Department for Transport

Proposed ultra low emission vehicles measures for inclusion in the Modern Transport Bill

Government response

Moving Britain Ahead

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Introduction

1 The Modern Transport Bill (the Bill) was announced at the Queen's Speech on 18 May 2016, with the aim to ensure that the United Kingdom is at the forefront of technology for new forms of transport, including electric vehicles (EVs). The Bill will enter Parliament at the earliest opportunity.

2 The Office for Low Emission Vehicles (OLEV) and Department for Transport ran a public consultation between 24 October and 23 November 2016. The purpose of this consultation was to receive feedback on the measures relating to the uptake and use of ultra low emission vehicles (ULEVs), including both hydrogen-fuelled and battery-powered EVs, which were being proposed for inclusion in the Bill. Two events were held to explain and discuss the proposed measures with stakeholders, in addition to the consultation, as well as a number of bilateral meetings and discussions.

3 The measures that were outlined in OLEV's consultation document are intended to help address three particular challenges emerging as the ULEV sector continues to grow: the consumer experience of using the infrastructure, the interaction of charging infrastructure with the electricity system, and the future provision of infrastructure.

4 With the primary legislative powers proposed in the consultation document, the Government would be able to introduce targeted regulation in these area – if and when necessary – to ensure recharging and refuelling infrastructure is able to meet the future needs of ULEVs and their users. These measures aim to support growth in the market and help ensure consumers receive the level of infrastructure provision they expect.

5 A total of 171 responses were received to this consultation. This included 82 stakeholders representing a diverse range of sectors, and providing a wide variety of experiences, viewpoints and expertise. The Government is grateful for the thoughtful responses received to this consultation, and values the evidence and opinions submitted. A full list of organisations which submitted a response is at the Annex.

6 All responses to this public consultation have been recorded and analysed. As well as considering the full written response to each question, we have drawn out the common themes that emerge from these responses in order to obtain an indication of the most frequently expressed points of view. The responses to the consultation have been statistically analysed on this basis, and this report includes a summary of the responses received.

7 Each of the three challenges, as described above, and the proposed powers to address the challenges, were under consultation and are considered in turn. The Government's response is given, and information set out on the next steps.

1. Consultation response

Consumer experience of infrastructure

Proposed power:

1. Power to require operators of publicly accessible chargepoints and hydrogen refuelling stations, and networks, to provide data in an open source format on the geographical location and live availability of charging and refuelling infrastructure

(a) Responses to questions:

What are the costs and benefits of requiring infrastructure operators to provide open (static) data on geographical locations of publicly accessible chargepoints and refuelling points? In what standardised format should this most appropriately be provided?

8 Of the 81 responses received to the first part of this question, the clear majority saw more benefits than costs to this proposal. A total of 52 respondees (64.2%) saw only benefits to the proposals, and a further 16 respondees (19.8%) believed that the benefits of the proposal outweighed the costs.

9 The most common benefits cited were:

- This information is important to allow consumers to know where to find and use chargepoints.
- Data allows car manufacturers etc. to direct users to the nearest chargepoints, increasing consumer confidence and reducing range anxiety.

10 A total of 5 respondees (6.2%) stated that the costs of the proposals would be greater than the benefits, and a further 8 (9.9%) that legislation was not required in order to achieve the desired aims.

