The Green Pages
NEW FUELS GUIDE
PEIMF+
WINTER 2023/24 • ISSUE 16

# Electric vehicles vs hydrocarbon vehicles: Safety myths explained


**Graeme Warnell, Director of EV-EXBOX, is an expert in EV charging risk assessment. Here he weighs up the comparable fire risks attached to both EV and ICE vehicles, and their infrastructure.**

**If you have flicked through any social media recently you cannot have failed to see the concerns surrounding lithium-ion batteries and electric vehicles.**

In the instances of fires caused by e-bikes, e-scooters and disposable vapes, the concerns regarding lithium-ion battery safety are well founded. There is not a day that seems to go past without a fire; resulting in severe damage to property, personal injury or tragically death.

For e-bike and e- scooters the guidance is clear: do not leave them to charge unsupervised, do not charge overnight and if possible do not charge indoors. If there is no alternative to indoor charging, ensure the equipment being charged is not blocking a safe exit route.

However, for electric vehicles the situation is more complicated, and the available data is harder to accurately assess and analyse. As a result of this, society seems to have polarised itself into taking extreme views reading the safety of EV and ICE's. The extreme pro EV camp believes an EV can do no wrong and the EV poses no risks when compared to and ICE vehicle.
The extreme anti EV camp believe lithium-ion battery vehicles are mobile time bombs - waiting to explode at any minute.

For the purpose of this article, I would like to focus on the sensible "middle ground" on which we should base any risk assessments, and also to dispel some of the common myths regarding both EV's and ICE vehicles; as both for and against camps try to play one vehicle type off against the other.

## ALL CARS BURN MORE FIERCELY

When we look at the nature of ALL vehicle fires, we have to understand that in the last 20 years car design, and the materials used for car construction, have changed significantly; regardless of whether they are EV's or ICE's. ALL vehicles now contain far more electrics and volatile organic materials than ever before.

The use of these materials means that ALL cars will burn more fiercely than they ever did before in the event of a fire. The intensity of a modern-day car fire ensures that any fire will spread more quickly from vehicle to vehicle. The use of more volatile organic materials will also mean that a modern car will give off more toxic fumes and result in the creation of more highly polluted fire water run-off.

These facts are confirmed from feedback from firefighters and first responders tackling car fires globally.

All modern cars now take longer to extinguish and require more water than they ever did before.

At EV-EXBOX we look at the typical risks associated with both EV and ICE vehicles, and we find that in many respects they are pretty similar.

A petrol car has the inherent risk of fire, a release of explosive fuel vapour, emitting toxic fumes and creating a serious pollution event.

Likewise, an EV car can catch on fire due to thermal runway, emit explosive and flammable vapour, emit toxic fumes and result in a pollution event.

With this in mind we struggle to understand why the design of EV charger locations are not as onerous or well defined as those for petrol filling stations when the risks attributed to both EV's, and ICE's is comparable.

*Continued on GP2*

*Continued from GP1*

**MYTH 1 : EV'S CATCH FIRE LESS THAN ICE'S**

To begin with, we need to understand that the frequency of EV fires compared to ICE fires is very difficult to factually record with any degree of accuracy on a global basis.

To date I have seen a figure published that states:

*"You are 24 times more likely to been involved in an ICE fire than an EV fire."*

or, 0.3% for EV cars caught fire globally compared to 1.05% for ICE cars.

The problem we face as an industry going through a huge transition, is that we still do not have enough data to make a true statistical comparison that is meaningful to identify the differences between the fire frequency of EV's and ICE's.

The challenge with the current data is the huge imbalance in the numbers of EV's vs ICE's. Just reporting the numbers is not enough, as for a true analysis we must consider vehicle age profiles vehicle type, vehicle use, vehicle power, vehicle mileage, vehicle usage, frequency of servicing, previous crash history etc; with regards to both sets of vehicles in the data set.

Thankfully, there is some great work currently being undertaken by EV Fire Safe in Australia and the NIPV, Dutch Institute for Safety and with time, (probably at least another 10 years), we could have enough data to compare EV fire frequency with ICE vehicle fire frequencies, using truly comparable data sets.

However, maybe we should even challenge the relevance of the EV vs. ICE comparison, especially when new ICE vehicle manufacture stops 2030-5. At some point we will reach a tipping point in the balance between EV's and ICE vehicles and in another 20 years, we may only have EV fires to worry about.

