REA Statement on Smart Charging draft legislation

Confidential – for submission to Government

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NB*: This document has been produced following one REA member working group meeting and consultation with members directly*

Text in Orange is taken from Government communications

Smart chargepoint function

"Smart functionality" means the ability of a charge point to—

(a) send and receive information and;

(b) respond to external signals by modulating the rate of electricity flowing through the charge point;

In line with the consultation, we also propose that all smart chargepoints must include a metering system, whereby on each occasion the charge point is used, it monitors and records the electricity it has consumed and the amount of time for which the charge point is consuming electricity. This information must be in a format accessible by the consumer.

REA response

The REA is supportive of this definition of smart functionality. We would welcome further language to emphasise the illegality of non-smart charging units being installed.

The REA has concerns about the inclusion of MIR-compliant meters as part of this legislation. We are broadly open to new AC home and workplace ('private') chargers having MIR-compliant meters if Government deems them necessary so long as a 12 month lead-in time is offered to manufacturers to comply. Our primary concern is that, increasingly, DC home chargers and workplace chargers are becoming more common as they offer reduced electricity losses to the vehicle battery (as losses are incurred in the on-board vehicle conversion of power from AC to DC). MIR meters for DC chargers however do not exist and, once they become available (largely due to new German calibration laws requiring DC rapid chargers to incorporate MIR meters) for many years we expect that it will be a small number of manufacturers supplying the market at a very high cost.

If Government is to include requirements for MIR metering for AC units, we would welcome wording that does not require the meter to be included as 'integral' to unit (e.g. located internally within the unit), so as some manufacturers can opt to include the meter externally and sit between the charger and vehicle.

Definition of 'private'

In line with the consultation, OZEV propose:

- The legislation will apply to all private chargepoints, which will be defined in legislation to include all workplace and domestic installations.
- A charging cable which happens to be smart will also be required to comply with the legislation.
- All rapid chargepoints will be exempt, with rapid to be defined in legislation.

REA response:

The REA is supportive of this proposal. We would like to see 'private' clearly defined in legislation as chargers deployed for personal use in homes, for shared use in apartments, and in commercial workplaces. We would like to see these regulations **not** apply to destination and public charge points.

The Government should give consideration to the how on-street charging infrastructure is defined, and whether it is defined as public or private. For example, an on-street charge point deployed for use of a community or at the request of an individual could be deemed 'private'. The REA does not have a firm position on this either way but would lean towards seeing on-street chargers defined as 'public' to avoid confusion and overlap of regulations (e.g. forthcoming requirements stemming from the Consumer Experience of Public EV Charging consultation).

We would like to see clauses on penalties and enforcement for non-compliance by installers, developers, and housebuilders.

Definition of customer interface

REA Response

The REA is strongly supportive of Government defining that a smart charge point must have a 'customer interface' in a way that does not require physical screens and buttons on each charge point and that clearly defines an app as being an acceptable interface. Many manufacturers provide a customer interface for smart chargers presently via an app or online platform accessible by computer, although others do include a physical screen and buttons. Government should provide flexibility in this area – some manufacturers will continue to offer charges with physical interfaces after this legislation is laid, so individuals who are not smart phone or computer literate will have access to these models on the market. Mandating physical screens and buttons however would require significant hardware and software changes to many manufacturers which would substantially increase costs on most models (on top of associated costs of compliance with other proposed interventions that are part of this legislation).

Default smart charging

There are different options for delivering a default setting:

- **Static default settings** - EVs would default to charging outside of the peak period (eg 21:00-06:00). These periods would be pre-defined and static.

- **Dynamic default settings** - EV chargepoints default settings that could vary by location and over time, to reflect local network conditions at that time.
- **Personalised default settings** - Consumers choose their own default charging settings. This could be an optional setting for consumers, or be a required choice at the point of installation (leading Government option).

REA response:

The REA agrees that chargers should be set to a 'default smart charging' setting and operate in line with the *Personalised Default Setting* option suggested by Government. At all times however a customer should be able to both override this function to immediately deliver power to their vehicle. This includes the Randomised Delay Function. Flexibility should be given to the manufacturer as to how this is set up in its first instance, and operated in practice throughout the duration of the unit's life. It should be up to the manufacturer and installer to suggest a pre-defined default (static or dynamic) setting if they feel it relevant, particularly as we expect increased 'bundled' sales of charge points and electricity tariffs from an energy supplier who may have sold the unit specifically to complement a particular EV-charging tariff.

