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A GUIDE TO TRANSITIONING YOUR FLEET TO **ULTRA LOW EMISSION VEHICLES**

As the UK's biggest carbon emitting sector, road transport is rightly being targeted for decarbonisation with a range of policies and roadmaps now in place to move our reliance on petrol and diesel powered vehicles to alternative low carbon solutions.

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In November 2020, government announced a commitment to end the sale of new petrol and diesel petrol and diesel vehicles by 2030, and that all new cars and vans will be required to be fully zero emission at the tailpipe by 2035.

Transport produced around a third of the UK's total emissions in 2019. Of this, the majority (91%) came from road transport vehicles. The biggest contributors to this were cars and taxis, which made up over half of the emissions from road transport, followed by Heavy Goods Vehicles (HGVs) then vans. (source www.gov.uk).

The cost of transitioning to low emission vehicles can be a barrier for businesses, though shouldn't be dismissed without checking out the funding options that are be available to, and could reduce your vehicle operating costs. Information on funding options can be found on pages [11](#) and [12](#).

This guide will help you to consider all the elements you need for transitioning your fleet of vehicles to ultra low emission alternatives.

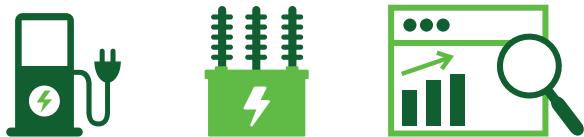
Developing Your Fleet Transition Plan

1 Analysis of current and future fleet options



- Analyse current commercial fleet operations
- Research comparable ULEV technology options, costs and availability
- Consider leasing vs. ownership given technology advances

2 Infrastructure options to power and maintain your future fleet



- Consider the best options for charging your vehicles (home, on-site, in public spaces)
- Do you have available power to support charging needs at site?
- What are your options if not? (for example energy management systems, grid upgrade etc)
- What hardware and software options and functionality do you need to manage your charging options?

3 Funding, supplier and future proofing solutions















- Investigate potential funding models to deliver optimal futureproof solutions (e.g. asset finance vs outright purchase)
 - Ensure you gain insight on different supplier solutions as you procure
 - Consider futureproofing and flexibility in your solution
 - Options to combine buying power with other local businesses
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ANALYSIS OF CURRENT AND FUTURE FLEET OPTIONS

The first task is to evaluate your fleet today and determine what choices there may be to transition to ultra low emission vehicle (ULEV) alternatives. The table below provides a guideline of vehicle types, ULEV or clean solutions and mileage ranges that ULEVs could deliver off a single charge or tank (if hydrogen fueled).

Ultra Low Emission Vehicle (ULEV) Options

MGVS and HGVS	Vehicles	Use Cases	ULEV Solution	Battery Size	Charge/ Refuel Location	Range
Cars and LCVS		Commuting, family journeys, holidays.	Battery Electric – very small minority	40 to 100 kWh 	Home (off/on street)	100 – 350 miles (currently)
		Utility services. Parcel delivery Trade	Hydrogen Fuel Cell	Up to 100 kWh 	Workplace (office) Depot Public	100 – 250 miles (currently)
MGVS and HGVS		Larger logistics e.g. appliances, machinery, security	Battery Electric and Hydrogen Fuel Cell	85 to 200 kWh 	Site depot	100 – 200 miles (currently)
		Inter-depot trucking		Up to 500 kWh 	On-route	100 – 300 miles (currently)
Specialist		Public transport Airport shuttle	Battery Electric and Hydrogen Fuel Cell (TBC)	Up to 500 kWh 	Site depot	200 miles (battery)/ 350 miles (hydrogen)
		Private hire Schools Specialist heavy duty vehicles (e.g. refuse trucks, tractors etc)		300 - ?? kWh 	On-route	100 – 200 miles

*Span of ranges taken from current manufacturer model real world figures

If you're considering cars and light commercial vehicles, then battery electric technology will be your solution. There may be a call for some hydrogen powered fuel cell electric cars and vans where quickfire refuelling is essential.

This is because with hydrogen, you can fill up in pretty much the same timescale as with petrol. Range wise, battery technology is advancing all the time, so it's only if your vehicles are regularly averaging over 300 miles a day with little time for parking up, that technology options may be limited right now.

As vehicles become bigger, heavier and more energy intensive, so battery sizes and power requirements to charge them increase. Then consideration turns to whether hydrogen fuel powered rather than plug in electric may be more operationally viable. This larger heavy duty vehicle market is still in its infancy with only a few early commercial models available.

Key considerations:

- Make sure to map out the operational usage of your current vehicles (mileage per day/ hours parked up/ seasonal variations/ route types (ie mainly stop start around town or motorway journeys).
- Analyse the ULEV technology options available now and in the future that best meet your operational needs to assess when you could transition from a vehicle technology perspective.
- If you run a company car scheme then consider the current 2% Benefit In Kind Tax allowance that UK Gov has in place until April 2025 as a way of transitioning your employees to ULEV options – alternatively you could consider a salary sacrifice scheme for employees where significant tax savings are available.