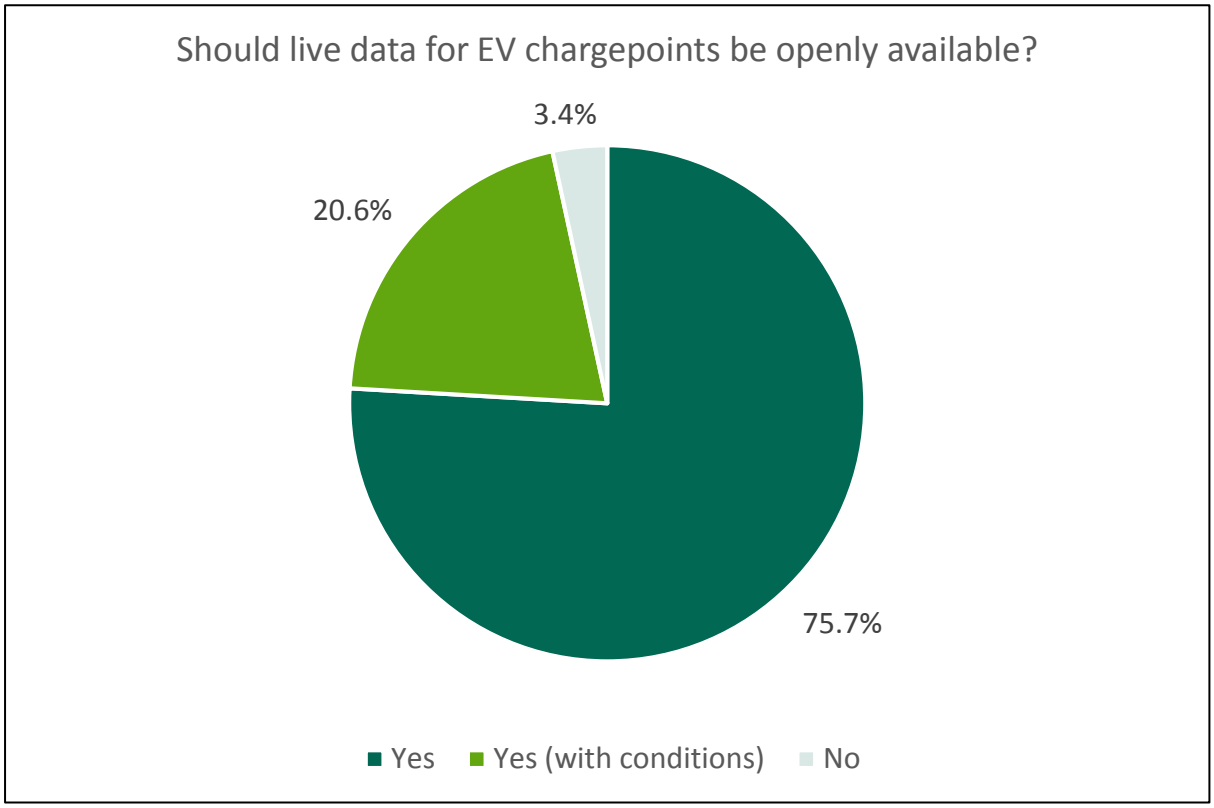
11 The most common cost cited was the financial cost of necessary back office

infrastructure, operations and maintenance to support the provision of data.

12 In regards to the most appropriate standardised format for the provision of data, 53 responses were received. In regards to the presentation of data to the user, a total of 36 respondees (67.9%) stated that a map on a mobile phone app would be the best solution. Other solutions included the following data formats, suggested from the combined responses of 14 respondees:

- CSV
- API
- XML
- OLMP
- OCPI
- OCPP
- SQL
- WGS84 geographical co-ordinates

Do you agree that live (dynamic) data should also be openly available? What proportion of existing publicly accessible chargepoints and refuelling points have the technical capability to provide information on the live availability of services?



13 Almost all respondees agreed that live data from EV chargepoint infrastructure should be openly available. Of the 107 respondees to this question, 81 (75.7%) agreed with the proposal without reservation. A further 22 respondees (20.6%) agreed with the proposal in principal but had reservations about the proposal that they wished to be taken into consideration.

14 In these cases, key concerns were:

- Live data provision was not suitable or necessary for all chargepoints, and should therefore only be required for charging infrastructure in certain locations or scenarios.
- Legislation should not be required to achieve the desired aim.
- Cost of installation and maintenance of this capability must not be prohibitively expensive.

15 A total of 4 respondees (3.7%) disagreed with the proposal.

16 The reasons given for not agreeing were that live data provision:

- would add unnecessary complexity and cost.
- would be less valuable over time as more chargers were installed and overall infrastructure reliability improved.

17 The proportion of existing chargepoints that have the technical capability to provide live information was not widely known. 27 responses were received, with estimates typically ranging from 50-70% of existing chargepoints. Several major existing chargepoint networks were able to highlight the existence of this capability in their own infrastructure.

(b) Summary:

18 A clear majority of respondees agreed with the proposed measures to ensure that open source static and dynamic data is made available to allow users to establish the location and live status of EV charging points. One respondent commented that "*knowing the location of charge points is critical in increasing confidence and reducing the range anxiety of EV drivers*", and that only "*dynamic data can give complete confidence to EV drivers, ensuring they are aware of the operational status and availability of a charging point as well as its location, connectivity and charging capability*". This sentiment was echoed by many of the respondents to the consultation.

