A Guide

5 THINGS BUSINESSES NEED TO KNOW BEFORE BUYING ELECTRIC VEHICLES

Welcome to our guide

INTRODUCTION

Making the shift from internal combustion 'easy' vehicles to electric is hard. If it wasn't hard then everyone would have made the shift already. There are lots of new moving parts to consider; driving range, recharging, higher capital cost, lower operating costs, residual value, charging infrastructure. It can be incredibly confusing. But it's not going away - the shift to electric vehicles is a global trend, not a fad.

This guide has been written after spending time with fleet, procurement, and business managers looking to build EVs into their fleet. I have experienced many reasons why businesses are looking to make the shift and these include: overall company-wide sustainability targets, the rising cost of liquid fossil fuel, the boss has brought a Tesla (on more than one occasion), through to staff have started bringing EVs to work and running extension leads out of their windows. It's also written from the perspective of someone who has brought an EV, gone through the buying process, installed EV chargers at home, and driven more than 70,000 kilometres (43,000 miles) in 18 months.

I have more than 10 years experience with EVs, having run the EV programme for Meridian Energy in New Zealand back when you couldn't buy an EV and there was no charging infrastructure. The insights I'm going to share with you in this guide are going to help with your journey from internal combustion to electric, clarify the complex issues, and make the decision making process easier. We'd love to get to know you and your challenges more so please feel free to contact me using the details below, visit our blog at www.chargesmart.co.nz, and follow us on Instagram, Facebook and LinkedIn. We also have a regular email newsletter you can sign up for to keep up to date.

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When do you jump into EVs?

THE PERFECT TIME

As we all know, trying to time something perfectly is a fools' errand. But it's fair to say that 11 years ago at Meridian Energy we were a little early. Here in 2020, we are getting closer and closer to EVs being on parity with internal combustion engine (ICE) vehicles. In fact, Deloitte predicts we will see this happen in 2022 (revised down from 2023).

Here in 202 we've been hit with COVID-19 and the price of oil for a time crashed. It's still down at ~$50USD/barrel, but prices at the pump continue to hover around $2 here in NZ compared to ~$0.30/litre for EVs. It's time to take a serious look at electric. The major challenge as I write this today is the upfront capital cost of the vehicles. And range is directly related to vehicle cost - you want a long-range car, well you'll pay a lot more than an urban commuter. But as a business you know there is more to assets than just the upfront costs. And that's where EVs will win in the medium term because they have far less moving parts and even fewer parts that wear against each other.

So while the perfect time was definitely not 10 years ago, depending on what your drivers are, it is the right time now. And in the next 2-3 years it won't matter what your primary drivers are (cost, TCO, sustainability, lifetime value, towing), an electric vehicle will be the first choice, not a nice to have.

Step 1

1. HOW DO YOUR STAFF DRIVE?

While electric vehicles are an amazing new technology, they are still just a means of transportation with a new drivetrain and power source. And our businesses (well most except for mine!) are not generally built around cars. But we need them to perform vital functions for our businesses, and this is where we need to start.

Knowing how far your staff drive every day is key to a great transition to an EV. If they drive substantial kilometres and don't take a break, then you'll need a bigger battery vehicle. If they drive only small distances mainly around urban environments then a smaller battery EV could do the job. And the size of the battery is currently the primary determinant in the price of the car.

Here's an easy checklist to get you started:

Trip Distances	Daily	Annual KM's
Total Trips		
0 - 100km		up to 24,000
100 - 200km		24,000 - 48,000
200-300km		48,000 - 72,000
300km+		72,000+

If your teams mostly drive short distances in a day (up to 100km), then EVs today will fit perfectly within your fleet today. If your staff drive 100-300kms, then you can make it work with a little planning. If your staff drive more than 300km in a day without any significant pauses, then you'll need a larger battery EV. The second column is a sanity check i.e. how many kilometres do your vehicles actually travel in a year?

The reason for selecting daily trips as the key measurement is intentional. Because unlike ICE vehicles, with the right infrastructure your staff can easily recharge your fleet to 100% full every night. So even if your team drives the full range of the EV in your fleet, you'll be able to fill it back up using your own in-house 'gas station'. This is a critical difference between EVs and ICE vehicles. In an ICE we drain the tank to empty and detour to find a gas station. For EVs, we can charge where we park, and overnight at either home or the office.

