

## EXPLANATORY MEMORANDUM TO

### THE ELECTRIC VEHICLES (SMART CHARGE POINTS) REGULATIONS 2021

2021 No. 1467

#### 1. Introduction

- 1.1 This explanatory memorandum has been prepared by Department for Transport and is laid before Parliament by Command of Her Majesty.

#### 2. Purpose of the instrument

- 2.1 The purpose of this instrument is to introduce regulations which require domestic and workplace electric vehicle (EV) charge points to include smart functionality.
- 2.2 This instrument will also mandate that these charge points must meet specified cybersecurity requirements and operate in certain ways to protect the stability of the electricity grid and to protect consumers.

#### 3. Matters of special interest to Parliament

*Matters of special interest to the Joint Committee on Statutory Instruments*

- 3.1 None.

#### 4. Extent and Territorial Application

- 4.1 The territorial extent of this instrument is England and Wales, and Scotland.
- 4.2 The territorial application of this instrument is England and Wales, and Scotland.

#### 5. European Convention on Human Rights

- 5.1 The Parliamentary Under Secretary of State at the Department for Transport, Trudy Harrison MP, has made the following statement regarding Human Rights:

“In my view the provisions of the Electric Vehicles (Smart Charge Points) Regulations 2021 are compatible with the Convention rights.”.

#### 6. Legislative Context

- 6.1 The regulations made by this instrument have been made using powers under the Automated and Electric Vehicle Act 2018 (“the AEVA”).
- 6.2 The AEVA is intended to enable consumers in the United Kingdom to benefit from improvements in transport technology. Part 2 paragraph 15 of the AEVA contains various provisions relating to charge points for electric vehicles.
- 6.3 Section 15 of the AEVA provides the Secretary of State with the power to introduce regulations prohibiting the sale or installation of charge points in the United Kingdom, unless they meet certain requirements.
- 6.4 Section 15(2) provides that the prescribed requirements may include (but are not limited to) requirements that relate to technical specifications for a charge point, such as: the ability for a charge point to receive and process information provided, to react to information, to transmit information, to monitor and record energy consumption, to

comply with requirements relating to security, to achieve energy efficiency and to be accessed remotely.

- 6.5 Currently no secondary legislation has been laid under this section therefore there are currently no similar requirements in law placed on charge points.

## 7. Policy background

### *What is being done and why?*

- 7.1 The uptake of EVs is central to Government's net zero commitment which requires the UK to bring all greenhouse gas emissions to net zero by 2050. But to enable this transition, the electricity system will need to meet the increased demand. Without intervention, significant and costly additional generation and network reinforcement will be required.
- 7.2 The time of day at which EV charging occurs could have significant implications for the electricity system. The Department expects that many consumers will charge their EVs at home in the future. Smart charging is when EV charging is optimised to occur at times of day when there is lower demand on the electricity system, or at times of high renewable electricity generation, which can help mitigate the impacts of this increased demand on the electricity system. This response from consumers to assist with managing the grid is called Demand Side Response (DSR). This in turn will enable consumers to save money on their energy bills as they take part in a flexible energy system. Without smart charging, EV charging is likely to happen during existing electricity system peak times (such as between 5pm and 7pm) when many people arrive home from work. This would require significant levels of additional investment both in the networks that transport the electricity, with the costs borne ultimately by consumers, and in electricity generation capacity to meet increased demand.

### Legislation outline

- 7.3 The main provisions of the instrument are described below.
- 7.4 **Scope:** Maximum flexibility and smart charging potential can be provided when a vehicle is plugged in for a long period of time (e.g. overnight or during the working day). Therefore, this instrument applies to charge points intended for use by vans and cars in a domestic or workplace setting (excluding public charging). It also applies to cables that have smart functionality but excludes rapid charge points (charge points at or above 50 kW that are intended for charging quickly).
- 7.5 **Smart functionality:** Government's overall policy aim for smart charging is to maximise its uptake amongst consumers. This instrument will help drive uptake, by mandating that all domestic and workplace charge points in scope of the legislation and which are sold in Great Britain must have the technical capability to smart charge. The effect of the instrument, therefore, is that those installing charge points at their home or workplace will only be able to install charge points with smart functionality. This will help drive the uptake of smart charging across Great Britain.
- 7.6 **Interoperability:** The ability of consumers to freely switch energy supplier is a fundamental principle in the energy market. This instrument makes clear that a charge point should not introduce a new barrier to switching by being designed to lose its smart functionality when its owner changes supplier.

