Loss Prevention Standards – Casualty Classes

Implementing Electric Vehicles

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As the sales of battery electric vehicles increases, this document aims to provide guidance associated with the risks posed by these vehicles.

AVIVA

Implementing Electric Vehicles

Introduction

Many businesses have started to transform their fleets to include Ultra Low Emission Vehicles (ULEV). These are defined as vehicles that have test results to show that they emit less than 75 g of carbon dioxide from the tail pipe, for every kilometre travelled.

The decision could have been made as part of the organisation's Environmental, Social and Governance (ESG) strategy to lower emissions, the cost reductions in fuel savings and maintenance costs or lower benefit-in-kind tax for company car drivers, as well as the scheduled end of sales for new diesel and petrol fuelled cars and vans in the UK by 2030, and of plug-in hybrids from 2035.

Evidence of this change can be seen in the changing UK market share, as of December 2021, the sales of Battery Electric Vehicles (BEV), according to SMMT, has increased 76% in 2021 with over 190,500 being sold, closely followed by Plug-in Hybrid Electric Vehicles (PHEV) with excess of 114,000 sold, which is an increase of 70%. A similar change in the sales of Battery Electric Vans was seen in the first three quarters of 2021, according to the Department for Transport, with 61,080 purchased by the end of September 2021 compared to 52,060 in the previous year.

Implementing Electric Vehicles to Your Fleet

Businesses are at different stages of transitioning to Electric Vehicles (EVs), along with other alternative fuel vehicles. There are a number of areas requiring consideration to enable a safe and successful implementation, such as:

- Vehicle selection - Understand the different EVs and suitability for your business needs
- Understanding the charging infrastructure required for the workplace, route planning and home charging
- Develop a business case - Understand total cost of the vehicle and running costs
- Engagement with and training for employees

Vehicle Selection

When selecting EVs, the type of EV available and business needs must be considered, as these will differ from selecting a petrol or diesel, Internal Combustion Engine (ICE) vehicle.

There are different types of EVs available, including:

- Battery electric vehicle (BEV*) - powered solely by a rechargeable battery and incorporates regenerative braking which helps to extend the available range
- Hybrid electric vehicle (HEV*) - driven by both an electric motor and an ICE, with the ability to recharge the battery whilst in motion
- Mild electric hybrid (MHEV*) - features a small battery pack with an integrated starter-generator, which is designed to improve efficiency and to deliver a tiny boost in acceleration
- Plug-in hybrid electric vehicle (PHEV*) - like a HEV although having a much larger battery with an extended range and can be charged via the electricity network
- Hydrogen fuel cell electric vehicle (FCEV*) - operates by taking hydrogen fuel and reacting it with oxygen to produce electricity. They produce zero CO^2 and air pollutant tailpipe emissions as water is the only waste product

**all of the above are referenced throughout this document as EV*

The usual considerations of the cost, safety, payload, loading, unloading and ergonomic features will remain, for the suitability of EVs. Fleet Managers need to establish how your businesses fleet currently operates which will inform the types of EVs that are suitable for the operational needs. Key considerations include:

- What is the mileage range of the EV?
- Is it possible to undertake your current activities within the projected mileage range?
- The impact that the weight of the EV battery might have on payload?
- How will the loads affect the mileage range?
- Additions to the vehicle which will increase or decrease energy efficiency, for example, refrigeration units and air conditioning?
- What are the Euro NCAP Ratings?
- Where the EV will be charged? Does the vehicle return to the same workplace?
- Type and location of charge points required at the workplace?
- Availability of offsite charge points?
- Is the electrical demand available at site able to charge the EV on a slow and/or rapid charge?
- Is there sufficient external space for charging units and the safe movement of pedestrian and vehicles?
- If using charge points inside a building, are suitable fire protection systems in place?
- Have you arranged maintenance, periodic inspection and testing contracts for the charge points?
- Can employees charge the EV at home or do they have access to a charge point?
- Establish if charge points will be needed for top-ups during routes, their availability on routes and vehicle downtime due to charging?

To understand the benefits of each type of EV to your business, it is advisable to arrange for EVs to be made available for testing within the organisation which will provide feedback on operational suitability, as well as potential efficiencies, concerns, safety and ergonomics.