As well as how far your teams drive there is also the question of how fast they go. In a fossil-fuelled car, if you drive faster, you use more fuel. If you drive an EV faster, you use more battery and eat into your range faster than driving normally. But don't worry, you won't have to become the 'fun' police (because yes I understand people actually get joy from driving - I'm one of those!). When your team drives an EV, they will immediately understand the benefits of this drivetrain. And unlike an ICE car, when you go down a hill or slow down you put energy back into the battery and increase range. The best example I've had in NZ is coming down the Matamata side of the Kaimai range and getting 9km of range back for a net loss of only 11km up and down over an 18km drive.

Now I'll confess, prior to driving electric our fleet cars were a VW Golf GTi and an Audi S4, so I love driving and I love acceleration. I'll also admit to not being the most patient driver on the road. Now it sounds corny, but driving electric changes the way you think about driving. The acceleration is smooth and rapid. The ride quiet. EVs are as they marketed them back in the early 1900's, "a sitting room on wheels". If I want to line up at the lights and blast off (legally) I can, but otherwise, I literally enjoy the ride and the gamification challenge of the range is something I play, even though I don't have too (I drive a Kona which has 450-500km of range).

An early 1900's EV.

CHANGING BEHAVIOURS

And that leads to something which you will see naturally, and something you may have to drive. Broadly I have seen drivers fall into three buckets:

1. **Those in love with the technology already.** You don't have to do anything with this group except give them the microphone. They will refuse to find fault with EVs even though they are not a perfect technology (solely because of range) just yet.

2. **Those against the technology who drive one and fall in love.** I have literally seen and met self-confessed hardcore 'petrol heads' fall in love and buy an EV immediately. They then change their driving style to match the vehicle and should be given a voice to the company once they make this shift. If you want to drive change, hunt them out and get them a test drive. Senior managers are the best target because they are looked up to by the rest of the organisation.

3. **Those who hate EVs and refuse to budge.** And get loud about it. Many of these people refuse to accept the technology and will actively promote it as bad. They also don't change their driving style and kept the right foot down hard to prove the technology is not up to it. If you take a 'devils and angels' approach I would focus on the positive people first and use them to help convince those against the technology. It will become harder for this group to complain once the other voices get louder.

If you have a lot of drivers who regularly do more than 300km/day and don't have the time to take breaks (which could include charging) then you may have a health and safety risk that's not transparent. EVs can force people to take the breaks they should because they need to charge. Of course, this needs to be balanced with commercial drivers.

Now some people may quite rightly have an issue with this new technology. But those cases will be outliers and not the norm. Now cars are status symbols and highly emotive so it won't always be easy. We are here to help and can present to your team about where the technology is going.

TOWING

Towing is currently an issue. There is really only one option on the road today that is rated for towing - Teslas. If your staff do a lot of towing for work then it may be best to have a pool vehicle for this. Of course with FBT favouring Utes in NZ, and everyone using these things for other uses outside of work, making the shift will meet some resistance from those weekend warriors with boats and home trailers. It may pay to look at something like the Mitsubishi Outlander PHEV.

Which is best?

2.CHOOSING THE RIGHT EV

The primary determinant of cost for EVs at this stage in the market is battery size, which determines the driving range. And the bigger the battery the more it will cost you.

There are a growing number of EV options in the market and it is not always clear which one is best. The main options for mainstream fleet vehicles today are the following:

- Hyundai IONIQ electric 38.3kWh, 250km
- Hyundai Kona Electric 64kWh, 450km
- Volkswagen eGolf 35.8kWh, 220km
- BMW i3, 225km
- Nissan Leaf 24/30/40kWh 120-240km+
- Tesla Model 3 300km+

Across NZ the market is dominated by used Nissan Leaf. In the new market, Tesla dominates, followed by Hyundai, VW, Audi and BMW.