As we clearly understand the fire risks of ICE cars surely it is better to just focus our attention to EV and hybrid data to assess where, when, and how they catch fire. If you believe the current data that EV's catch fire less, then let's understand why they burn at all and, try to eliminate this through design of both vehicles and charging infrastructure. If we can do this, we achieved something meaningful through the data analysis for the future safety of EV's.

**Myth verdict: Stop comparing EV and ICE fire frequency it will be an ever-moving target.**

What is inevitable with any mechanical device, is the risks of failure resulting in fire increases with usage and time. If we add to this our demand for more powerful batteries and faster charging, the problem will grow; but hopefully be balanced by some advances in battery technology. As we move to battery storage systems in charging poles, we must now also to consider not just the EV's but also the charging infrastructure supporting them.

**MYTH 2: EV FIRES ARE MORE DIFFICULT TO EXTINGUISH THAN ICE FIRES**

With the true unknown probability of an EV or ICE fire set to one side, we should perhaps focus on what happens when we do have a vehicle fire, (already knowing that all car fires are harder to deal with than they were 20 years ago). For ICE cars the emergency services have had over 100 years of practice in extinguishing fires, so the risks are known, the training is in place and the equipment carried is fit for purpose.

For EV's there is more of a challenge, as the emergency services and the entire fire industry is still innovating to try and make lithium-ion battery fire suppression in vehicles more effective. The biggest challenge still sits with the car design itself, where the battery packs are very inaccessible. The secondary challenge is that the exothermic reaction that is," thermal runaway," does not behave like a traditional ICE fire.

A lithium-ion battery in thermal runaway emits highly flammable and explosive gas. When the gas ignites, there can be a vapour cloud explosion or the violent burning off of the electrolyte gas as it is released from the battery pack. But is that not the same as petrol vapour which can explode or burn as well?

In some ways the answer is YES, however, with a petrol fire once you starve the fire of oxygen or remove the vapour you have effectively controlled the fire. With a lithium-ion battery fire starving the fire of oxygen can be challenging as the battery creates its own oxygen during thermal runaway.

What you may do during an EV fire is extinguish the flames that were the result of all the burning volatile organic materials, plastics, rubber etc; but the thermal runaway in the battery will continue. As long as the thermal runaway continues, the battery will continue to emit flammable and explosive gas. So we enter the cycle of EV fire re-ignition, which can persist for days.

**Myth verdict: Yes, EV presents a bigger challenge to firefighters than an ICE vehicle due to the nature of a lithium-ion battery fire.**

Aside of the battery the burn characteristics of an EV and ICE are pretty much the same.

**MYTH 3: AN EV FIRE CREATES A BIGGER ENVIRONMENTAL INCIDENT THAN AN ICE FIRE**

What you will often hear regarding an EV fire was the fact that tens of thousands of litres of water had to be used. This is often the case, and sometimes the EV can end up in a total submersion container. When we look at the volumes of water used, we should ask ourselves how much of this water was used effectively?

All cars will create highly toxic fire water pollution. An EV vehicle fire will, however, release more pollutants if we use more water and if the battery pack splits and is flushed as part of the firefighting process.

When we look at innovation, the key to controlling an EV fire is around cooling the battery, as this slows down and eventually stops thermal runaway. Simply turning a fire hose onto the battery and using water alone may not be the best use of such a large volume of water.

New equipment on the market allows the battery to be punctured or cut into, allowing the battery compartment to be flooded with water. The difficulties with this arise with locating the best place to create a successful battery penetration. We have to consider all the various differences between the makes and models of EV's. In terms of personal safety directly trying to access the battery pack puts the emergency services closer to the burning vehicle. If battery penetration can be successfully achieved then less water will be used. However, as we mentioned before, if the battery pack is flushed then this will result in the highest release of toxins into the firewater.

Having reviewed a number of high-profile ship fires recently, (and let's not debate if it was EV or ICE until the investigations are completed), it seems innovation is now looking at water misting as a more effective cooling solution than water drenching. Water misting, using an added encapsulation agent to promote rapid cooling, may take us even a step further in the effective suppression of a thermal runaway event - using less water.

**Myth verdict: all modern cars create more toxic firewater and smoke than they ever did before.**

This has been overlooked in terms of pollution control mechanisms, where any cars park or are charged. The EV has the potential to release more heavy metals and PFA chemicals if the battery pack is flushed. The use of excessive amounts of water used to combat EV fires will make the EV firewater run off harder to contain.

