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Common Requirements and Good Practice for the ChargePlace Scotland Network

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Part 1: Introduction

This document provides guidance and recommendations for electric vehicle and plug-in hybrid electric road vehicle conductive charging equipment to be used as part of the ChargePlace Scotland network.

In doing so the document sets out the minimum, common requirements, standards and regulations for the safe, reliable and efficient operation of electric vehicle charge points on the ChargePlace Scotland network.

The following guidance is structured into three sections:

- **part two:** Minimum common requirements for charging equipment and its installation
- **part three**: Minimum common requirements for the ChargePlace Scotland Charge Point Network Operator and associated network communications
- **part four:** Other good practice guidance and information resources

References to standards or regulations are to the current edition of such standards at the time of installation.

In cases of apparent inconsistency in installation requirements, the IET Wiring Regulations (BS 7671) shall take precedence.

Manufacturers/suppliers of charging equipment shall demonstrate compliance with this guidance.

Part 2: Charging equipment and its installation – common requirements

1.	Installation
1.1.	This guidance is for charging equipment only and not the final installation. However, it is recommended that the final installation will be in accordance with the IET Wiring Regulations (BS 7671); the recommendations of the IET Code of Practice for Electric Vehicle Charging Equipment Installations (as amended); Electricity Safety, Quality and Continuity Regulations and all other applicable standards.
1.2.	It is recommended that installations on the public highway shall use a contractor registered through the Highways and Electrical Registration Scheme (HERS).
1.3.	It is recommended that charging equipment be installed in accordance with BS EN 61851.
1.4.	It is recommended that electrical supply of the final installation should allow the charging equipment to operate at full rated capacity.
1.5.	It is recommended that the design of the charging equipment and installation shall be compliant with the requirements of BS 8300-1(Design of an accessible and inclusive built environment. External environment. Code of practice) and BS 8300-2 (BS 8300-2:2018. Design of an accessible and inclusive built environment. Buildings. Code of practice).
1.6.	It is recommended that the installer must be a member of SELECT, NICEIC or equivalent.
2.	**Charging equipment**
2.1.	It is recommended that charging equipment is CE marked in accordance with EC Directive 768/2008/EC.
2.2.	It is recommended that details of any precautions necessary to ensure safe operation with Active Implantable Medical Devices is provided and is clearly displayed on the charging equipment.
2.3.	It is recommended that charging equipment is compliant with: • BS EN 61851 Part 1 • Electromagnetic Compatibility Regulations 2016 • Electrical Equipment Safety Regulations 2016
2.4.	BS EN 62196 Mode 1 or Mode 2 charging is not compliant with this specification.
2.5.	It is recommended that charging equipment utilises socket outlets (BS EN 61851:1 Case A2 or B2 connection) or tethered cables (BS EN 61851:1 Case C connection).
2.6.	Where multiple outlets are provided, it is recommended that charging equipment is rated for all outlets to operate at full rated output capacity simultaneously.

2.7.	**It is recommended that for AC charging equipment:** • AC charging equipment output power is measured or calculated at a nominal supply voltage of 230V ac single-phase or 400V ac three-phase • AC charging equipment is compliant with BS EN 61851 Part 22 • AC charging equipment uses BS EN 62196 Mode 3 charging • AC charging equipment socket outlets (where used) is BS EN 62196 Type 2
2.8.	**For DC charging equipment it is recommended that:** • DC charging equipment is compliant with BS EN 61851 Part 23 • DC charging equipment uses BS EN 62196 Mode 4 charging
3.	**Charging outlets**
3.1.	**STANDARD AC (7kW)** **It is recommended that:** • Charging equipment outlet is rated 230Vac ± 10% single-phase • Charging equipment output is 7kW • AC charging equipment is fitted with a BS EN 62196 Type 2 socket outlet • Has the ability to deliver power of 7 kW capacity to each outlet simultaneously
3.2.	**FAST AC (22kW)** **It is recommended that:** • Charging equipment outlet 400Vac ± 10% three-phase • Charging equipment output is 22kW • AC charging equipment is fitted with a BS EN 62196 Type 2 socket outlet • Has the ability to deliver power of 22 kW capacity to each outlet simultaneously