Now while some companies have made a significant shift to electric, there is not a uniform model for how you achieve this. It all comes down to a balance of lease horizons,

lease offers, and your core brand. Meridian Energy in NZ, for example, made the shift to only 100% electric vehicles (no hybrids). This was a big goal a couple of years ago, but it is becoming easier as more infrastructure goes in and staff learn how to use the cars in new ways according to their team. Others have opted for a mix of electric and hybrids to ease the transition and/or they have much longer driving distances in a day.

From the exercise in the previous chapter where you estimated the number of kilometres driven in a day, the vehicles fall into the following categories:

Up to 100km/day	Nissan Leaf 24/30kWh
Up to 200km/day	VW eGolf
	Hyundai IONIQ
	BMW i3
200km/day+	Nissan Leaf 40kWh
	Hyundai Kona 64kWh
	Tesla Model S 75kWh+
	Tesla Model X 75kWh+
	Tesla Model 3 (all)
	Jaguar iPace
	Audi e-Tron

Now this recommendation is a conservative one because you can get more than 200km out of an Ioniq, BMW i3, or eGolf, but you have to drive conservatively and to be safe, let's just assume not everyone does. If you are a premium brand with a large lease budget then the premium car brands are starting to provide some great options.

For urban commuting needs, smaller battery vehicles like early Nissan Leaf can be great. For medium use like travelling between Auckland and Hamilton, cars like the VW eGolf and Hyundai IONIQ EV are a great choice. And if you either want to go a long distance between charges, or your budget is considerably larger you start at the Hyundai Kona EV and go up through Tesla, Jaguar, Audi and soon to be Porsche.

ALTERNATIVES

The alternatives to pure electric vehicles (EVs) in the more sustainable transport space are hybrids. These are cars which either charge the batteries using a petrol engine or that have the ability to charge using an external plug and then switch to a petrol/diesel engine

when the battery has been discharged. The upside of hybrids is that they generally have a longer range than pure EVs, and they are generally cheaper to buy upfront. The downside is that a hybrid is a really complex vehicle with old and new technologies combined in one vehicle (internal combustion and electric drive). They are going to need much more servicing than a pure EV and they still have to be filled up at the gas station. You may have seen the term self-charging hybrid, which has been hammered by Toyota and its luxury brand Lexus. This isn't some new technology, it's just a hybrid rebranded using a new marketing message. The batteries are charged by burning petrol and using regenerative brakes. Don't be fooled by that one.

Fuel-efficient diesels are another technology which is heavily marketed around the world. The benefit of this technology is that the range is superior to most other engines and burning diesel has a lower C02 impact on the climate. The downside is that burning diesel creates N02 particles (you know the black smoke that billows from trucks and some cars) which is really really bad for biological creatures that breath oxygen i.e. us. Diesel particulates have been directly linked to premature death from lung and heart disease. This is why many cities and countries are making moves to ban diesel vehicles in the next 10 years completely. They also need regular servicing, unlike EVs.

Taking every opportunity

3. WHERE DO YOUR DRIVERS PAUSE?

Nobody drives all day without a break (at least they shouldn't!), so thinking about where your staff 'pause' for these breaks is a key part of the EV equation. Now if you're opting for large battery vehicles like the Kona, and your people drive less than 400km/day then skip this section because it doesn't matter - you'll be able to fully recharge overnight ready to go. If your budget doesn't stretch that far, then this is something to consider.

Where your people pause for a meeting with regular clients, for meetings at the office, or for lunch, are all possible places to charge. A modern EV with an onboard AC charger of 7.2kW can recharge around 50km of range an hour using a fast AC charger. And more and more public chargers are going in to meet this growing demand.

The office is an easy starting point - for every EV you put into the fleet, it is recommended you have one fast AC charger which delivers at least 7.2kW. This ensures

that if all cars are back at the office they can all be charged, and if they are left there overnight, they can all be fully charged for the next day ahead.

If you have clients you have worked with for years and they share similar goals to yourselves this can cement that relationship further by sharing charging infrastructure costs i.e. you put in chargers which they can use when they visit and they do the same.

And for public meetings, by mapping out these trips and overlaying the data from www.plugshare.com, which has all the EV charger locations in the world, you can see where staff can grab a charge while they attend a meeting, grab a coffee, lunch, or just have a break from driving.