Whole Life Cost

Understanding of a vehicle's use and requirements will provide an informed decision on whether your fleet is suited for electric, the next stage is to look at the Whole Life Cost (WLC) associated with new EVs compared to ICE vehicles.

EVs generally have a higher list price, therefore establishing the WLC throughout the term of leasing or ownership will provide the financial element of the business case. WLC should include the purchase price, future sale price, changes to running costs such as fuel, exemption from congestion charges, maintenance and servicing as there are fewer moving parts and changes to braking styles, government buying incentives such as the low-emission vehicles plug-in grants, tax, and resale price, etc.. EVs tend to compare favourably to ICE vehicles in the WLC exercise and will enable a suitable conclusion to ensure that the right vehicle options are deployed in the most suitable areas.

Your vehicle supplier/manufacturer should be able to support you in exploring the relevant issues and help you to make sure that your EV fleet will be fit for purpose operationally.

Mileage Range – Range Anxiety

EV mileage ranges are improving all of the time with some vehicles reaching between 180-350 miles, which is enabling the growth of EVs across commercial fleets. Yet many people still have a fear that they will run out of power and not be able to find a working charge point, known as *range anxiety*.

Range anxiety can be reduced by initially understanding the mileage range required for journeys and loads to be carried, to enable the selection of appropriate vehicles to meet individual and business needs. Combined with robust route planning, if additional charging is required identify the location of charge points on the route, be it public charge points or for commercial fleets through a reciprocal agreement with partners using charge points at their site(s). For guidance on allowing time for vehicles to be charged on route and the provision of information, instruction and training to drivers and managers on driving EVs - see *EV Driver Training and Information* section later in this document. As with ICE vehicles, maintain tyre pressure, tread depth, and use tyres designed for EVs (as they have lower rolling resistance), all of which further optimises the EV range.

Mileage ranges are the equivalent to mpg in ICE vehicles and are based upon the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) test. There are factors which will impact upon mileage ranges, such as:

- The speed the EV is driven
- Number of people in the EV
- The load carried
- Weather conditions, in particular cold weather
- Territories driven, e.g., urban or motorway driving
- How the EV is driven, such as harsh braking and acceleration

To understand the impact of driving at higher speeds on the battery energy consumption, the Energy Saving Trust has produced data, see the table below:

Percentage increase in energy consumption at different constant speeds relative to the same vehicle's energy consumption at 30 miles per hour

Speed	EV Cars	EV Vans
40 mph	21%	32%
50 mph	50%	59%
60 mph	83%	98%
70 mph	127%	177%
Source: Energy Saving Trust, 2018. The electric car data is an average across tests on three models, the van data is based on one model		

To identify the appropriate EVs for your fleet, understanding the mileage requirements is key.

If your business has telematics fitted these will provide accurate data on the mileage range required for your operations. Alternatively, mileage claim forms, fuel cards or collation of manual mileage data can be used. Once the mileage range required is established, over normal and peak operations, the suitability of EV manufacturers and vehicles can be established.

This exercise could also be an opportunity to review the current route planning to establish if operational changes could be introduced to accommodate EVs. It may be that for certain operations an EV may not be suitable currently, but as mileage ranges increase this can be kept under review. Is it possible to incorporate charging of the EV into the route planning using your other workplaces, public charge points, establishing partnerships or having a reciprocal agreement with other companies?

EV Batteries

EV battery pack, normally lithium-ion, is made up of multiple battery cells. The battery capacity is measured by kilowatt-hour, or kWh, the higher the kWh, the further your EV can be driven on a single charge.

On average, EV batteries have an 8–10-year or 100,000-mile manufacturer warranty but can last longer, and at the end of life could be reused. A recent survey of EV users in the UK showed an 8% reduction in usable range over six years, something to build into business plans and WLC calculations. Therefore, Fleet Managers need to establish how to maintain a batterie's lifespan, the cost and timeframes for replacing batteries and provide drivers with information on how to take extra care of their vehicle batteries to prevent degradation, as this can result in mileage range reduction.

To prevent battery degradation, advise drivers to maintain a charge between 20% and 80%, many public charge point's time to recharge, is based on achieving an 80% charge. The reason for 80% is that recharging the battery generates heat, and too much heat, such as keeping the EV fully charged, can damage the battery over time.