19 However, there were some issues raised regarding the practicality and costs

associated with the proposals, with one respondent commenting that "the provision of live data requirement will drive up "*installation and operating costs*", and that in some public spots a "*stable internet connection may not even be possible".*

(c) Government decision:

20 A clear majority of responses favoured government taking powers for intervention in this area. We therefore intend to proceed with the proposed powers, which would allow regulation to require operators of public chargepoints to provide openly available data on the geographic location and live availability of chargepoints, in a standardised format. It was commonly viewed that this would enable consumers to have available all necessary information on available chargepoints to plan journeys make transport decisions, reducing range anxiety.

21 A small number of respondees felt that legislation may not be required to meet this aim, so provisions will enable time limited secondary legislation to be introduced, which may be subject to a sunset clause, to incentivise industry to come up with its own solution in the longer term. The market is developing quickly in this area so we intend that the primary powers proposed will be sufficiently broad to allow for future innovation and that the format of the data and how it should be provided is more suitably defined in secondary legislation.

22 The most common cost cited was the financial cost of necessary back office infrastructure, operation and maintenances, in particular for dynamic data, which may not be technically feasible for all chargepoints. We will explore these costs further before any secondary legislation and will ensure that there is potential to allow exemptions to be set in those regulations where appropriate.

Proposed power:

2. Power to require operators of publicly accessible chargepoints and hydrogen refuelling stations, and networks, to ensure consumers can use them without the need for multiple memberships.

(a) Responses to questions:

How could a roaming platform, or bilateral roaming solution between operators be developed to best serve users and operators? Could this be delivered without legislative intervention?

23 Of the 78 respondees to the first part of this question, 17 respondees (21.8%) indicated that the best solution would be for the government not to intervene. Of these respondees, 6 stated that a roaming solution should not be implemented at all.

24 5 respondees (6.4%) believed the best solution would be to copy solutions already implemented in certain European countries, including 2 respondees who suggested the existing OCPI protocol used in the Netherlands would be a good solution.

25 An additional 26 respondees (33.3%) agreed that a roaming solution was required, but did not provide an opinion on how best it could be delivered.

26 There were 59 responses to the second part of the question. 34 respondees (57.6%) stated that a roaming solution could be delivered without intervention, including 15 respondees who stated that it would be possible if certain factors were taken into consideration.

27 Key reservations expressed by these 15 respondees were:

- To be effective there must be a desire between operators to co-operate
- Government support/funding would be required
- Not all chargepoints should be required to be roaming-capable

28 25 (42.3%) respondees stated it would not be possible without legislative intervention. Given reasons that included:

- To prevent companies from overcharging
- To prevent monopolies from forming
- To ensure that chargepoints met minimum technical standards

What are the costs and benefits of requiring EV infrastructure operators to deliver a roaming platform solution for open public access? How could the Government best support this?

29 There were 65 responses to the first part of the question. Of those that responded, 17 (26.2%) outlined benefits only and a further 19 (29.2%) stated that the benefits outweighed costs, suggesting 57.4% of respondees were broadly supportive.

30 Common benefits cited were:

- Lower consumer costs, and easier access
- Removal of a barrier to EV uptake

31 However, 8 (12.3%) of the respondees believed that costs of a roaming platform would outweigh benefits, and a further 3 (4.6%) outlined costs only.

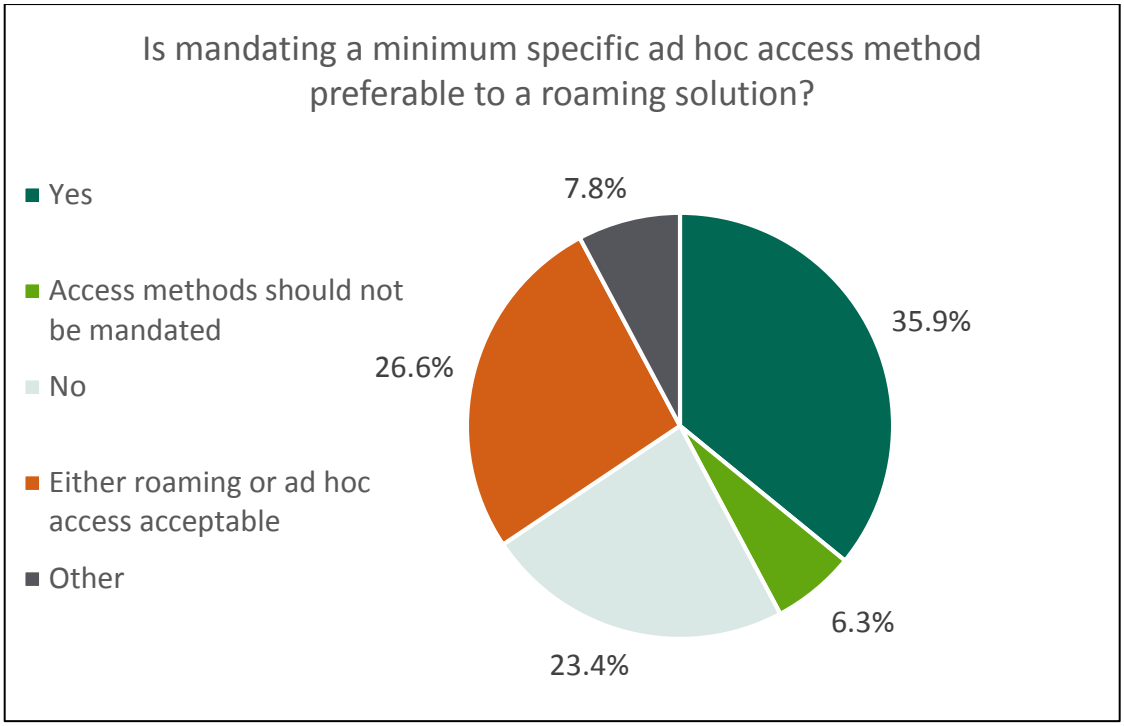
32 Common costs/concerns were as follows:

- Capital and operating expenses can be large
- There are a large number of infrastructure operators, so compatibility and pricing may become an issue
- Evidence is required of the benefit to UK infrastructure operators

33 There were 52 responses to the second part of the question. The most common responses in regards to how Government could best support the proposals were as follows: 12 (23.1%) suggested legislation; 8 (15.4%) respondents stated that the Government shouldn't provide support; 10 (19.2%) respondents stated that the Government should set up a national framework; and a further 10 (19.2%) suggested grants and other incentives would be the best form of support.

Provision for ad hoc access to publicly accessible chargepoints will be mandated by AFID. Is mandating a minimum specific ad hoc access method for consumers preferable to a roaming platform / bilateral roaming solution in the UK market? If so, should there be a minimum access method that is most appropriate as a minimum standard?

34 There were 64 responses to the first part of this question. Of these responses, 23 (35.9%) agreed that mandating a minimum specific ad hoc access method is preferable to a roaming platform. 15 (23.4%) respondents did not agree, stating that roaming is preferable. A further 17 (26.6%) respondees thought that ad hoc or roaming equally acceptable. 4 (6.3%) respondees stated that access methods should not be mandated.



35 There were 72 responses to the second part of the question:

- 45 (62.5%) agreed that there should be a minimum standard. (Of these respondents, 22 suggested debit/credit card, 7 suggested RFID, and 6 suggested a smartphone app)
- 7 (9.7%) did not agree
- 15 (20.8%) agreed that a simple solution was needed, without defining minimum access method

(b) Summary:

36 The picture that emerged as a result of this consultation was mixed. Over one half of respondents believed that a roaming solution could be developed without government intervention. Furthermore, over one half of respondents agreed that the benefits of a roaming solution would outweigh the costs. However, only one third of respondents stated that a roaming solution was required, and over one fifth of respondents believed the government should not intervene in this area.

37 This cautiousness was captured by one respondent, who commented that: "*providing a roaming solution, be it bilateral or not, would help to improve the usability for the consumer by having a single point of access to chargepoints. However, this would almost certainly require a large number of operators to amend their infrastructure which may not be the right solution given how advanced the chargepoint technology already is".*

38 However, a clear majority of respondents to the consultation agree that access to EV charging infrastructure should be simplified, with over 60% of respondents agreeing that there should be a minimum standard ‘pay-as-you-go’ method to access charging points.

39 Just over one third of respondents believed that mandating a specific ad hoc access method would be preferable to a roaming platform. This is a similar proportion of respondents to those who stated that a roaming solution was required.

(c) Government decision:

40 Government intends to proceed with taking powers to enable legislation that will help to provide a single point of access to chargepoints. This was commonly seen as a challenge for consumers, and could remove a barrier to EV uptake which has been raised repeatedly with Government. There was no clear consensus on the best approach to ensuring a more interoperable and accessible chargepoint network, be that through roaming or via a single minimum defined access method. Therefore, it is envisaged that a primary power will be sufficiently broad so as to enable either approach to be mandated, taking into account market and consumer developments, should secondary legislation be required. Taking into consideration views of respondees, it will also be sufficiently flexible to enable developments in technology, and we envisage will allow for exemptions to be set where necessary.