You can also shape regular meetings to ensure that the fleet gets charged regularly throughout the day. This has more complexity and involves negotiating with the managers running these meetings, but it can be worthwhile.

When I'm not on the road, for example, I call into my office in downtown Auckland and use the free chargers supplied by Auckland Transport. I pay for the park, but the charge is a nice bonus, and it just tops me up while I do some paperwork. When I head to Hamilton, I drop into the office there, head over to Countdown to buy some lunch and plug in for an hour.

A simple worksheet for your drivers could look like the following:

Places you pause in a day	Morning	Lunch	Afternoon
For 15-30 minutes (these can be rapid charges using public DC chargers)			
For an hour (these are ideal for fast AC charging giving up to 50km of range an hour)			
For more than an hour (these are ideal for fast AC charging giving up to 50km of range an hour)			

Commercial reality

4. THE NUMBERS

If you're in business you understand that even if you are focused on sustainability goals at the highest level, being financially sustainable means you'll be around tomorrow.

If you compare the cost of a diesel vehicle and say a Hyundai IONIQ, and you buy your fleet, then the upfront cost difference is ~$15,000 more for the EV. The big difference though is that you pay virtually nothing for the ongoing servicing costs. An average service will be $200-$300NZD, and the running costs are ~$0.30/litre in comparison to $2.00NZD+/litre today. So to compare apples with apples you need to do some math.

Let's say your average fleet vehicle drives 30,000km/year. Or 125km/working day/48 weeks/yr.

	EV	Diesel
Kilomteres Driven	30,000	30,000
Capital Cost	$60,000	$45,000
Fuel Cost p.a. (0.25/kWh used and the latest diesel pricing from pricewatch))	$1,176	$3,999
Servicing (source AA + personal experience)	$450	$1,566
Road User Charges	$0	$2,040