**MYTH 4: THERE ARE FIRE EXTINGUISHERS FOR LITHIUM-ION BATTERY FIRES**

What to do for an EV fire?

When we consider risk assessment, we cannot ignore the behaviours of our customers and how they interact with our safety systems. For a petrol spill they may grab a sand bucket and happily throw its contents over a spill. In a fire they might grab a fire extinguisher as they are typically located next to the pumps, and we are happy for them to do that. So, what does a customer or site operator do in the event of an EV fire?

On the marketplace today there is an array of fire extinguishers that profess to be suitable for lithium-ion batteries, but not all of them. A typical fire extinguisher may contain between 9 – 50 litres of firefighting medium. This may be enough for laptops, phones, e-bikes, or mobility scooters but it will have no effect on an EV battery fire. There is simply not enough medium to cool the battery and probably not enough to extinguish all the organic materials once they are fully alight. It is important to remember a lot of EV charging is unmanned and unsupervised, so a fire may be well established before any alarm is raised and action taken.

**Myth verdict: There is no fire extinguisher suitable for an EV battery fire.**

The desire of an EV driver to save his own vehicle should not be encouraged through the use of fire extinguishers. Leave it to the professionals!

*Continued on GP4*





WINTER 2023/24 • ISSUE 16 • THE GREEN PAGES - NEW FUELS GUIDE

*Continued from GP3*

**MYTH 5: A FIRE BLANKET WILL PUT OUT AN EV FIRE**

If we look at fire blankets, then the application of these is really a job for between 2-4 people, not an individual.

Once of the key challenges in deploying a blanket is that you need to get close to the vehicle. The EV can jet out flames from the battery pack up to 2-3 metres, and if it's a hybrid or petrol car there is the risk of explosion from the petrol tank.

If a fire blanket is successfully deployed, it can extinguish the flames associated with the organic material components of the car through oxygen starvation. However, as discussed before, the battery can generate its own oxygen, and if not cooled it will continue to emit highly flammable electrolyte gas.

To smother a fire, the fire blanket must be impermeable. Therefore you also run the risk of allowing the explosive electrolyte gas and toxins, such as hydrogen cyanide and hydrogen fluoride, to build up under the blanket.

**Myth verdict: Blankets make us nervous**

At EV-EXBOX we have seen fire blankets deployed at EV charging hubs and in car show rooms, which makes us very nervous.

What we know about EV fires, is that they should only be tackled by the emergency services, who will be fully trained and wearing breathing apparatus and fire-retardant clothing. The desire of an EV driver to save his own vehicle should not be encouraged through the use of fire blankets. Leave it to the professional!


**MYTH 6: EV'S ARE HEAVIER THAN ICE'S. THIS IS A PROBLEM FOR THE FUTURE**

For now, let's forget the EV vs ICE debate and just focus on cars in general. All cars are getting heavier for two main reasons. First, people want a much higher equipment specification, more luxurious seating and bigger interiors for more space and comfort. There is also the perception that bigger is safer although ironically heavier means harder to stop and slower to escape from in a potential accident scenario.

The rise of the SUV, and uptake of 4x4's in urban areas, means average car weights have been increasing for some time; with or without the uptake of EV's.

Yes an EV battery can weigh over 500kgs, but most EV's are weight comparable to most small non-EV SUV's. The real weight factor only really comes into play when you put massive batteries into massive cars; which tends to be at the more luxurious end of the car market and typically less common.

**Myth verdict: Our obsession with owning bigger vehicles in general is the issue.**

Heavier cars could pose a problem for some very old structures as time goes on, but this is not uniquely an EV issue. If we think there is unfair wear and tear on roads then use weight as a taxation metric. Let's face it, the vehicle taxation metrics have changed at least twice in my lifetime, which means they are not fixed.

## CONCLUSION

In a world where we are still struggling to understand the long terms risks of EV's, we must firstly acknowledge the fact that EV's and modern ICE's have brought new challenges to public, fire and environmental safety management and risk assessment. Much of our infrastructure today has not taken into account how these risks have changed over the last 20 years.

If we look at a petrol filling station with EV charging, the risk profile is still really focused on the hydrocarbons and not the EV facility. If we look at an EV-only charging facility, the design typically ignores all of the common risks shared by both EV's and ICE's: namely fire, risk of explosion and an increased toxicity of firewater run-off.