41 The Alternative Fuels Infrastructure Directive[1] will require a minimum Ad Hoc Access requirement, so we will continue to monitor the market and needs of consumers if this is insufficient in meeting the needs of EV drivers.

[1] On 23 June 2016, the EU referendum took place and the people of the United Kingdom voted to leave the European Union. It will be for the current Prime Minister to begin negotiations to exit the EU, and until exit negotiations are concluded, the UK remains a full member of the European Union and all the rights and obligations of EU membership remain in force. During this period the Government will continue to negotiate, implement and apply EU legislation.

Proposed power:

3. Power to require operators of publicly accessible chargepoints and hydrogen refuelling stations, and networks, to publish transparent and comparable pricing information

4. Power to specify minimum standards of design and functionality for new publicly accessible chargepoints and hydrogen refuelling stations and networks.

(a) Response to questions:

How should operators of chargepoints and hydrogen refuelling stations and networks best display and make available pricing information for users?

42 There were 99 responses to this question. The most common were:

- 34 (34.3%), online and on chargepoints
- 14 (14.1%), mobile app
- 19 (19.2%), signage at chargepoint.
- 14 (14.1%), data should be open source.

If required, in what comparable format should the pricing of electricity from a chargepoint and hydrogen from refuelling stations be specified as a minimum? What other relevant regulations / guidance on consumer pricing is already in place, and could this be used for these purposes?

43 There were 79 responses to the first part of the question. The most common suggestions were:

- 45 (56.7%) for £/KwH. Of those, 7 stated that for hydrogen prices should be in £/kg
- 9 (11.4%) respondees stated any measure would be ok as long as it is clear and comparable
- 4 (5.1%) stated that it should not be standardised, as operators should be free to decide

44 Other suggestions commonly made were that:

- Parking fees to be included in price
- European standards to be developed

45 There were only 23 suggestion in response to the second part of the question on existing requirements. The most common responses were:

- 7 (30.4%) respondees suggested existing petrol pricing regulations should be followed
- 5 (21.7%) respondees suggested that current pricing models of utility companies should be mirrored
- 4 (17.4%) respondees suggested there was no relevant legislation or guidance in place

(b) Summary:

46 There was a clear preference among respondees for pricing to be standardised. For EV charging, the most popular suggestion for standardisation was to charge for energy consumed (£/KwH) rather than by time spent at the charger. However, inappropriate parking, or long dwell times in EV charging bays was commonly raised as an issue.

47 For hydrogen refuelling, where dwell times are typically shorter, the most popular suggestion for a standardised pricing measure was £/kg. For both EVs and fuel cell EVs, most respondees suggested pricing information should be available online, at the chargepoint, or (most commonly) at both locations.

48 Some responses received suggested that there should be standardisation of connector types, or that powers should be taken to ensure that each type of connector is available at each charging location. Relevant measures will be covered by the European Union Directive on the Deployment of Alternative Fuels Infrastructure (AFID), which will mandate a minimum common charging connector or socket outlet for relevant public chargepoints, while allowing chargepoint manufacturers to include other connector types.

49 The Government held a parallel consultation on the proposed transposition of the Alternative Fuels Infrastructure Directive, also between 24 October and 23 November 2016. Overall, the results of this consultation suggested there was support for minimum technical standards for EV charging infrastructure.

50 The following points were raised and will be considered both in relation to the relevant proposed Bill power and the relevant AFID requirement:

- It is important to ensure the standards mandated are actually achievable, i.e. that compliant equipment is available on the market
- Clarity needs to be provided as to when, and in which circumstances tech standards will apply (e.g. are workplace chargers included, will existing chargepoints or hydrogen refuelling stations need to be upgraded, who is responsible for complying?)

- Need to ensure that chosen standards are not a barrier to future technical development
- Compliance should not place an unfair cost burden on operators

(c) Government decision:

51 Only a small number of respondees stated that pricing should not be standardised. We noted respondees' widespread support for greater clarity and consistency of pricing, and after further consideration have identified existing powers, which should allow much quicker action to be taken. We will bring forward new regulation in 2017, consulting further as necessary, to improve the consistency of pricing information.

52 In taking forward this regulation, we will take into consideration other issues raised, including how other costs – such as for car parking – should be fairly and transparently described, and other European standards being considered in this area. We do not plan therefore to include measures on pricing information for electric vehicle charging/refuelling in the Modern Transport Bill.