	EV	Diesel
Total	$61,626	$52,605
Total Over 3 years	$64,878	$67,815

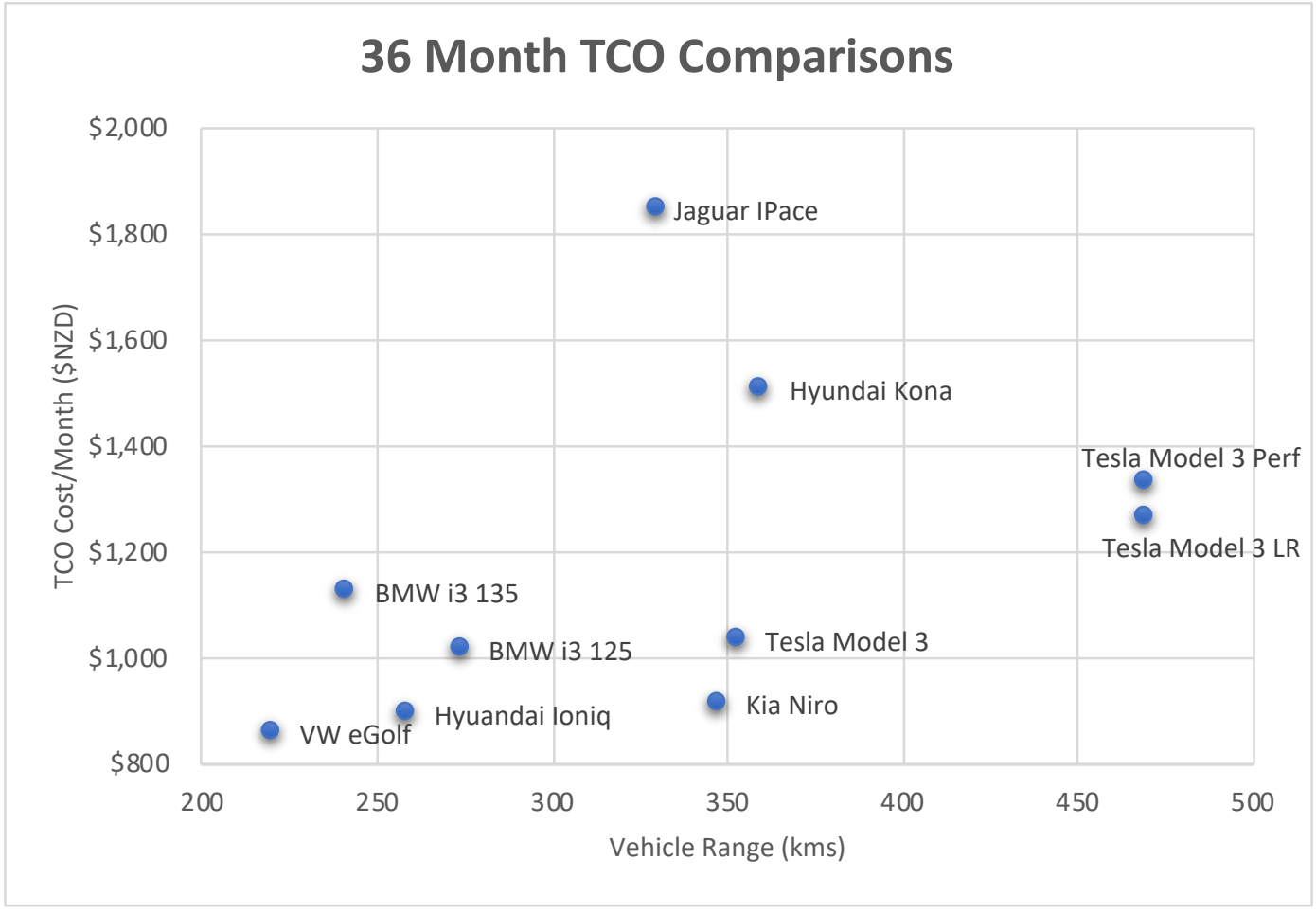
If you take a one-year view then quite rightly it looks painful. But if you take a 3-year view things start to get interesting. When road user charges (RUC) comes in for EVs (and they will) then an EV at today's prices above would be ~$3,000 more expensive over a three-year term. But by the time this happens, the price of these vehicles would have dropped, and EV prices only have to drop 5% for the difference to be negligible ($183), including RUC.

In regards to servicing it's worth noting my personal experience driving a Hyundai Kona more than 34,000kms in 5 months. The first 10,000 service was $250 and most of this cost was pollen filter replacement and technician time. The second 30,000 service was $244 incl GST and this was all technician time and $15 for brake fluid top up. With no oil, spark plugs, moving parts grinding on each other, these cars are just really really reliable. Which is going to be a real challenge for mechanics going forward. But, like me, that may not be your problem.

In reality, I have also used spent less money recharging than the model above. The current public charging model, given the early stage of the market, is to provide free public charging in a number of places. As previously mentioned, there are a number of local government authorities providing free charging, as well as big-box retailers who want you to come to their business, which his pretty smart. Like most people, I can't just use a free service and not spend some money with them. Here's an example on the right of an Australian EV driver using a free charger and spending $41 at the cafe next to it (and feeling great about the experience).

There are other things to consider such as potential break-fees for leases if you want to change now, business disruption cost, and the costs of putting in charging infrastructure, which we will go into in the next section.

The big unknown for EVs up until now has been residuals. A New Zealand based source has now analysed resale values using auction house data and some of the comparisons are outlined in the graph below. These may surprise you. A recent example highlighted by Meridian in an interview with Drive Electric was that the residual value of one of their 2017 IONIQs was 87% compared to similar Hyundai diesel vehicles in the fleet which were worth 70-75% after the same time period. Now the residual value of ICE vehicles has been relatively stable up until now. But here's the curly one to get your head around as a fleet owner/operator, as diesel and petrol vehicles become less popular, the residual value of these vehicles starts becoming harder to predict.



Refuelling options

5. CHARGING

Unlike the way we have purchased vehicles for our businesses in the last 100 years, it is very rare to buy a refuelling station with the car. The EV breaks the existing fuel value chain in a massive way because you no longer need to go to a gas station. Well maybe for a coffee on the go, or to check your tyre pressure.