- 7.7 **Loss of connectivity:** Charge points will rely on a network connection to meet the smart requirements within the legislation, for example using Wi-Fi. This instrument mandates that when the network connection is lost, a charge point must still be capable of charging an EV, to ensure users can always charge their vehicle when they need to.
- 7.8 **Safety:** There is little evidence that introducing smart functionality into EV charge points increases safety risks. However, this instrument does include a provision to help mitigate any potential risks that could occur, to ensure consumers are protected. The instrument mandates that during operation, the charge point must be setup to prevent users carrying out certain functions (such as a ‘consumer override’ of certain default functions), where these may result in a safety risk.
- 7.9 **Measuring energy consumption:** Data on energy consumption is important for consumers so they can monitor how much electricity they are using when charging their EV and compare different energy deals. Government has therefore included requirements within this instrument to ensure consumers have access to such data. This instrument mandates that, each time a smart charge point is used, it must measure or calculate how much electricity is imported/exported, and the time over which electricity is imported/exported. It mandates that the charge point owner must be able to view this data, so they can actively monitor their electricity consumption. A charge point also needs to measure or calculate this data to be operationally capable of supporting demand side response services. The instrument sets an accuracy level of within 10% for all power and electricity import/export values and says a charge point must be capable of calculating the power value every one second. This will help ensure the data charge points generate can be used to help facilitate demand side response services.
- 7.10 **Off-peak charging:** As outlined above, Government’s aim is to maximise the uptake of smart charging, to increase the number of EV drivers who charge during times when electricity demand is low. To participate in smart charging, consumers ordinarily need both a smart charge point and to sign up to a smart charging service, such as an energy tariff where electricity prices are lower during periods of low electricity demand. This instrument does not mandate that consumers must use the smart functionality of charge points nor sign-up to certain services. Therefore, to help mitigate the risk that some users do not engage with smart charging offers and instead charge during peak times, it mandates that charge points must be pre-set to not charge at times of high demand. The instrument also mandates the charge point owners must be informed of this setting during first use and given the opportunity to edit or remove the setting. This option to change or remove the setting is also required to be available to the owner at any point after first use. This instrument does allow for some charge points to be sold without this setting, where a charge point is being sold in combination with a smart charging service, described in the instrument as a DSR agreement. The instrument also requires that charge point owners should, subject to the safety provisions described above, be able to override on any given occasion the default mode of charging outside peak hours.
- 7.11 **Randomised delay:** One key objective for smart charging is grid stability, meaning to help maintain the balance between generation and demand of electricity at all times. If charge points all turn on or off (“switch”) simultaneously (for example, when turning on after a power outage) this could cause grid instability, due to the sharp increase or decrease in electricity demand from EVs. To mitigate this, this instrument mandates

that charge points should have a randomised delay function. This function means that before a charge point switches electricity load, it randomly generates a time in seconds (of up to 10 minutes) and won't switch until this time has passed. This means charge points switch in a staggered way, spreading the electricity demand from EVs over a period of time. This setting will not apply if:

- 7.11.1 (i) a consumer cancels it;
  - 7.11.2 (ii) an immediate response is required from the charge point (for example, to provide contracted Demand Side Response); or
  - 7.11.3 (iii) if a randomised delay has already been applied (for example, via a smart meter).
- 7.12 **Cybersecurity:** Cyber attacks on smart charge points, such as the hacking of devices, the systems that control them, or the communications between charge points and their operator, have the potential to threaten the stability of the electricity system. This instrument includes device-level requirements in line with the best practices set out in the Department for Digital, Culture, Media and Sport's (DCMS) Code of Practice for Internet of Things devices and the European cybersecurity standard, ETSI EN 303 645. These requirements are intended to ensure that charge points employ good 'cyber hygiene', including the use of unique passwords, the secure storage of sensitive information, and the encryption of communications sent to and from a charge point. The Code of Practice for Internet of Things devices can be viewed here <https://www.gov.uk/government/publications/code-of-practice-for-consumer-iot-security> and the European cybersecurity standard, ETSI EN 303 645 here [https://www.etsi.org/deliver/etsi\\_en/303600\\_303699/303645/02.01.00\\_30/en\\_303645v020100v.pdf](https://www.etsi.org/deliver/etsi_en/303600_303699/303645/02.01.00_30/en_303645v020100v.pdf).
- 7.13 **Assurance:** To prove compliance with these regulations, this instrument requires there to be:
- 7.13.1 (i) a statement of compliance; and
  - 7.13.2 (ii) a technical file which outlines how a charge point meets the regulations.
  - 7.13.3 A statement of compliance must be provided with each charge point at the point of sale, and the technical file must be made available to the consumer when requested. A person who sells a charge point must also keep a register of all charge points sold within the past 10 years.
- 7.14 **Enforcement:** To enable the effective enforcement of these provisions, this instrument provides the person responsible for enforcing the instrument (referred to as the enforcement authority) with various powers. These include powers of entry (both with and without a warrant) in addition to a power to require provision of information and documents necessary to monitor compliance (by serving an 'information notice'). These powers will be used to assess compliance where remote evidence is insufficient or where a known breach has occurred and further investigation is needed to ascertain the extent of the breach. Associated powers have also been provided for investigation, seizure and detention of any relevant products, records or other information. Careful consideration has been given to how and when these powers can be used.
- 7.15 **Penalties:** In the event of non-compliance, the enforcement authority may issue a civil penalty up to a maximum of £10,000 in respect of each non-compliant charge point sold, and a maximum of £250,000 for obstructing the enforcement authority, knowingly making false statements and certain other similar matters. Government deems this an appropriate maximum to deter non-compliance and obstruction, whilst

allowing the enforcement authority flexibility to take a proportionate approach when determining and issuing penalties.

- 7.16 Other enforcement provisions: In lieu of imposing financial penalties, the enforcement authority can issue a compliance notice requiring specified action to be taken or may accept a written undertaking to ensure no further breach will occur, that the position is restored to what it would have been had the breach not been committed, or that action is taken to benefit any person impacted by the breach, within a specific time period. This instrument also mandates that the enforcement authority publishes the cases in which civil sanctions have been imposed and cases in which an enforcement undertaking has been entered into, except where the sanction has been overturned on appeal or where a publication is considered inappropriate.

## **8. European Union Withdrawal and Future Relationship**

- 8.1 This instrument does not relate to withdrawal from the European Union.

## **9. Consolidation**

- 9.1 No consolidation is required.

## **10. Consultation outcome**

- 10.1 The Office for Zero Emission Vehicles carried out a UK wide public consultation on the introduction of requirements for EV smart charging between 15th July 2019 to 7th October 2019 and received 129 responses in total from a range of stakeholders. Chapters 1 and 2 of the consultation focused on proposals for these regulations. A summary of the responses was published on 27th May 2020 and a Government response, with an Impact Assessment, was published on 14th July 2021.
- 10.2 The majority of respondents supported the Government's overall aims and objectives for EV smart charging and provided feedback on specific technical requirements for charge points.
- 10.3 Three material changes have been made to the original proposals as a result of the consultation:
- 10.4 Firstly, Government has opted not to mandate the requirements of the British Standard PAS1878 (a newly developed standard for Energy Smart Appliances) at this time. The standard was still in development when government consulted, and it is now clear that the full benefits of the standard cannot be met through device level requirements alone. However, measures in these regulations are consistent with the standards established in PAS1878, and Government will consider mandating that standard at a later stage.
- 10.5 PAS 1878 can be downloaded from here: <https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/about-standards/Innovation/energy-smart-appliances-programme/pas-1878/>.
- 10.6 Secondly, Government has chosen not to mandate device-level requirements relating to DSR interoperability at this time (the ability of a charge point to work with multiple DSR providers). This is because the smart charging market remains nascent, and because delivering interoperability would require broader powers than those set out in the AEVA. The Department intend instead to consider how best to deliver interoperability as part of a second phase of legislation, by looking at placing wider requirements on the entities (such as charge point operators and aggregators) which

could deliver DSR through charge points. Government aims to consult on this second phase of policy measures in 2022.