3.3.	**TRIPLE RAPID DC (50kW) CCS Combo 2 and CHAdeMO and AC (43kW)** **It is recommended that:** • AC Charging equipment outlet is rated 400Vac ± 10% three-phase • AC Charging equipment output is 43kW • DC Charging equipment output is 50kW
3.4.	It is recommended that DC charging equipment provides a vehicle connector independently certified to the CHAdeMO standard, version 0.9 or above.
3.5.	It is recommended that DC charging equipment provides a vehicle connector compatible with the Combined Charging System 'Combo 2' (EN 62196-3) standard.
3.6.	It is recommended that the CHAdeMO connector is the Sumitomo Electric SEVD-01, the Yazaki CHV-04 or equivalent.
3.7.	It is recommended that charging equipment has the ability to output 50kW to one of the DC outlets and 43kW to the AC outlet simultaneously.
3.8.	It is recommended that the charge point is able to supply information to the Charge Point Management System (CPMS) on the status of each of the three connectors independently.
4.	**Location**
4.1.	Where installed in an outdoor location, it is recommended that the charging equipment meets the minimum IP (Ingress Protection) ratings set out in BS EN 61851:1.
5.	**User interface**
5.1.	It is recommended that charging equipment status should be indicated using lights, LEDs or display.
5.2.	Where possible, it is recommended that usage instructions are provided on screen.
6.	**Data requirements**
6.1.	It is recommended that the charging equipment is fitted with a MID (Measuring Instruments Directive) (SI 2016/1153) approved electricity meter.

6.2.	At least the following information should be recorded for each charging session: • Charging session ID • Chargepoint ID • User ID • Plug in date and time • Unplug date and time • Charge start date and time • Charge end date and time • Total energy drawn (kWh)

Part 3: ChargePlace Scotland charge point network operator – common requirements

The ChargePlace Scotland Charge Point Management System (CPMS) is currently operated on behalf of Transport Scotland by a Charge Point Network Operator (CPNO), Charge Your Car (CYC) Ltd. Recipients of funding to install charge points shall fully cooperate and issue sufficient locational and charge point manufacturers information as required to the CPNO. The point of contact at the CPNO can be obtained from Transport Scotland.

The Charge Point Management System (CPMS) provides:

- compliance with the latest interoperability criteria emerging in the UK and Europe and is capable of capturing data via Open Charge Point Protocol (OCPP v1.6)
- when each and every charging session is carried out at all of the charge points, recognition of the RFID cards and activation of the charge points for charging to commence
- a system for levying of tariffs on the charge point if required
- collation of data for all of the key parameters of each and every charge transaction, including fault monitoring and automated maintenance call out
- production of periodic reports of all charging transactions
- issues such reports to each Grantee in regard to their involvement as well as to Transport Scotland on behalf of Scottish Government
- upon receiving fault messages from charging outlets, automatic dial and call out of a maintenance team with sufficient information to locate the outlet in question identifying via code the fault type
- if a post is deemed faulty, CYC will notify the manufacturer/ installer and the Host. The Host will then invoke maintenance and warranty agreements with charge post manufacturers as required

7.	Charge point management system
7.1.	It is recommended that charging equipment is compatible with the Open Charge Point Protocol version 1.6 (OCPP 1.6) or above.
7.2.	To ensure full compatibility with the ChargePlace Scotland network, the charge point manufacturer will need to provide a written endorsement from the ChargePlace Scotland Network Operator stating that the charge points and the specific models have been tested and certified as compatible. All costs associated with any testing and development required will need to be borne by the charge point manufacturer.