INFRASTRUCTURE OPTIONS TO POWER AND MAINTAIN YOUR FUTURE FLEET

Alongside vehicle consideration, a critical element to delivering your new fleet system will be the infrastructure needed to keep your fleet on the move. You're going to need to consider:

- EV charging units
 - Back office software to manage & monitor the charge points
 - An app or RFID card system for users to access your charge points
 - Ongoing operations and maintenance – to ensure chargers stay working and potentially to manage any payment services you may need
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Charging at home

The most cost effective way to keep your vehicle charged will be to install a 7kW chargepoint at home if you have a driveway. As indicated in the table below, this will charge an EV with a 64kW battery (with a range of c.250 miles) from empty to full in 10 hours.

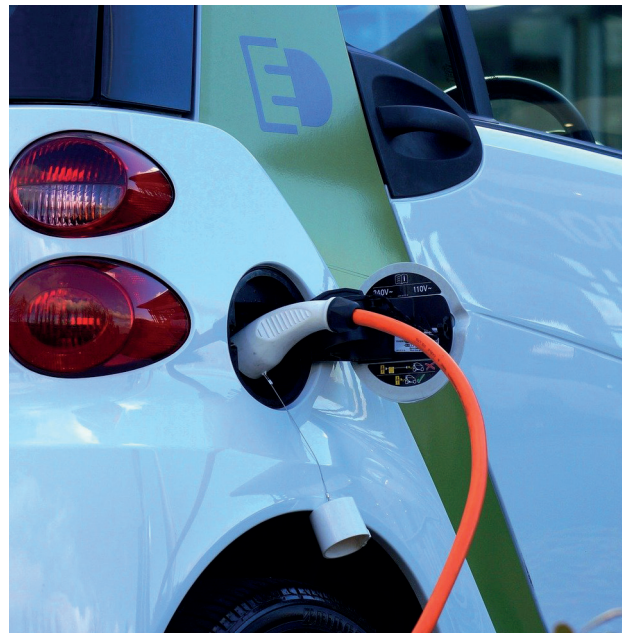
Then with the assistance of a smart meter, you can take advantage of time of use tariffs that energy suppliers are starting to introduce in the market, offering lower prices at certain times of the day and night when there's lower overall demand for electricity in the UK – ie night time.

You can schedule when you want your vehicle to charge – either through the vehicle itself or potentially via your chosen chargepoint supplier's digital app service (worth checking this when you look to buy). There's also technology providers within the market who can split out billing to separate work related and non work related charging at home.

Charging on your street

If you don't have a driveway, then getting a charging option on-street outside your home becomes a little more challenging and out of your control as your local authority will need to assess this need, evaluate where a charging unit could go and then invest in it.

And whilst you won't be paying for the charging unit, you'll be paying public charging rates for using the asset which will most likely be a dearer cost per kilowatt hour of charge than at home



Charging at work

If your operations mean that you want or need to charge your vehicles at work, then there are plenty of options available depending on your circumstances.

The key first steps are to:

- 1.** Ensure you have permission to install EV charging infrastructure if you don't own your premises.
- 2.** Understand what available electricity supply capacity you have at your premises that can be used for charging your vehicles. This is especially important if you're

considering installing multiple chargepoints. You should be able to find this detail out from your electricity supplier or energy broker (if you use one).

- 3.** Create a forward looking plan so you're considering a phased delivery of charging units in line with adoption of ULEV technology across the decade.

Installing charging in the employee car park

If you're looking at installing chargers in the employee car park, then you need to assess the requirements of your employees to ensure success.

For example – If you know that all employees (with or without EVs) live within 30 miles of work and have driveways, then you may think you simply need only 1 or 2 chargepoints to act as a top up for employees as they switch to EVs. This is because distances from home and work are short and the vast majority of their charging will be done overnight on their driveway – where it will be more cost effective for them (unless you're planning to offer them free charging at work).

If however most employees DON'T have driveways and will need to rely on wider public charging network to support their charging needs, then as an employer encouraging the transition to ULEVs, you may look to install a wider number of chargers to support them.

If your plans include developing infrastructure in your car park, then you may want to consider what is the better option for installation –

a larger number of 7kW chargers that will charge vehicles across the course of the day (either am/pm or both) OR a smaller number of more expensive but far quicker charging 20-40kW DC chargers that may give a good sized charge far more quickly allowing for employees (and visiting customers too!) to rotate using charging bays every couple of hours.

Another consideration is how to phase the number of chargepoints you're going to need over time in line with employee uptake of EVs. You don't have to decide now – BUT it's worth investigating whether it's worth putting in the necessary groundworks and cables for future chargepoints as this will save on cost ("dig once" thinking)

Finally you then need to consider how to maximise utilization of these charge points and how much you may want to charge given that the power used will go straight onto your electricity bill.

Installing charging in a depot

If you have multiple commercial vehicles that are core to your business and operate out of a depot, then having the infrastructure to ensure a smooth transition will be critical.