- 10.7 Thirdly, the consultation also proposed that these regulations apply across the UK. During the development of these regulations the Government worked with the Devolved Administrations to ensure any regional considerations were taken into account. Following close engagement with the Northern Ireland Executive, the Government has concluded that measures should be implemented on a Great Britain only basis at this time. This is because Northern Ireland has a separate system of energy regulation and smart meters (which are important to realise many of the consumer benefits arising from smart charging) are not currently being deployed in Northern Ireland.
- 10.8 The consultation, summary of responses, government response and impact assessment can be found here: <https://www.gov.uk/government/consultations/electric-vehicle-smart-charging>.

## **11. Guidance**

- 11.1 Non-statutory Guidance for industry to help support compliance with the requirements in this instrument will be available on the Gov.uk website and Government will continue to work closely with industry and trade bodies to communicate the new requirements.

## **12. Impact**

- 12.1 The impact on business is from the increase in technical complexity of EV charge points, therefore cost of compliance with these regulations will fall mostly to charge point manufacturers. It is expected that this instrument will not significantly increase the cost of a charge point that is already smart.
- 12.2 There is no, or no significant, impact on the public sector.
- 12.3 The overall monetised benefits are estimated at £300m - £1.1bn up to 2050, primarily derived from reduced electricity system costs. The cost to industry of this instrument is estimated at £10 - £260m up to 2050, primarily related to product development costs to meet the requirements. The costs to industry are significantly outweighed by the benefits to the energy system and consumers, and this instrument has a Net Present Value of £0 - £1.1bn up to 2050, with a central estimate of £500m. (All monetary figures are in 2021 values and discounted at 3.5%).
- 12.4 A full Impact Assessment is submitted with this memorandum and published alongside the Explanatory Memorandum on the legislation.gov.uk website.

## **13. Regulating small business**

- 13.1 This instrument applies to activities that are undertaken by small businesses.
- 13.2 No specific action is proposed to minimise regulatory burdens on small businesses.
- 13.3 The basis for the final decision on what action to take to assist small businesses is that these regulations apply market wide for effective product regulation. Exempting small and micro businesses could potentially distort the market and undermine the policy intention and consumer benefits. Additionally, many of the policy objectives, such as grid stability and cyber security, require adoption by the entire charge point market in order to successfully mitigate risks to consumers and the electricity system.

## **14. Monitoring & review**

14.1 The approach monitoring this legislation, new metrics are being developed to assess the overall scheme's progress and feed into evaluation activity. Such metrics could include:

14.1.1 the proportion of home charging EV owners that use a dedicated charge point;

14.1.2 average price of a charge point;

14.1.3 percentage of load charged in smart charging mode;

14.1.4 proportion of home charging EV owners with incentives (such as specific energy tariffs) to smart charge; and

14.1.5 qualitative metrics such as consumer attitudes and awareness around smart charging.

14.2 Some monitoring activity is already being undertaken but additional evaluation will also take place. An interim process evaluation (using mostly qualitative data) will establish if these regulations are being implemented as intended followed by a separate impact evaluation in 2024-5 to assess how effectively the policy is meeting its objectives.

14.3 A statutory review clause is included in the instrument. The AEVA also contains a requirement for the Secretary of State to prepare a report every 12 months assessing the impact and effectiveness of the regulations made under Part 2 and the need for regulations to be made under this part going forward.

## **15. Contact**

15.1 Emma Roberts at the Office for Zero Emission Vehicles Telephone: 020 7215 6961 or email: [emma.roberts@beis.gov.uk](mailto:emma.roberts@beis.gov.uk) can be contacted with any queries regarding the instrument.

15.2 Natasha Robinson, Deputy Director for the Office for Zero Emission Vehicles, at the Department for Transport can confirm that this Explanatory Memorandum meets the required standard.

15.3 Trudy Harrison MP at the Department for Transport can confirm that this Explanatory Memorandum meets the required standard.