleet.

Support has come from those involved in the industry.

EV advocacy group Drive Electric hopes to see the consultation process move quickly and the feebate style scheme introduced "sooner rather than later".

The group has long pushed for such a plan and Drive Electric chairman **Mark Gilbert** says it's a great step forward.

"It's good to have some sort of emissions protocol in New Zealand as we've never had this.

"A lot of people don't really know what sort of emissions their vehicle produces – whether clean or dirty – so an education process could be put in place.

"Perhaps it [emission testing] could be part of the warrant of fitness process every couple of years."

Gilbert says most car companies will already have an idea of their vehicles' emissions because they have to comply with standards and policies in other countries.

"It's more the older fleet – five or six years-plus – that might need a green or red card."

Gillbert says the "clean car plan' could help people decide what their next car will be.

EV seller **Martin Harwood** of Harwood Cars is concerned New Zealand may be "sitting around" for two years to implement the plan while other countries scoop up EV stock. He would rather it takes effect as soon as possible.

Genuine Vehicle Imports (GVI) group general manager **Hayden Johnston** says it's great that New Zealand is following the lead of other countries, successfully running a feebate system that is tried and proven and has dramatically increased the number of EVs in their national fleets.

"A generous subsidy for new EVs and PHEVs will encourage manufacturers to offer more of their model range in New Zealand and we will hopefully step outside of the clutches of Australia's anti-EV influence," he says.

"Used sales will also benefit dramatically as the rebate will not only be a cash incentive but can actually enable some people to get into a cleaner and safer vehicle than they normally would using the

Continued on page 13

‘Massive’ EVworld NZ expo expected

Excitement is mounting as another record-breaking EVworld NZ event shapes up on August 1-3 at the ASB Showgrounds in Auckland.

Held over three days instead of two, New Zealand’s biggest EV industry gathering is forecast to attract more than 200 delegates, at least 80 exhibitors, and thousands of visitors.

They’ll see new products and innovative tech with many trade displays launching new stuff at the show - which organiser Conferenz expects will be “massive”.



Hyundai's electric Kona at Meridian Energy’s Te Uku Wind Farm near Raglan

Ride and drive test tracks for micro-mobility devices such as electric mopeds, e-bikes, Segways, hoverboards and more feature this year, and Mercury’s electric 1957 Ford Fairlane “Evie” will take visitors on a VR (virtual ride) experience.

Free testing of portable chargers will be provided, while EV brands on display include Audi, Hyundai, Kia, Mitsubishi, Nissan, Volkswagen and Renault.

The industry conference kicks off on Thursday, August 1 with the opening of the exhibition and the EV Champions Awards presented that evening. Friday, August 2 is the second day of the conference with the trade day free expo open that includes seminars.

The public day is on Saturday, August 3. Visitors can get free entry to see 80-plus exhibitors, hear seminars, and can bring their driver’s licence to drive or ride and see what e-mobility means.

Feebates are a timely topic following the Government’s announcement of a -clean car- plan for consultation until August 20, which includes discounts for low emission vehicles and fees for high emission ones.

It’s a topic to be taken up by keynote international speaker **Jackob Lagercrantz** from Sweden, who will talk about the similar Swedish “bonus malus” scheme, analyse outcomes after a year of feebates there and also cover the benefits of moving to a smart road tax.

EV advocate **Elizabeth Yeaman** of Retyna Consulting opens the industry conference on August 1 at 9am, the day including discussion about EV charging infrastructure, what’s on the horizon for EV innovation and more.

The second day of the conference includes keynote speaker **Drew Kodjak** of the International Council of Clean Transportation (USA), studying global EV trends and learning from other countries with a similar renewable energy mix to New Zealand.

Smart systems such as vehicle-to-home and vehicle-to-grid technologies are also explored, and Oliver Bruce will lead a break-out stream discussion around EV micro-mobility such as e-scooters.

Electrification of public transport and even a dissertation on battery powered lawnmowers and similar devices for parks and open spaces will come from Mean Green Mowers’ **Bruce Scott**.

Electric ferries are also covered by **Jeremy Ward** from East by West Ferries and Wellington Electric Boat Building Company.

Another stream on “electrifying your fleet” has TransNet’s **Glenn Inkster** talking about fleet charging infrastructure, Meridian’s **Nick Robilliard** on understanding property requirements, and The Climate Group EV100 head **Sandra Roling** discussing lessons from the EV100 global initiative.

The closing keynote speech on electric aircraft comes from Zephyr Airworks country manager **Anna Kominik**, the company trialling its Cora electric plane in the South Island.



Mercury’s Evie will provide a virtual reality drive experience

New Zealand Hydrogen Association chief executive **Dr Linda Wright** is scheduled to help lead a trade seminar programme on future fuels, and there’s also updates on the Energy Efficiency and Conservation Authority (EECA) low emission vehicles contestable fund.

An added incentive to attend the whole event is the chance to win the use of a Hyundai Kona EV for a month and second prize a keep for yourself an Inokim e-scooter from Scoozzi.

Visit **evworld.nz** for more information. ■

Continued from page 12

rebate amount as a deposit on finance.

“My only concern is that if passed and a firm date is announced, how far out will people stop buying and wait until making their new vehicle purchase?”

Wellington mayor **Justin Lester** says every other OECD country has fuel efficiency standards except New Zealand, Russia and Australia and that it has been very effective at driving down emissions and ensuring a wider range of low emission vehicles is sold.

Toyota New Zealand says it’s an encouraging step towards reducing New Zealand’s automotive carbon emissions, while the Motor Industry Association (MIA) says it welcomes sensible discussions on ways to make vehicles cleaner and greener. ■

EV Charging Infrastructure