In this article we have covered some of the most common challenges, but the list goes on and gets infinitely more complicated in locations such as below ground and multi-story carparks.

Additional considerations must also be given to public safety as EV chargers are now located in areas where there can be a high concentration of people, such as shopping centre carparks.
As EV charging is pushed to the boundaries of petrol filling stations, then boundary risk assessments should consider the risk of adjacent material flammability, such as cladding and the risk of fire spreading through wooden fencing or landscaped areas.

Having watched the electric vehicle and clean energy transition for many years, EV-EXBOX have devised a range of sensible and cost-effective risk assessment services, fire suppression and firewater pollution control measures to mitigate risk across a wide range of premises.

We are all on a learning curve when it comes to understanding the risks differences between ICE's and EV's, as the clean energy transition gathers pace. Do not be afraid of the risks but equally do not be complacent or ignore the risks. Our industry has been at the forefront of designing-out risks and it all starts with sensible risk assessment.
If safety itself starts with a conversation please reach out to the EV-EXBOX Team to discuss how we can help you to mitigate the risks of fire, public safety and environmental pollution for the future.

Email: info@ev-exbox.com • www.ev-exbox.com



# Government announces £200m investment in zero emission trucks

**HGVs contribute around 20% of UK domestic transport emissions and are acknowledged as a particularly challenging sector to decarbonise.**

**The Government has announced details of £200m funding for projects focused on freight decarbonisation. Four collaborative projects are to be funded involving 370 zero emission HGVs and associated infrastructure across Great Britain.**

Delivered in partnership with Innovate UK, the £200m Government investment will also deliver around 57 refuelling and electric charging sites, providing vital infrastructure to help the haulage sector decarbonise.

Decarbonisation Minister, Jesse Norman, said:

*"We're investing £200m to roll out 370 zero emission trucks, and a further £2.4m to pioneer green tech through the Freight Innovation Fund."*

The four projects to be funded under the zero emission HGV and infrastructure demonstrator programme are:

**GRIDSERVE**

Will use their Project Electric Freightway to demonstrate up to 140 battery electric HGVs, that will be provided by DAF and Volvo, alongside up to 220 chargers, 70% of which will be open-access.

**PROJECT ZERO EMISSION NORTH FREIGHT**

Will demonstrate up to 70 battery electric and 30 hydrogen fuel HGVs. Eddie Stobart and Royal Mail are just two of the operators participating in this scheme.

**VOLTEMPO,**

Whose FREIGHT 2030 project will demonstrate up to 100 battery electric HGVs in partnership with Renault Trucks, Scania and DAF. Marks and Spencer and Menzies Distribution are some of the operators confirmed to be participating.

**HYDROGEN AGGREGATED LOGISTICS (HYHAUL)**

Led by Protium, which will deploy around 30 hydrogen fuel cell HGVs onto the M4. Through DfT funding, the HGV fleet will be serviced by one fixed hydrogen refuelling station (HRS) and mobile refuelling in two other locations. The project has longer term ambitions to implement two additional permanent hydrogen refuelling stations in Magor and Bridgend, alongside additional hydrogen conversion projects along the M4.

Commenting on the announcement, Zemo Partnership's Chief Executive Andy Eastlake said:

*"This is the biggest investment in zero emissions ever seen for the crucial, tough to decarbonise, road freight sector.*

*"The zero emission HGV and infrastructure demonstrator programme puts over 300 battery electric HGVs, 60 hydrogen fuel cell HGVs and a network of 57 recharging and refuelling sites needed to operate them, into service with a wide range of commercial operators.*

*"Up to now, decarbonising HGVs has really only been possible through the use of low carbon renewable fuels like biodiesel or biomethane, but, as in every other area of road transport, the UK is determined to phase out the sales of new non-zero emission heavy vehicles by 2040.*

*"Like previous road freight demonstration programmes (LCTT and LEFT), these wide ranging projects will be closely and independently monitored with regular dissemination of progress and results, in this case led by a team from Ricardo UK.*

*"Zemo Partnership has been pleased to support the DfT and Innovate UK in developing the programme from its earliest conception and will continue to contribute to it via several targeted groups. Zemo's Commercial Vehicle Working Group will be keeping abreast of all the developments in this exciting, long-term demonstration trial."*

**www.zemo.org.uk**

# Which is the right future fuel for you?

## Dover Fueling Solutions take a look at the alternatives


**Despite the move towards decarbonisation, internal combustion engine (ICE) vehicles are still prevalent in most markets. Up to 2020, nearly 80% of all passenger vehicles sold in the leading european markets were petrol or diesel, with the average lifespan of road vehicles being 10 years.**

Clearly, the road to carbon-neutrality is a rocky one with barriers to adoption including price, range and refueling/charging anxieties. However, news that UK electric vehicles sales outpaced ICE sales for the first time in December 2022 offers cause for optimism in the race for adoption.