Charging infrastructure isn't free of course. And it comes in a variety of different shapes and sizes. Here at ChargeSmart we currently stock more than 300 types of chargers, cables and accessories. Chargers come in three broad categories:

1. Trickle (up to 2.3kW)
2. Fast AC single and 3-phase (3.7-22kW)
3. DC Fast and Ultrafast (20kW - 500kW)

Trickle chargers come with the vehicle and are generally only recommended for emergency charging, or for charging small battery vehicles. This is because the wiring in a property is an unknown, and consistent use of a ‘trickle’ charger at those energy levels through old wiring could cause a fire. Wiring rule changes have meant that if you have plugs that are consistently used for trickle charging then these need dedicated wiring to the distribution board and appropriate protections.

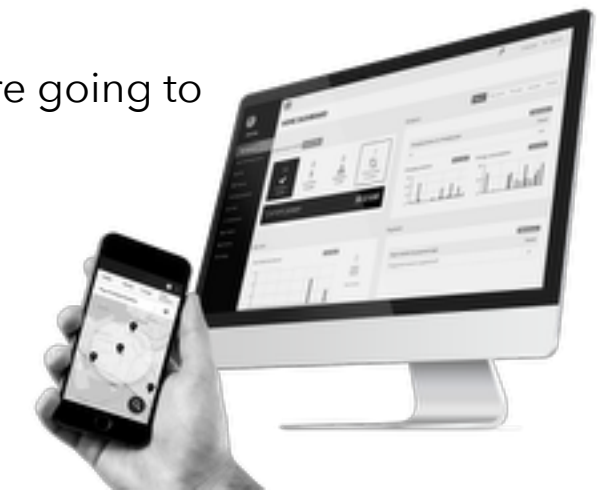
THINGS TO AVOID: Do not let staff use trickle chargers with extension cords. This practice is specifically outlined in the NZ Worksafe guidelines as dangerous. We have seen staff hanging extension leads out of windows to charge their vehicles - DO NOT LET THIS HAPPEN. Should a fire occur (worst case) you could void your insurance…

Fast AC chargers are those we most often recommend for workplace charging and for businesses that want to encourage customers to stay longer. They take longer to charge than DC, but are cost-effective to install and easy to maintain. They can also operate within your existing energy consumption without putting too much stress on your internal electricity network. These chargers are sophisticated, but they are limited by the actual charger on the vehicle i.e. a 22kW AC ‘charger’ can only deliver a 24kWh Nissan Leaf 3.3kW because of this limitation. This is an important consideration when assessing your EV fleet, but here at ChargeSmart we can help you design the optimal system. Fast AC chargers range from ~$2,000 up to $10,000 for double units made from solid steel.

One of the most frequent things I get asked is about fast charging, which for most customers immediately means DC. DC chargers are an off-board charger, meaning the charger bypasses the vehicles onboard charger and feeds directly into the battery. There are still limitations to how much the battery can ‘eat’ per hour, but these are much higher than AC and range from 30kW right up to 350kW in the latest models coming. They do come with a much larger price tag though, starting at around $20,000 for a 25kW model and heading north from there.

The hardware is really just the starting point though. To design an optimal charging solution you have to take into consideration:

1. The location of where the chargers are going to go
   1.1. How far is this from the distribution board?
   1.2. What is the surface the chargers are going to be located like? Is it suitable for a pole or can the charger be wall mounted?
   1.3. What is the cellular reception like (if cellular chargers are going to be used)
2. How much capacity is there on site?
   2.1. Even if there is enough it might be a good time to plan for more as your fleet grows.
   2.2. Bear in mind that 7.4kW single phase chargers are 32amps, as are 22kW 3-phase chargers. DC chargers can be a lot more.
3. How much space is there on the distribution board?



The global standard (including NZ and Australia) for outdoor charger installation is IP54 so at a minimum, chargers should meet this criteria. In addition, there are standards that must be met in each individual country EV chargers are sold and installed. In NZ where I live it is NZ/AUS wiring standards and Worksafe compliance, which is critical for workplace

and public charging installations. In the US chargers must meet UL standards. And in Europe, it is IEC standards.