One of the key learnings from commercial fleet operators who have already started the transition to ULEVs has been around managing electricity capacity at their depot(s) – ie the available capacity they had on-site to support charging didn't correspond with the power needed to charge the entire fleet on site. correspond with the power needed to charge the entire fleet on site. If this is the case for your fleet, there are a number of options to consider.

1. You can apply for additional capacity via your District Network Operator.
2. You can look to manage the charging of your fleet within the

capacity constraints you already have at your site. This can be done by including a dynamic (or basic) load management system as part of your charging infrastructure. Which balances the available electricity load between vehicles so you never exceed capacity (which can be costly as part of your energy bill). There are systems available that can schedule charging – for example prioritise charging for those vehicles with less charge first.

3. You could consider energy system options that can bolster your electricity capacity. This could include installing on-site generation through Solar PV and battery storage options. This could also help to make to you more energy secure in the long term and protect you from future energy price spikes.



Charging when you're out and about

Even with charging solutions at home and at work, there will be times when you and/ or your employees will need to utilize the wider public charging network in Wales to top up on power as part of their journey. The Welsh Government is keen to ensure that all public charging networks are easy to access and allow anyone to simply drive up, plug in and charge.

Make sure you use an app such as Zap Map that can show you where

public charging options are located across the road network and potentially which ones may be out of service or inactive which is a critical consideration currently as the charging network is still growing.

There are clear plans to grow the public charging network in Wales with public and private sector working to install rapid and fast charging infrastructure across the country.

The A-Z of charging infrastructure and where it's needed

	slow			fast		rapid	ultra rapid
Charger type	2.3kW	3.6kW AC	5.5 kW AC	7kW AC	22kW AC/ 25kW DC	50 – 150 kW DC	Up 55kW DC
64kWh car charge time	30 hours	18 hours (empty/full)	14 hours (empty/full)	10 hours (empty/full)	8 hours/ 3 hours	50mins/ 30 mins From 20-80% charge	n/a
Charging options	At home – off street						
				At home – on street			
				At work – workplace			
				At work – depot			
				Destination charging (e.g. supermarket/shopping centres)			
	En-route						
Charger type	3.6kW	5.5kW (on street public lamp post charging)	7kW (home)	7kW (on-street/work)	2.2kW	50kW/ 150kW	Up to 500kW
Av. Cost (charger & install)	£900	£2500-£4000 (cost to local authority although grants available)	£900	£3000-£4000	£4000 (if no 3 phase upgrade)	£35,000 – £50,000 (potential for large connection cost variance)	

1kWh of charge = approx 3.5 miles (car)

FUNDING

Once you have an idea on your ULEV vehicle choice and an idea on cost of infrastructure, you can then look to build a total cost of ownership (TCO) model into your budget and engage with your accountant or finance team to work out the best options for funding.

There may be grants and or funding available through public sector routes to aid transition such as the Electric Vehicle Plug in Grant, the Workplace Charging Scheme.

And if you're considering transitioning as part of a capital expenditure programme, then the government Super-deduction allowance will allow you to claim back up to 25p for every pound you invest in EV charging infrastructure until end of March 2023.

Alternatively you may look to consider asset finance as a viable funding route, whether that be leasing of vehicles but also for delivering your infrastructure. There are more and more green finance options available in the market that would potentially allow you to take advantage of a faster and potentially larger transition and then pay over time through an operating lease arrangement.

Other potential aids to funding could be to look to collaborate with local businesses to see if there may be a complimentary solution that works for both parties and would maximise utilization of any charging assets – for example if you are a business with a commercial fleet that's out of depot between 8am and 4pm, but you're situated next to a commercial office that has staff working between 9 and 5pm and is looking at workplace charging.

KEY TAKEAWAYS

- Get to know the subject better – there's plenty out there (see examples below).
- Have an indicative plan of transition (ie what's economically and technically viable and by when).
- If you're planning multiple charge points at work, check your site's available power capacity.
- Get a range of infrastructure supplier views so you can compare and contrast their solutions.
- Futureproof your solution wherever you can.
- Call Business Wales for more information on the Green Growth Pledge.



[Arrange a free consultation on making the transition to low emission vehicles](#)

Further information

[Making the transition to ultra low emission vehicles video](#)

[Energy Saving Trust - Switching to Electric Vehicles](#)

[Energy Saving Trust - Guide to EV charging infrastructure for businesses](#)

[BVRLA \(British Vehicle Rental and Leasing Association\) – Fleet Charging Guide 2022](#)

[Electric Vehicle Charging Strategy for Wales](#)

[Electric Vehicle Charging Strategy for Wales – Action Plan](#)

[Business Wales – Green Growth Pledge](#)

Funding opportunities

[Super-deduction - 130% first-year capital allowance for qualifying plant and machinery assets; and a 50% first-year allowance for qualifying special rate assets](#)

www.british-business-bank.co.uk/sustainability

[Sustainable finance for a greener economy](#)

[Finance options for your sustainability ambitions](#)

[Green SME fund](#)

For advice on how to green up your business [Contact Business Wales](#) today