7.3.	It is recommended that each charge point will be labelled with the charge point's ID number and the contact details for the CPS helpline 0141 648 0750. The charge point supplier or installer should liaise with the Charge Point Network Operator (CPNO) in order to ensure the appropriate sticker / label is provided on the charge point.
8.	**Network communications**
8.1.	It is recommended that data transmittal is achieved by means of mobile phone SIM card technology.
8.2.	It is recommended that the charge point manufacturer supplies the charge point inclusive of the cost of a SIM card and data contract to allow the charge point to connect with the Charge Point Management System and transfer all necessary data for a period of 5 years.
8.3.	It is recommended that roaming SIM cards are used which will roam between the mobile phone networks to select the strongest signal to communicate with the Charge Point Management System.
8.4.	It is recommended that the charging equipment has the ability to start and end a charging session even if network communications are not available.
8.5.	**'Free vend'/'Default to charge' –** It is recommended that when the charge point is not able to communicate with the CPMS the unit should automatically default to allow charging to take place with any RFID card and all data related to at least 100 charging sessions should be stored on the unit for up to 1 month until communications are restored.
8.6.	It is critical for the performance of each charge point in operation and the system overall to be able to communicate with the back office to activate the unit and record transactional data. This also allows users to make mobile calls to the helpline if required. In order to achieve this functionality it is recommended that each proposed location for charging equipment is surveyed for mobile telecommunications signal strength. To assist with site selection it is recommended that the grantee undertakes an indicative signal strength survey.
8.7.	When a site is tested, though not definitive, the generally recommended GSM signal strength is between -52dB and -82dB. Anything below -92 dB is unsatisfactory and ideally another location should be sought. Where there are no alternative locations, it is recommended that the grantee discusses possible solutions and site specific issues with the CPNO and charge point suppliers.

Part 4: Other good practice guidance and information resources

9.	Layout of charging bay
9.1.	The location and layout of charging sites is an important consideration in encouraging their use and to raise the profile of the ChargePlace Scotland network. Common issues to consider include: • The site not being located in an area of flood risk • The site being easily accessible to main roads • The site being in a prominent location and where possible in locations with CCTV, lighting and amenities • Access to charging equipment being available at all times • Sites providing a minimum of two dedicated charging bays • The charging unit being positioned at the centre point between two bays • Where possible, the bays should be widened to allow easy access to the charging sockets on the vehicles • Where possible, the bays should be laid out and designed so that they are disabled access compliant to national statute. For charge points installed on footways or raised platforms, this includes dropped kerbs to allow wheelchair users to access the charge point • Crash resistant bollards should be provided in the front of ground mounted charge points. If there is vehicle traffic behind the charge point, bollards should also be provided there • Charge points should be located such that their cables at no time cross over footpaths or otherwise create any kind of trip hazard • In exposed locations consideration should be given to the installation of a canopy over the charge point
9.2.	It is recommended that each bay should be marked with Traffic Signs Manual Figure 13-44 with the permitted variant “Electric vehicle recharging point only"
9.3.	It is recommended that the bays are also marked taking account of TSRGD Diagram 1028.4 with permitted variations "ELECTRIC VEHICLES", "ELECTRIC VEHS ONLY" or "ELECTRIC VEHS" for on road bays. Bays in car parks should also be painted green.
9.4.	It is recommended that a driver must be able to easily distinguish between a standard 7kW AC and fast 22kW AC charge point and that

	the charge point supplier ensures that appropriate signage, or similar, is provided.
10.	**Canopy**
10.1.	For installs where it is deemed essential to include a protective canopy, it is recommended that the canopy meets the following specifications: • The canopy has at least three full sides, thereby protecting the rear and both sides of the charger, the front of the canopy should ideally also provide some protection to the front of the charge point whilst still allowing for access • The roof of the canopy extend at least 0.5m beyond the front of the charge point • There is enough clearance between the walls of the canopy and the charger to ensure the canopy does not interfere with ventilation and maintenance of the charge point • The canopy is of a highly durable build and material, such that it will not be damaged by extreme local weather conditions
11.	**Charge point maintenance**
11.1.	It is recommended that each charge point is covered by a 5 year warranty and annual servicing package. This should include the requirement to repair out of service charge points within 48 hours, including a site visit when required.
12.	**Other useful guidance**
12.1.	A number of guidance documents have been prepared by third parties which may be of assistance to the grantee: • UK Electric Vehicle Supply Equipment (EVSE) Trade Association – General Procurement Guidance for Electric Vehicle Charge Points Guide 2015 • BEAMA – A guide to Electric Vehicle Infrastructure – April 2015

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