There should be a requirement that ensures that customers set up default smart charging after their unit has been installed. It should be up to the manufacturer, who trains and approves installers to install their units, to instruct installers to work with a customer on setting this up or leave it to the guidance in their app and / included with the device. This will be increasingly important as the intelligence of vehicles increases, and associated communication between chargers and vehicles increase, and the initial set up responsibilities/capabilities may move towards the automotive manufacturer.

Interoperability

We have explored three options for our approach to DSRSP interoperability in our regulations. These are:

1. Mandate compliance with PAS 1878
2. Mandate the use of (or ability to use) OCPP between chargepoints and the DSRSP
3. Do nothing

We are currently minded to do nothing on DSRSP interoperability at this stage, given the nascent nature of the market and the limitations of our device-level powers.

We may consider including an outcome-based requirement for all chargepoints to work with any energy supplier.

REA response

The REA is supportive of the Government's proposed position of *Do Nothing* at this time. Whilst we are supportive of the widespread adoption by industry of open communication

protocols and standards (e.g. OCPP) we are hesitant for Government to specifically mandate any one standard/protocol at this time.

We note that the conversation between industry and Government on the issue of interoperability has improved and become more detailed over the past two years since the initial consultation. We retain the position that it should not be required for a consumer to be able to switch the operator of their smart home charge point as this would have significant operational (e.g. software and firmware updates), warrantee, commercial model, and hardware implications.

We are broadly supportive of proposals in PAS1879 to ensure that it is easy for a consumer to switch the Demand Side Response Service Provider (DSRSP), which is the entity which sends demand control signals to the operator of the smart charging unit. We agree with the Government's position at this time that compliance with PAS 1878 and 1879 should not be mandated at this point as it is still an untested and draft standard, and many of the proposed attributes of the standard do not yet have widespread industry buy in.

Randomised Delay Function

The consultation proposed introducing a randomised delay function (similar to SMETS) to avoid grid instability issues from multiple chargepoints turning on/off at the same time (e.g. in response to a drop in price).

No final decision on a randomised delay function has been made. If one is included, our approach and requirements could mirror that described in the draft version of PAS 1878 (section 5.5.4.5, Incorporating randomized offsets in power profiles):

- To avoid large simultaneous unwanted switches in load on the electricity network, the smart chargepoint shall be developed with functionality to offer randomized offsets of up to 30 minutes.
- The chargepoint shall incorporate randomized offsets, if these are not already included (e.g. included in ToU tariffs with built-in randomized offsets). The randomized offset shall be between 0 and 10 minutes.
- The consumer override function specified shall be able to override the randomized offset, if activated by the consumer.
- The chargepoint shall not incorporate randomized offsets when providing fast-responding DSR services.

REA response

The REA is broadly supportive of inclusion of randomised delay functionality in smart chargepoints. We see a capability of 0-10 minutes as being a reasonable range for chargers to be technically capable of delivering, so long as the consumer has the ability to override this functionality if needed. As Government has indicated, this functionality should not inhibit future fast-response DSR services.

The REA is concerned that on an operational level, 10 minute randomised delay could still be detrimental to the user experience and conflict with Time of Use price-reflective charging.

For example, if an Agile tariff rewards customers for modulating their charge within a 30 minute window, and only 20 minutes of that 30 minutes is used this has negative consequences for both energy suppliers and consumers. It potentially also has knock-on impacts on customer billings. To address this, units using price-reflective Time-of-Use tariffs should not need to comply with the randomised delay, or the delay for these tariffs (and other tariffs) should **in practice be between 0-2 minutes**.

Failsafe Mode

A failsafe mode was not explicitly included in the smart charging consultation. However, the consultation did note that the BSI standard would consider grid stability as a key principle.

PAS 1878 defines a "Mode 4" which is a failsafe mode which would be applied in "exception conditions" such as where there is a loss of power.

We are considering if a failsafe is required for smart chargepoints, and if so, what that failsafe mode should be. For example, when power is restored after a loss of power, all chargepoints could be required to resume in an "off" state, or could have to use the randomised delay function before restarting. This setting could be beneficial for network operators, but could also cause confusion for consumers (e.g. a short powercut overnight could leave a car uncharged in the morning).

REA response

The REA is not supportive of Government legislating for a Failsafe Mode. We agree that Grid Stability should remain a core principle of the Government's work in this area, but on an operational basis it is the responsibility of the local distribution network operator (DNO) to deliver this. It should not be the responsibility of individual units to include provision for this. For example, if there is a power cut in a local area the DNO should, rather than rely on EVSE-manufacturers to provide grid flexibility by default, procure grid flexibility through services like Western Power Distribution's Flexible Power product through the structured DSRP-CEM-EVSE relationship as set out in PAS1879. If consumers and smart home energy assets (including, but not limited to EVSE assets) are providing on-the-ground flexibility to DNOs they should be compensated for such activity through market structures. This is essential for the development of wider markets for domestic flexibility, such as that stemming from home batteries or heat pumps.