As motorists continue to embrace greener transport, many drivers will be considering which clean fuel is best for them. For fleet managers and sustainability directors, many will be wondering which is best for business?

At present, market leaders appear to be hydrogen, electric, Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) – each with their own advantages. But which is right for you, your business sector or personal driving habits?

### WHAT YOUR FUEL OF THE FUTURE MAY LOOK LIKE

We drill down into the data and review what your fuel of the future might look like.

### HYDROGEN

Hydrogen would appear to be a strong choice for long-haul, heavy-duty vehicles and other commercial transport and we are starting to see the first fuel cell trucks recently appearing on the European market.

The Hydrogen truck lends itself naturally to the mass mileage demands of HGV haulage. Hyundai's current Xcient model, for instance, can travel 400 miles on a single tank, while Volvo is pouring millions into the development of its own hydrogen-powered alternative with a range of 1000 km.

Volvo's simple nozzle-to-pump dispensation will also appeal to motorists, with no need for time-consuming charging which may complicate electric, battery-powered alternatives.

To fully flourish, however, greater infrastructure is needed to support future fuel development. Hydrogen investment is growing but not as quickly as that of electric vehicles. Market leaders, Germany provide a neat case study with total German hydrogen refuelling stations expected to reach 85 by 2025 and 300 by 2030. Despite this, cumulative hydrogen investment totals €40 billion, which lags behind EV at €51 billion.

One other thing to note, when it comes to this future fuel is cost. In Germany, the average price of fuel per 100km is 7.60 euros for Hydrogen, compared with 9.05 euros diesel and 11.74 euros for petrol.

### COMPRESSED NATURAL GAS

One lesser known option is CNG which is widely accepted to be the 'cleanest fossil fuel'. Its chemical properties mean it's compressed to less than 1% of its volume while it reduces carbon monoxide emissions by 90 to 97 percent.

Although it's a non-renewable source, having been formed millions of years ago from decomposing plants and animals, CNG is non-toxic and has fiscal benefits too. Every 1% increase in natural gas production can create 35,000 jobs.

Statistically, CNG is 30% more efficient than petrol, with a vehicle able to travel the same distance on 6/7 litres of CNG as 10 litres of petrol. As with any fuel, pricing is subject to global market conditions, but it remains the cheapest non-renewable energy source. Its nozzle-to-pump refuelling method is also a clear user benefit.

Despite this, CNG adoption is currently in its infancy. There are currently only 4,159 refilling stations across Europe, which makes it more of an option for fleet owners as opposed to the everyday motorist.

This is not to say that CNG doesn't have mainstream potential, with the fuelling option accepted in Europe for passenger vehicles. Almost any petrol vehicle can be retrofitted with a CNG system for around €3000 - €5000, which could make it a shrewd alternative to other clean fuels. This may appeal to businesses or commercial fleets that require its efficiency benefits.

In Germany (CNG market leaders) the fuel compares favourably in terms of price too. The average cost of fuel is 6.48 euros per 100km for CNG, compared to 9.05 euros for diesel and 11.74 euros, petrol.

### LIQUEFIED NATURAL GAS

LNG is another derivative of the abundant natural gas, formed when natural gas is compressed and cooled to -162 degrees Celsius. The International Energy Agency estimates that if consumption remains at present levels, there are enough resources to last 230 years.

Again, much like its counterpart CNG, LNG is a cleaner fossil fuel, producing 40% less carbon dioxide than coal and 30% less than oil. It's clean and quiet burning, while its familiar refilling method should appeal to drivers.

LNG infrastructure may be embryonic, but it is fast growing. There are around 635 LNG stations on the continent, with the bulk concentrated in Western Europe: Germany with 162, Italy with 130 and Spain with 90, This represents a network that has doubled in size in less than two years.

Ultimately, consumers want energy to be affordable, secure and capable of driving down carbon emissions. LNG ticks all these boxes.