Cold weather effects batteries, and to help mitigate this many EVs have preconditioning systems which can be activated to set the EV internal temperature while the EV is plugged in to charge, saving driving time and energy. Ensure drivers are informed about this feature and its benefits.

Advice is available on prolonging EV battery lifespan, here are a few of them:

- Don't overcharge – constantly topping up EV batteries to remain fully charged can cause damage. Charge to 80% and use regeneration braking to add the extra charge, only charge to 100% for long journeys
- Avoid charging your car straight after a long drive – give the batteries chance to cool down first
- Limit the use of fast chargers. A slow charge is better for the battery over the long term
- If your EV is going to sit around without being driven or only used locally, don't fully charge it first. Keep the battery around 50%, as this is better for its long-term health
- Extreme hot or cold temperatures can negatively affect the battery's range and its lifespan
- Utilise the preconditioning systems to warm the vehicle
- Follow manufacturer's advice

Provide drivers with guidance on prolonging the battery life when they are issued an EV and within driver handbooks.

Telematic systems are beginning to integrate EV data to their management information and dashboards. The data can include:

- State of battery charge
- Real time details of EVs being charged
- Battery levels
- Remaining mileage range
- Cost analysis and efficiencies of EVs

Currently, the data available will vary between telematic providers.

EV Driver Training and Information

Driving an EV requires different on-the-road techniques, obtaining knowledge on safe driving due to torque, economical performance, benefits of regenerative braking, understanding the different types of charge points, how to use them as well as maintaining battery performance.

The provision of information, instruction and training for drivers is pivotal to keep your drivers and other road users safe and provide assurance to your drivers when changing to EVs. The information and training provided should include guidance from the manufacturers on areas specific to the vehicle, familiarisation of the EV and the controls. Look for trends and learnings from EV near-misses, incidents and driver feedback as well as considering the following:

Charge points – understand the different types, how to connect and disconnect, safe placement of cables to prevent tripping if the EV charge inlet point is at the front of the vehicle, awareness when reversing out of the charging area, undertaking a visual inspection and reporting damage and/or faults, understand the controls and cable security, if applicable.
Range anxiety – provide details on the EV mileage range, using regenerative braking (see *On the Road* below), enable drivers to test drive the EV, understanding EV charge eco features, the benefits of preconditioning (remote climate control), how to find suitable charge points, journey planning and charging the vehicle to prevent battery degradation.
On the road – one pedal driving - use of regenerative braking, early release of the accelerator (eco driving), immediate torque, using the display information, the need to use the brake from time to time to prevent the system seizing up, obtaining the most economical use of energy as well as how to reduce energy consumption, and reminding about the quiet running of the EV with potential for Vulnerable Road Users (VRUs) not to be aware of the EV.
Maintenance and vehicle checks – lower level of maintenance but still important to follow the manufacturer's requirements, usually an annual check, which will also update the on-board information. Maintain tyres in a good condition, with the correct pressure and tread depth, as underinflated tyres will increase energy consumption.

Regenerative Braking

An EV range is affected by how the vehicle is driven and in particular how the vehicles' regenerative braking system is used. Regenerative braking occurs when the driver takes their foot off the accelerator pedal and uses an electric vehicle's motor as a generator to convert much of the kinetic energy lost when decelerating back into stored energy in the vehicle's battery. Then, when the EV accelerates, energy stored from regenerative braking can be used.

Regenerative braking systems are often adjustable and can be set so that they slow the EV down when the driver takes their foot off the accelerator - many drivers find they use this method rather than using the brake pedal. Driving in this way reduces brake wear and tear, maintenance costs whilst extending mileage range. However, drivers need to familiarise themselves with the different levels as some are more effective for urban use due to the level of braking undertaken, than motorway driving.

EV Battery Fires

As the number of EVs have increased on the roads, battery fires have made headlines. As EV battery technology develops at pace, the risk of fire is rare but something that EV Fleet Managers need to be aware of.

Lithium-ion batteries can catch fire for various reasons such as:

- Manufacturing fault
- Damage
- Software that protects the battery from getting too much or too little electric charge has a fault or fails
- Following a collision

If EVs are involved in a collision, the emergency services or vehicle recovery company will check for signs of damage to high voltage electrical components or cabling, to consider if the integrity of the battery is likely to have been compromised, and they will follow the required protocols. If the vehicle is brought back to the workplace, the same procedure as for ICE vehicles involved in a collision should be followed; park them in the open air away from buildings, other vehicles, flammable objects/surfaces until they are repaired.