SMART VERSUS DUMB

Obviously, the type of charger we advocate is given away with the name of our company. Where dumb chargers just deliver energy, smart chargers can be controlled, remotely managed, record all data and transactions, record users, provide restricted access, and most importantly, be monetised when/if you want too. Not capturing data from chargers in my view is a missed opportunity, and the costs to do so are generally quite low. We provide a platform for customers which enables both on and off-site remote monitoring and management capabilities. The data can also be used for carbon reporting, and for reconciling energy consumed at home by staff. A smart charger installed at a drivers home can be reconciled back to a corporate account using user identification, which records not only station access, but also who is accessing the machine.

Smart chargers in homes and those used for fleet charging overnight could also be used for grid stabilisation and peak management if access is opened up to electricity network companies (at an economic benefit to the EV owner).

Smart chargers, when networked together, can also be used to manage peaks within your commercial premises, either physical ones (the total amount of energy available) or financial ones (you don’t want to exceed a sites total peak and be charged for this)

When it comes to fleet and the importance of the vehicles to your business it always pays to default to your own charging infrastructure and not rely too heavily on public charging at this point. There are times when public chargers in the Waikato have 2-3 cars waiting to use them, which can mean a wait of 1-2 hours before you get a charge.

Commissioning EV chargers requires experience and expertise. It pays to work with those that have not only installed hardware but have connected them to a software platform in the past. Little things can trip this process up, but once you’re up and running you’ll be away.

When it comes to charging infrastructure, we are the experts and I will be personally involved. The best piece of feedback I had recently from a Government client when I asked for her input into this guide was:

"I found it extremely difficult to find anyone who would provide this type of service to us so many thanks for being so prompt in getting back to me, your communication and details provided have been excellent."

ALTERNATIVES

In regards to alternatives for fleet charging, you could have your own system designed from the ground up for your building. The responsibility for the design, management and ongoing monitoring of this type of system would however, sit with the designer so it is unlikely to be worth their investment.

A lower cost alternative for smaller battery EVs is 16amp 'blue commando' plugs combined with a higher capacity trickle charger. These retail for just under $1,000 and can be a good back up system. They won't deliver any data but they can provide around 20kms of range an hour.

As mentioned, you could rely on public charging infrastructure for all your charging needs coupled with trickle charging. You'd need to do some planning around how the EVs are used throughout the day, and this would involve time lost while charging but it can be done.

CHARGING STAFF FOR USE

We get asked about this a lot, and this is where our software platform comes in handy. There are roughly three options you have in regards to making charging available for staff:

1. FREE: this is obviously the easiest but can make non-EV staff feel ripped off. The reality is if someone drove their car 50km to work every day and charged the extra **monthly** cost would be ~$43.
2. MONTHLY FLAT FEE: the second easiest to administer. Basically to get an access card (this requires a machine with RFID access controls) the user pays an initial fee and then an ongoing deductible fee of $xx/month. Your finance people won't have to do anything else, but it could create tensions if you have a limited number of chargers..
3. CHARGED PER KWH: this is the fairest, but the most complicated. This requires a software platform that has tariffing and accurate measurement.

We provide a software platform for all connected smart chargers capable of this, but not all chargers do. If this is something that is important to you it pays to ask. What we have seen is a 10x increase in EV buying by staff as they feel one more barrier has been removed.

The issues.

EV SHORTCOMINGS

While some would make you believe that EVs are amazing, can solve the climate crisis on their own (they can't, they are a piece of the puzzle though), and can't put a foot wrong, that's not the case in reality. They do have some shortcomings, and here's my top 3.

1. Rubbish. As someone who has been an on the road salesperson for many years, I've developed the habit of using gas stations to drop off my road rubbish (that stuff you collect from coffee shops, lunch on the go etc). Now I actually have to think about where I drop this off because I never pull up at the pump where the rubbish bins are located. I know, your heart bleeds!

2. Public chargers. OK, there I said it. Many who own EVs will dance around and say it's OK, or won't really talk about it. Well, I'm a busy person and lining up on a charger for 30 minutes, or heaven forbid having to wait for one just sucks. So as a business person, I have my own charging infrastructure and my own plan. But then I never loved fi lling up at the gas station either.