Its cost-competitive benefits mean it has strong potential for commercial transport.

### ELECTRIC VEHICLES

While the hydrogen propulsion method first gained traction in the early 2000s, this has been supplanted in recent years by the rise of EVs.

The European market is currently leading the charge on the global stage with 1,390,000 units sold across the continent per year. By 2030, every second car sold is expected to be powered by electricity.

This has serious potential for the general motorist. Massive investments are being made across EMEA as countries pour billions into charging infrastructure. The Netherlands is currently blazing the trail with 90,000 charging points as of 2022, while Europe plans to have 1.3 million public chargers in place by 2025 and 2.9 million by 2030.

Price points also offer mainstream charging potential. In the Netherlands, the average cost of electricity per 100km is 5.31 euros compared to 8.66 euros for diesel and 12.32 euros, petrol. Home and workplace charging stations, meanwhile, remain safe and easy to use where drivers can simply 'plug in' their vehicle to the charge point.

Despite this, charging times, range anxieties and initial cost remain main barriers to adoption. David Mc Guinness, Director of Product Management, Electric Vehicle Charging at Dover Fueling Solutions expands on reasons for this:

*"While price and range concerns are being addressed by automotive manufacturers, more needs to be done by authorities to improve access to 'the plug'. Dependable, renewable energy infrastructure is required to feed the grid with a need to create a consumer-centric recharging model that serves the practical needs of EV drivers.*

*"As local governments begin to embrace this, companies can deliver high-quality fast chargers to market."*

### CONCLUSION

As the world, and the transport industry, move towards Net-Zero, it's likely all four options will be an integral part of the decarbonisation mix, each with their own distinct benefits.

In fact, each offers something unique, so you should take time to explore your options and make a well-informed decision on which of these future fuel alternatives will suit your business goals and lifestyle the best.

**Sources**

European transportation: the road to net-zero | Statista, Sales of new electric cars in the UK overtake diesel vehicles | The Independent

https://hydrogen-central.com/first-hydrogen-trucks-rolling-europe/; Volvo Trucks has started tests of fuel cell electric trucks.

Comparison of the cumulative investment of supply infrastructures. | Download Scientific Diagram (researchgate.net)

study_id104032_european-transportation-the-road-to-net-zero (1).pdf ; Electric cars: Half of all chargers in EU concentrated in just two countries (acea.auto); Europe now has 635 LNG fueling stations - LNG Prime

The state of EV charging infrastructure in Europe by 2030 (virta.global); https://www.doverfuelingsolutions.com

What is CNG fuel? A detailed explanation (met.com); https://mydisposal.com/what-is-cng-a-short-guide

CNG: the best short-term long-distance solution | Fleet Europe; Natural gas and its advantages | Shell Global

# Shell Recharge Solutions and Aldi partner to provide more public charge points for electric vehicles

**Partnership to provide Aldi UK with charge points for their customers to charge up their electric vehicles (EVs) whilst shopping.**

**3 year deal will add approximately 140 new chargers to the UK's public charging network.**

**Shell Recharge Solutions, a leading European smart charging solutions provider, will partner with the UK's fifth largest supermarket, Aldi, to provide electric vehicle (EV) charging points at all new Aldi store locations across the UK, allowing customers to charge up their EVs whilst shopping. This will add 140 chargers to the UK public network, with the potential of more to follow to match rising customer demand. Aldi will also install charge points at its headquarters in Atherstone to encourage and support the uptake of sustainable driving.**

The Shell Recharge Solutions charge points will support charging speeds of up 22 kW, significantly higher than the 7kW chargers generally available. This will ensure Aldi's EV infrastructure is future-proofed to accommodate newer EV models that will have bigger battery sizes and support greater charging speeds.

Alan McCleave, UK General Manager of Shell Recharge Solutions, said: *"We are excited to be partnering with one of the UK's fastest growing supermarkets. We are scaling up our offering in the UK to make EV charging easy and accessible for a growing number of drivers. Now is the perfect time for retailers and commercial businesses to invest in their charging infrastructure."*

Fritz Walleczek, Managing Director of Corporate Responsibility at Aldi UK, said: *"Sustainability and protecting the environment is extremely important to us and our customers. We are delighted to be working with Shell Recharge Solutions to offer shoppers access to fast, easy charging facilities when they visit our stores, and to further support our colleagues to make more environmentally-friendly choices."*