The REA notes that there is an IET working group developing a standard for PME Open PEN (Protective Earth Neutral) Device detection. The work here may have consequences for standalone devices if the EVSE smart requirements include a delay on loss of power.

There are varying levels of sophistication within the range of devices which fulfil the Open PEN protection function. The more simplistic devices interrupt the supply when a certain voltage measurement threshold is reached. The issue is that some of the existing distribution network operates towards the upper end of this limit and sometimes exceeds the threshold during normal operation (homes close to transformers or where there is high penetration of embedded generation). This can cause the Open PEN device to operate effectively nuisance tripping.

The REA would also like to flag that Failsafe Mode may not be able to differentiate the different between a loss of power to a premises (or other trip, such as a customer resetting their unit or those mentioned in relation to Open PEN) and a wider power cut, which would falsely start Failsafe Mode and impact the consumer experience of the charge point.

Cyber Security

We have explored three options for our approach to cybersecurity in our regulations. These are:

1. Mandate compliance with PAS 1878
2. Mandate compliance with ETSI EN 303 645
3. Mandate the consultation outcomes only

We are currently minded to mandate full compliance with ETSI EN 303 645, as an outcomes-based approach which would embed good cyber hygiene, provide a strong minimum level of cyber mitigations and enable data privacy at the device level. Compliance with EN 303 645 is required in PAS 1878.

Per their 2020 Call for Views, DCMS intend to mandate compliance with three specific provisions in EN 303 645 for IoT devices. However, we are currently minded to require compliance with the full standard given the increased cyber risk posed by smart chargepoints, as described in our consultation.

We are also minded to include additional requirements for chargepoints to include physical protections and security logging, which are not included in the ETSI. We are likely to use similar language to that which is used on these protections in PAS 1878 (paragraphs 7.12 and 6.12.1 respectively).

This position is subject to NCSC views and feedback.

REA response:

The REA acknowledges and agrees with the Government's overarching position that cyber security needs to fully incorporated in the EV charging value chain.

The ETSI EN 303 645 cyber security standard is seen by members as implementable and sensible but costly at an outset and is not yet widely adopted in the industry.

Implementing this device-level security will require one-off software development and increased ongoing software and firmware costs. It also will require fixed unit costs in the EVSE itself. Individual REA members have submitted information on the estimated costs associated with compliance to ETSI EN 303 645. The standard also pertains to individual devices not wider networks.

The REA sees network and demand signals (e.g. the security around the Demand Side Response Service Provider (DSRSP) and CEM (interface A)) as being a more critical security priority above regulating individual devices. For example, on a street of existing properties

that have EV chargers retrofit to them by 2030 it is highly unlikely that all households will opt for a charger of the same manufacturer. Hackers may be able to breach a charger or several individual charge points but the impact of this is modest compared to the risk of networks themselves, or Demand-Side Response Service Providers, or cloud-based operating platforms, sending signals to hundreds of charge points potentially of different manufacturers to suddenly turn up or down demand. The risk of such network 'spoofing' would not necessarily be reduced by device-level security standards.

As such the REA recommends Government consider the role of **ISO27001** as it pertains to wider cloud-based system security.

Additionally, international manufacturers have flagged that other European countries have not adopted the ETSI standard and urged Government to ensure that standards development remains aligned with that of EU member states to ensure a competitive environment remains in place.

The REA would prefer a delay to the cyber security requirements for home charge points until 2024/5, when the Ofgem RIIO-2 price control review has come into force (and thus further markets for domestic grid flexibility have emerged) and domestic half-hourly settlement more commonplace. At this stage Government and the National Cyber Security Centre will have a more clear picture of the risks across the value chain and better equipped to introduce specific interventions in different parts of the market.

Finally, if ETSI EN 303 645 is to be mandated it is essential that a market for enforcement be developed. There must be a clear regulatory regime ensuring compliant companies are not undercut by non-complaint ones offering a cheaper product to the market. As such, there needs to be a sufficient number of organisations put in place to carry out certification and enforcement.

Safety

Background

- The 2019 smart charging consultation proposed that smart chargepoints should be required to be safe, **with due regard to the existing safety framework**, and sought evidence on any additional safety requirements that may be needed. No safety requirement was included in the draft legislation, published alongside the consultation.
- The consultation set out the existing safety laws and requirements related to smart chargepoints (see page 30 of the consultation document).