Recovery

EVs involved in a collision or break down should be recovered by trained operatives, as they will be able to check for signs of damage to high voltage electrical components or cabling (usually coloured orange) and are trained in the safe movement of EVs.

Avoid towing an EV unless it can be determined that it is safe to do so, as dangerous voltages can be generated by movement of the drive wheels. Refer to the Aviva Loss Prevention Standard *Electric and Hybrid Vehicle Awareness.*

Electric Vans - Changes to Driving Licence and Operators Licence Requirements

The additional weight of the electric batteries is an issue for larger vans because the legal maximum gross vehicle weight (GVW) for a standard UK driving licence, category B, is 3.5 tonnes, and many large electric vans already have or exceed this allowance. In 2018, the Department for Transport raised the weight threshold for electric light commercial vehicles from 3.5 tonnes to 4.25 tonnes, provided the van is not driven outside of Great Britain, is used for the transportation of goods and is not towing a trailer. This results in these vans being more competitive to run as there is no need for a restricted operator's licence.

Before driving 4.25 tonne EVs, category B driving licence holders, must also complete a minimum of five hours training on driving alternatively fuelled vehicles provided by members of the National Register of LGV instructors or the National Vocational Driving Instructors Register. The training includes a mix of practical and theory, vehicle handling techniques when driving a loaded alternative fuelled vehicle, refuelling alternative fuel types and the safe loading of alternative fuelled vehicles.

In addition, there is an exemption from goods vehicle operator licensing for all electrically propelled goods vehicles (of any weight), if first registered before 1 March 2015.

Drivers Hours

The EU drivers' hours rules require the use of tachographs and prescribe maximum limits on driving time and minimum requirements for breaks and rest periods. The rules apply to drivers of most vehicles used for the carriage of goods where the maximum permissible weight of the vehicle (or combinations of vehicle and trailer) exceeds 3.5 tonnes.

However, EVs that carry goods within a 100 km radius of the company base, and do not exceed 7.5 tonnes (maximum authorised mass) including the mass of a trailer, are exempt from the EU drivers' rules regulation. Details of all the exemptions/national derogations can be found in Guidance on drivers' hours for goods vehicles.

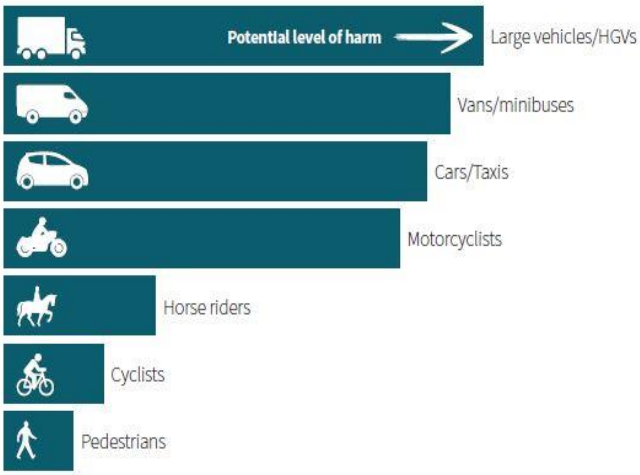
If a vehicle meets one of the exemptions/derogations, including EVs, then the driver is exempt from the EU drivers' hours rules. Normally drivers out of scope of the EU drivers' hours rules would automatically come under scope of the GB domestic drivers' hours rules.

Increased Risk to Other Road Users

EVs operate much quieter than an ICE vehicle and can be an increased risk to other road users, specifically VRUs. Since July 2021 all newly registered quiet EVs must install a sound generator which will produce a specified level of noise when they are reversing or running at below 12 mph. However, there are over 335,000 EVs already on UK roads before the legislation came into being. The sound generators can be deactivated by the driver, so businesses will need to inform and instruct drivers not to switch these off and the need for greater awareness when driving in town centres and other built up areas.

The Highway Code change of principle of the inclusion of a Hierarchy of Road Users is designed to place road users in order of potential harm to improve safety for VRUs, in particular pedestrians, cyclists, and horse riders. EV drivers should be reminded that those in charge of vehicles that can cause the greatest harm in the event of a collision, bear the greatest responsibility to take care and so reduce the danger they pose to others.