3. Quietness. I've actually run out of things I think EVs come up short in comparison to ICE cars so I'm going to throw this one in there. You actually need to pay more attention when driving around pedestrians in carparks and shopping centres.

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ChargeSmart

ESTIMATED CHARGING TIMES FOR 100% ELECTRIC VEHICLES (HOURS)

VEHICLE	MAX CHARGE (kW)	BATTERY SIZE (kWh)	3-PIN PLUG	3.7kW	7.4kW	11kW (3-phase)	22kW (3-phase)
			Hours to Charge				
BMW Active E	7	32	18.8	8.6	4.6	4.6	4.6
BMW i3 2014-2016	7.4	23	13.5	6.2	3.1	3.1	3.1
BMW i3 2017 (60 Wh battery)	7.4	23	13.5	6.2	3.1	3.1	3.1
BMW i3 2017 (90 Wh battery)	7.4	32	18.8	8.6	4.3	4.3	4.3
Chevy Bolt	7.2	60	35.3	16.2	8.3	8.3	8.3
Chevy Spark	3.3	23	13.5	7.0	7.0	7.0	7.0
Fiat 500E	6.6	31	18.2	8.4	4.7	4.7	4.7
Ford Focus EV	6.6	23	13.5	6.2	3.5	3.5	3.5
Ford Focus EV 2017-2018	6.6	33.5	19.7	9.1	5.1	5.1	5.1
Honda Clarity EV	6.6	25.5	15.0	6.9	3.9	3.9	3.9
Hyundai Ioniq	6.6	28	16.5	7.6	4.2	4.2	4.2
Hyundai Kona	7.2	64	37.6	17.3	8.9	8.9	8.9
Kia Soul	6.6	27	15.9	7.3	4.1	4.1	4.1
Jaguar i-Pace	7	90	52.9	24.3	12.9	12.9	12.9
Mercedes B Class B250e	9.6	28	16.5	7.6	3.8	2.9	2.9
Mitsubishi i-MiEV	3.3	16	9.4	4.8	4.8	4.8	4.8
Nissan Leaf 2011-12 (3.3kW on board)	3.3	24	14.1	7.3	7.3	7.3	7.3
Nissan Leaf 2013-16 (3.3kW on board)	3.3	24	14.1	7.3	7.3	7.3	7.3
Nissan Leaf S 2013-15 (6.6kW on board)	6.6	24	14.1	6.5	3.6	3.6	3.6
Nissan Leaf S 2016	6.6	24	14.1	6.5	3.6	3.6	3.6
Nissan Leaf S 2016 (S upgrade, SL & SV model)	6.6	30	17.6	8.1	4.5	4.5	4.5
Nissan Leaf 2017	3.3	30	17.6	9.1	9.1	9.1	9.1
Nissan Leaf 2017 (6.6kW on board)	6.6	30	17.6	8.1	4.5	4.5	4.5
Nissan Leaf 2018	6.6	40	23.5	10.8	6.1	6.1	6.1
Smart Car	3.3	17.6	10.4	5.3	5.3	5.3	5.3
Smart Fortwo ED 2017	7.2	17.6	10.4	4.8	2.4	2.4	2.4
Tesla Model 3 Standard	7.7	50	29.4	13.5	6.8	6.5	6.5
Tesla Model 3 Long Range	11.5	70	41.2	18.9	9.5	6.4	6.4
Tesla Model S 100	17.2	100	58.8	27.0	13.5	9.1	5.8
Tesla Model X 100	17.2	100	58.8	27.0	13.5	9.1	5.8
Tesla Roadster	17.2	56	32.9	15.1	7.6	5.1	3.3
Toyota Rav4	9.6	41.8	24.6	11.3	5.6	4.4	4.4
VW e-Golf (3.6kW on board)	3.6	24	14.1	6.7	6.7	6.7	6.7
VW e-Golf (7.2kW on board)	7.2	24	14.1	6.5	3.3	3.3	3.3
VW e-Golf 2017 (7.2kW on board)	7.2	35.8	21.1	9.7	5.0	5.0	5.0