Proposal

- Given the breadth of safety legislation that chargepoints must already comply with, we are not proposing to introduce any new requirements or duplicate existing legislative requirements within our smart charging legislation.

- We are however considering mandating a high-level outcome on smart safety, in line with the safety proposal in PAS 1878. For example, "*The chargepoint shall be configured such that safety aspects take priority over energy flexibility related behaviour at all times.*"

REA response:

The REA is supportive of high-quality EVSE being installed in homes and workplaces, and for this to be done by well-trained installers fully following IET electrical rules including full site surveys and earthing requirements. The market is not yet fully at this stage and issues are reported to the REA. However, for the purposes of this specific piece of regulation we agree with the Government's position and do not feel it is relevant to be adding additional specific safety-related requirements at this stage.

We do not have a firm position on whether a clause is needed calling for developers to comply with all existing safety regulation, but would welcome a landing page on the Government's website outlining all the existing regulations that installers and manufacturers need to comply with.

Testing

For cyber and data sections within the consultation proposed an independent testing and assurance scheme before the point of sale and installation.

The consultation stated that having a security testing assurance process will provide confidence that the security outcome-based requirements have been met, and the benefits of smart charging don't turn into a vulnerability for the electricity system.

For enforcement, the consultation proposed that the Office for Product Safety and Standards should be the regulator and that there should be 12 months between the legislation being "made" and coming into force.

Elements of assurance –

1. Testing – should we require that all/some requirements undergo testing, or just ask a regulator to test a sample of devices? What would be helpful to enable testing of smart chargepoints – a route to conformance guide? Testing specification?
2. Certification – how should industry prove compliance? Should we require certification or are there other means we should consider? (E.g. requiring industry to keep certain documentation/evidence in case of audit).
3. Further guidance – in addition to the requirements set out in legislation, what other support would industry need from Government to complying with these regulations?

REA response:

If regulations are introduced to mandate 'smart charging,' it is essential a robust regulatory regime is put into place. Clear specifications and expectations are needed from Government, otherwise industry will over-specify products to avoid risks of fines in the future. A public register of approved devices should be created.

If compliance with ETSI EN 303 645 is not required, we would prefer an industry-led scheme where a market for testing would arise. Qualified testing companies could register with the Government, which would likely consist of multiple, independent consultancies. Passed tests could be submitted to one of several industry-led schemes that would then maintain an audit. The Office for Product Safety and Standards could then monitor the compliance schemes to ensure they are performing adequately and remove their ability to remove the ability for the schemes to operate.

The Government / OPSS should be empowered to levy significant fines should non-compliance be identified. Industry-led schemes could provide arbitration between the manufacturer and OPSS if required.

It is essential that any testing for compliance to these regulations is joined up with the forthcoming third-party product certification regime being worked on in other parts of OZEV. We understand that this regime will replace the controls on the EVSE market that are currently in place through the EV Homecharge Scheme. Two separate and unconnected testing and compliance schemes would unnecessarily inflate costs to manufacturers and provide unneeded market confusion.

The REA agrees with the 12 month timeframe for enforcement.

Other

The REA notes that there will likely be products on the UK market that allow a 'dumb' charger to have some 'smart' capabilities (for example to turn on or off the power the device when the local power rate gets too high but they do not allow DSRSPs to modulate charging rates), by installing a unit upstream from a smart charger.

- For an example of the sort of boards that are being developed that can be installed upstream from the EVCP see: Garo G8EV40PMEB MCU 40Amp Type B RCBO PME Fault Det Connection Unit | Replenishh
- Matt-e is also developing such a unit: www.matt-e.co.uk

What this means is that this type of technology can be installed upstream for any dumb charger and technically make it 'smart'. The REA sees this innovation as useful in the market for existing chargers but would rather see Government act to ensure that such functionality is included in new private charging units in the future.

Note on finance

The REA has been in discussion with members involved in consumer finance asking why home chargers do not yet qualify largely for monthly finance packages (akin to smartphones, where a customer can pay a monthly fee to pay off the phone's cost rather than an upfront payment). Early reports back indicate that many banks are hesitant to offer such a finance product to consumer products costing below a certain threshold.

If this is indeed one of the leading barriers to the advent of mass consumer finance for the home charging market, these regulations combined with the withdrawal of the EV Homecharge Scheme from March 2022, could increase many basic home smart charging units to above that threshold and break down a major barrier to high street banks providing more accessible finance instruments to consumers.

***ENDS**