In order of the potential to cause harm, the hierarchy can be represented as follows:



With vans and HGVs sitting at the top end of this hierarchy, there's additional emphasis on the responsibility that sits with the drivers of these vehicles in maintaining safe practices on the roads.

LOSS PREVENTION STANDARDS

EV Charging Infrastructure

Fleet Managers need to collaborate with their Health & Safety, Facilities teams and Risk Management department to implement your change management procedures, to prevent errors and/or losses occurring during any charge point project.

When looking to install an EV charging infrastructure, from a fleet perspective, current operational needs should be factored in, for example:

- Is the vehicle driven for a large part of the working day, and thus needs to charge on return to site or is it parked at site for a large proportion of the day, where additional charging is required or could be achieved
- The mileage range of the EVs, and the factors that impact on the mileage range such as loads carried, driving style, etc.
- Provision of adequate space to enable charging to be undertaken safely, with sufficient segregation of pedestrians and vehicles
- Establishing the frequency time required to charge the vehicles
- Considering future operations, and the type of charge points required and how to manage inherent risks that occur during charging

Initially a review should be undertaken on the electrical capacity and demand at the workplace, to enable the identification on the number and type of charge points that could be introduced alongside current business operations, and if electricity supply upgrades are required to sustain current and future EV on the fleet. To assist businesses, the Institution of Engineering and Technology (IET) Code of Practice for Electric Vehicle Charging Equipment Installation - 4th Edition provides a clear overview of EV charging equipment, as well as setting out the considerations needed prior to installations and the necessary physical and electrical installation requirements. Information is provided for areas that need to be considered when installing electric vehicle charging equipment in different locations.

Following the electrical capacity survey, businesses can determine the type of charge points required, when the charge points will be required to charge the vehicles, location of the charge points to maximise their use and calculate the number of EVs that can be operated now and in the future. The Energy Saving Trust has produced a Guide to charge point infrastructure for business users which will further assist in this process.

There are many factors to consider when installing your EV charging infrastructure, including:

Vehicle Operations

- Number and types of charge points required now, and in the future
- When the charge points will be used (during and outside of normal operations)
- Would charge point load management technology, which monitors the charge level of the vehicles connected and can adjust the power provided to individual charge points in real time, enabling certain vehicles to have priority charging, be of benefit?
- Sufficient space to park the vehicle, use the charge points safely, enable safe circulation of other vehicles and pedestrians and reduce the spread of fire
- Review and update the workplace transport risk assessment to enable safe movement of vehicles and pedestrians in the vicinity of the charge points

Infrastructure

- Electricity capacity at site and load management for charge points and business operations
- Impact on other activities taking place in the vicinity
- Electrical protection built into charging points
- Where to locate the charge points – externally or inside buildings/segregation
- Sufficient lighting levels for safe operation of the charge points
- Appropriate signage and location agreed
- Competent contractor engaged
- Ability to install charge points on leased sites
- Futureproof for further fleet expansion or new charging technology
- Review and update the fire risk assessment
- Review and update the DSEAR assessment to ensure that charging areas are sufficiently remote from any hazard zones and locations used for the storage of hazardous or flammable liquids and gases

Financial

- Available budget for the installations and running costs, including maintenance, inspection and testing during their life cycle
- Whether to purchase or lease the charge points
- Whether to charge drivers for using the charge points for non-commercial vehicles

Ongoing Management

- Day to day management of the charge points including identifying damage and defects
- Requirements for passive, active and management control measures to prevent a fire occurring and in the event of fire
- Implement a maintenance, inspection and testing programme
- Whether to have a reciprocal arrangement for shared use of charge points with other partners

Offsite Charge Points

- Use of offsite charge points using networks or entering into collaborative partnerships
- Provision or not of home charge points for employees
- Identify alternative solutions for employees, who take company car/vans home, and are unable to have a charge point installed as they live in flats, rented accommodation, or do not have a drive

Further guidance on the installation and maintenance of EV charge points can be found in the Aviva Loss Prevention Standard *Electric and Hybrid Vehicle Charging – Property Risk Management Guidance.*

Some of the elements raised above, are discussed in more detail below.

Type of Charge Points

There are a range of charge points, ranging from 3 pin which takes up to 12 hours to, slow, fast and rapid. The time taken to charge an EV depends on the size of the battery and the power output of the charger. Also, not all EVs can charge at higher rates and you'll be limited to the speed at which your EV takes power. To determine the EV charging time the following calculation will assist: Battery size (kWh) ÷ Charger power (kW) = Charging time (hours). The Energy Saving Trust have calculated how long it will take to charge an EV, see table below.

Type of Charge Points	Slow	Fast	Rapid
Power rating	Up to 3.5-7kW	7kW, 22kW or	43kW AC, 50kW DC,
Electrical supply type	AC	AC & DC	AC & DC
Charge time	4-8 hours	2–4 hours	25–40 minutes 80%)
Vehicle range added in 15 minutes	3–6 miles	6–20 miles	35–40 miles
Annual cost (approximate)	£500-£1000	£2-£3k (AC) £19K (DC)	£20K–£40K

A charge point provider should be able to assist with tailoring a solution for your business with the ability to include passive provision to scale up the charge points. Consider site load management that controls the power rate of your chargers, by utilising as much of the site's energy supplies as possible.

The charge points installed need to be compatible with the EV, there are three types of cables: Type 2, Combined Charging System (CCS) and CHAdeMO. CCS and CHAdeMO are specific to certain EV manufacturers and the Type 2 which is compatible with most vehicles (with exceptions), for utilising the higher rates of charge.

To reduce the restriction on EV manufacturers, consider installing charging sockets rather than tethered cables, although cables will need to be made available. To manage this adequately, an appropriate number of cables should be made available, with secure and safe storage arrangements provided, to enable drivers to obtain the correct cable and return them to prevent the cables becoming damaged or creating trip hazards if left lying around and also reducing the risk of theft. However, these risks can be negated if rapid chargers are installed, as they will have more than one type of cable fitted.

There have been examples of charger cable thefts and to address this, some manufacturers have in-built anti-theft measures. When evaluating the charge points and cables, businesses should understand the anti-theft measures available and if these meet your needs, or if additional measures are required. There have been recent incidents of cables stolen whilst the EV is charging which has caused damage to the EV inlet port and the connected vehicle parts.

Charge Points – Funding

Currently there is Government funding for charge points in the UK from the Office for Zero Emission Vehicles. For businesses, further workplace charging scheme guidance is available, click here.

For employees, the Office for Low Emission Vehicles (OLEV) home charging grant ends in April 2022, except for people living in flats or in rented accommodation, further information can be found at Electric Vehicle Homecharge Scheme: guidance for customers.

The charge points at either business or residential addresses must be installed by an authorised installer, a list of which can be found on the Office for Zero Emission Vehicles website. Businesses should ensure the installer meets their company contractor selection requirements, obtain relevant documentation to ensure a safe and correctly commissioned installation, and the work is monitored throughout. For further information, on managing contractors please refer to the Aviva Loss Prevention Standard entitled *Managing Contractors.*

Location of Charge Points – On Site

When developing the infrastructure, the location of the charge points is critical and should ideally be located external to buildings. The proposed area should be assessed to ensure that the charge points are accessible, can be operated safely, reducing the risk of injury to EV users and pedestrians in the vicinity, as well as preventing damage to other vehicles and to the charge point from vehicle impact as well as from vandalism.

At commercial or industrial sites there may not be an external area to place the charge points. If this is the case, the RC59: Recommendations for Fire Safety When Charging Electric Vehicles document produced by the RISCAuthority provides recommendations to reduce the likelihood of a fire occurring and preventing the spread of fire and will assist when updating the fire risk assessment.

As there will be an increase in the amount of vehicle movements within the charge point zone, this could potentially lead to a higher frequency of vehicle on vehicle and/or vehicle and pedestrian incidents. A workplace transport risk assessment should be utilised as it will assist in identifying the safest places to locate the charge point. This risk assessment should be reviewed when the charge point zone(s) opens and at regular intervals thereafter, to ensure safe operations remain.

As mentioned earlier, charge points should ideally be located external to the building and to maximise usage not placed in corners of car parks. Such placement limits the use of the charger, as there may be short cables installed and depending on where the EV inlet port is located on the EV, could result in the EV having to park at an awkward angle or block walkways to reach the charge point, creating additional hazards for car park users. Charge points, especially wall mounted points, should not be positioned where the cable trails across a walkway as this will create a trip hazard when the charge point is in use and if cables are not returned to the charge point.

Creating clearly signed EV charge point zones and bays, will encourage use by EV drivers and should reduce the likelihood of non-EV drivers using the area. The charge points should be signed with the charge point sign placed in the eye line of the driver, as this reduces the opportunity of the defence of ignorance from any inappropriate use. Effective use of painting the parking bay space either completely or partially will also assist in identifying EV spaces. These measures will raise road users, including pedestrians, awareness of EVs in the area.

When there are multiple charge points, erect a sign detailing the type of charger present and reminding users to replace the cable after use, as this will assist in preventing the cables becoming a trip hazard or being damaged. Trip hazards can also be created at poorly positioned wall mounted points, where the cable has to trail across a walkway. If a trip incident should occur when the cable is connected to the vehicle, and a claim is received this should be reported under the motor policy.

EV inlet ports are not located at the same position, resulting in EVs approaching the charge points either by reversing or forward parking which could result in damage to the charge point. To prevent vehicle impact damage, protect charge points either by installing barriers or by raising the kerb. Whichever damage protection method is installed, ensure that it does not hinder the maintenance and inspection of the charge points or the access and use of the charge point.

If your vehicle parking areas have been designated as reversing only parking, the EV area will need to be reviewed as EVs may have to forward park due to the location of the inlet port.

Further guidance on designing charge point infrastructures can be found within the OREF Charging Infrastructure Design Guide.

The business should implement a documented inspection process of the EV zone and the condition of the charge points to prevent build-up of storage or waste, and to ensure damaged cables or charge points are identified and where necessary taken out of use until repairs are completed. As the charge points are a fixed electrical installation, Duty Holders are required under the Electricity at Work Regulations 1989 (EAWR) to ensure the safety of EV charging points. This includes maintaining electric vehicle systems to prevent, so far as is reasonably practicable, any danger to employees, visitors or other persons. An inspection and testing programme, by a competent person, should be implemented throughout the charge points life cycle.

Charge Points at Employees Homes

Some businesses provide the charge points for employees whilst other organisations require the employee to fund the charge point. There will be occasions when employees cannot install a charge point, be it if they live in a flat, have a house without a drive or rent the property. When this situation occurs employees should be encouraged to plan the task of charging EVs into their daily life. This can be achieved through charging the EV at work, using chargeable charge points and using free charge points such as those found at some supermarkets, hotels, attractions and car parks. Chargeable and free charge points can be found on EV charge point locater sites.

Another option is to recommend employees contact their local authority about the on-street residential changepoint scheme. Local authorities have access to grant funding through the On-street Residential Chargepoint Scheme to assist with the transition towards zero emission vehicles. These chargers can be standard ground, wall mounted, or double headed charge points capable of charging two vehicles, where possible. The charge points are being located in public car parks or on-street with some located within lampposts.

Sustainability – Energy Storage

Installation and energy source for charge points can be achieved in many ways. An example can be found at Aviva which in 2020, with support from the Scottish Government, launched one of the UK's largest solar and energy storage initiatives. The eco-powered carport features over 3,000 solar panels, 50 new electric vehicle charging points and covers 342 car park spaces. It is one of the largest renewable installations of its kind. Further information can be found at: Aviva Eco powered carport.

New Charging Methods

Inductive Charging (Wireless EV Charging)

Charging using cables may not be appealing or possible for everyone, and to address this there are trials taking place globally including across the UK, with inductive charging. Such charging works in the same way as you would charge a smart phone without cables, with electricity being transferred through an air gap from one magnetic coil in the wireless charging pads to a second one fitted in the vehicle. The charger is only activated when the EV parks on the pad and aligns the technology.

Portable EV Battery Charger

Technology continues to advance. To address being unable to install charge point at home, a Portable EV Charging Station that is charged at home from a household plug then used to charge an EV, is one concept coming to market in 2022.

Checklist

A generic Electric Vehicle Fleet Checklist is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners, including:

- Electrical inspections and thermographic imaging: Bureau Veritas
- Electric vehicle charging points - testing and inspection: Bureau Veritas
- Thermographic imaging and PAT testing: PASS
- Automatic fire detection and portable extinguishers: SECOM
- Security marking: Selectamark
- Business continuity: Horizonscan

For more information please visit:

Aviva Risk Management Solutions – Specialist Partners

Sources and Useful Links

- RC59: Recommendations for Fire Safety When Charging Electric Vehicles – RISCAuthority
- Energy Saving Trust
- The Institution of Engineering and Technology (IET) Code of Practice for Electric Vehicle Charging Equipment Installation - 4th Edition

Additional Information

Relevant Loss Prevention Standards include:

- Electric and Hybrid Vehicle Charging – Property Risk Management Guidance
- Electric and Hybrid Vehicle Awareness
- Business Continuity
- Contamination Following a Fire
- Control and Management of Combustible Waste Materials
- Electrical Installations – Inspection and Testing
- Emergency Response Teams
- External and Internal Third Party Exposures – Property Protection
- External Building Areas – Usage and Safety
- External Wall Insulation Systems
- Fire Compartmentation
- Fire Safety Inspections
- Fire Safety Legislation
- Heat and Smoke Venting Systems
- Housekeeping – Fire Prevention
- Managing Change – Property
- Managing Contractors
- Smoke Contamination
- Thermographic Surveys

To find out more, please visit Aviva Risk Management Solutions or speak to one of our advisors.

Email us at riskadvice@aviva.com or call 0345 366 6666.*

*Calls may be recorded and/or monitored for our joint protection.

Appendix 1 – Implementing an Electric Vehicle Fleet Checklist

Location	
Date	
Completed by (name and signature)	

	Electric Vehicle Fleet Checklist	Y/N	Comments
1.	Vehicle selection: Have you considered the following: • Mileage required? • EV mileage range? • Loads to be carried? • Safety features – Euro NCAP ratings? • Whole life costs?		
2.	Have employees being provided with EV training and information on the following: Charge points • How to use correctly? • Safe placement of cables to prevent tripping, including undertaking a visual inspection and reporting damage and/or faults? Range anxiety • Understanding EV charge eco features? • The benefits of preconditioning? • Journey planning? • Charging the vehicle to prevent battery degradation? On the road • Using regenerative braking? • Impact of torque? • Using the brake regularly to prevent the system seizing up? • Obtaining the most economical use of energy as well as how to reduce energy consumption? • Quiet running of the EV with potential for VRUs who may not to be aware of the EV? Maintenance and vehicle checks • Maintaining tyres in a good condition as underinflated tyres will increase energy consumption?		

	Electric Vehicle Fleet Checklist Contd.	Y/N	Comments
3.	Do you have procedures in place for category B driving licence holders, to complete a minimum of five hours training on driving alternatively fuelled vehicles before driving a 4.25 tonne EV?		
4.	Charging Infrastructure – Fleet perspective: • Meets the current and future operational needs' requirements of the fleet? • Number and type of charge points required?		
5.	Charging Infrastructure – Business perspective: • Is your change management procedure being followed? • Are all relevant departments involved? • Has a review of the electricity capacity been undertaken? • Has electrical protection been built into charging points? • Are charge points located externally? • Are charge points located inside buildings? – if yes refer to RISCAuthority document RC59 for guidance • Are changes required for passive, active and management control measures to prevent a fire occurring and in case of fire? • Has appropriate signage and location been agreed? • Has a competent contractor been engaged? • If the workplace is leased, do you have the ability to install charge points on leased sites? • Is the plan future proofed for further fleet expansion or new charging technology? • Has the fire risk assessment been review and updated? • Has the DSEAR assessment been review and updated?		
6.	Charging points - Once installed: • Is there a management procedure for checking the charge points are free from waste, and that there is no damage and defects? • Are thermographic checks undertaken on the charge points? • Has the business implemented a maintenance, inspection and testing programme for the charge points in line with the Electricity at Work Regulations?		

	Electric Vehicle Fleet Checklist Contd.	Y/N	Comments
7.	Has the workplace transport risk assessment been reviewed to ensure adequate space is provided to safely charge EVs with sufficient segregation of pedestrians and vehicles?		
8.	Is advice available for employees about installing a charge point at home?		
9.	Is advice available for employees who cannot install a charge point at home?		
10.	Additional comments:		

Please Note

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LOSS PREVENTION STANDARDS