53 With regard to technical standards, Government will take forward primary legislation to enable the introduction of regulations as needed, to specific minimum technical standards for chargepoint connectors or socket outlets for future installations, to ensure they meet the needs of drivers. This regulatory approach will be significantly flexible to enable continued innovation and technological development. The Alternative Fuels Infrastructure Directive will introduce a minimum level of standardised connectors for electric vehicle chargepoint connectors and socket outlets, so we will continue to monitor the market and needs of consumers in this area – but consider further action if this is insufficient in meeting the needs of EV drivers.

Smart charging – Infrastructure and the electricity system

Proposed powers:

5. Power to require infrastructure installed for the purposes of charging EVs to have 'smart' functionality to receive, understand and respond to signals sent by energy system participants (e.g. Distribution Network Operators (DNOs), energy suppliers, National Grid or other third parties) for the purposes of balancing energy supply and demand, and to require any technological functionality in EVs necessary to ensure 'smart' functionality

6. Power to require that technical standards used by operators of chargepoints and networks comply with the requirements set out in these measures are available and implemented on an open access basis. This includes making publicly accessible the necessary protocols to allow the charging infrastructure to communicate, understand and respond to signals or grid balancing

(a) Responses to questions:

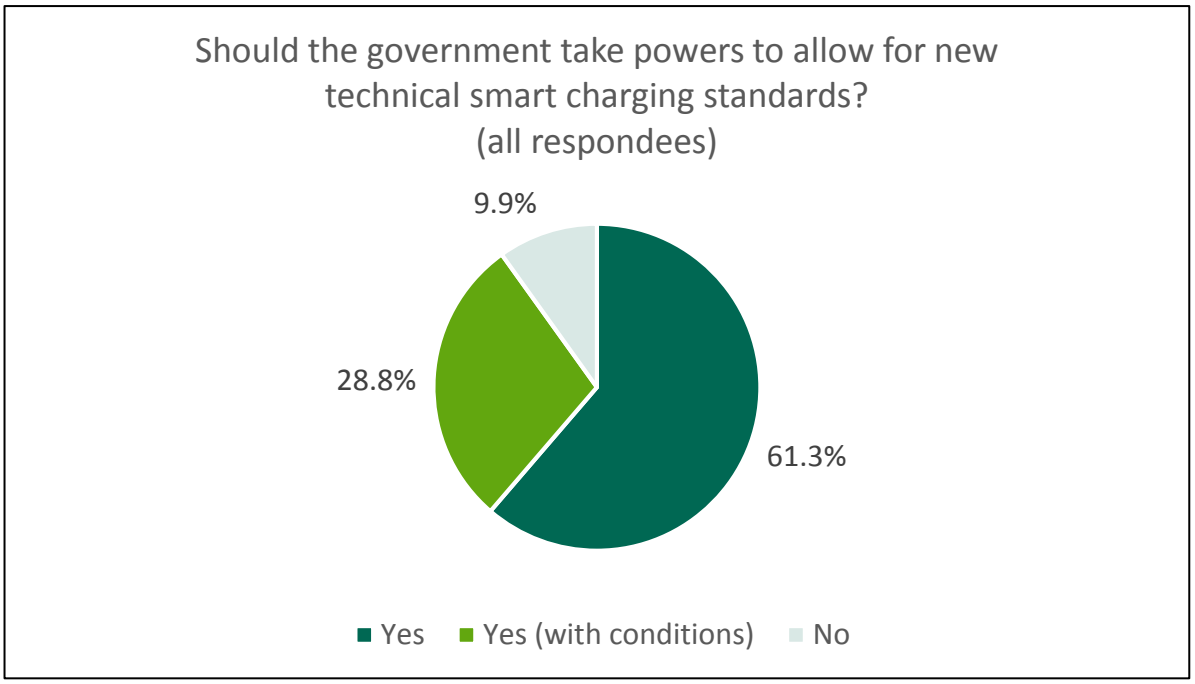
Do you agree that the Government should take powers to allow for new technical standards to support smart charging?

54 There were 111 responses to this question. 100 (90.1%) respondees agreed that the Government should take powers in this area (including 32 who had additional comments). Of these 32, the most common comments were:

- Powers should only after used after market is allowed time to innovate smart charging solutions – 4 responses
- Standards should be interoperable with European/international standards – 4 respondees
- Cost to consumers should be taken into consideration – 3 respondees
- Smart charging should only be used for destination chargers, not rapid chargers – 3 responses

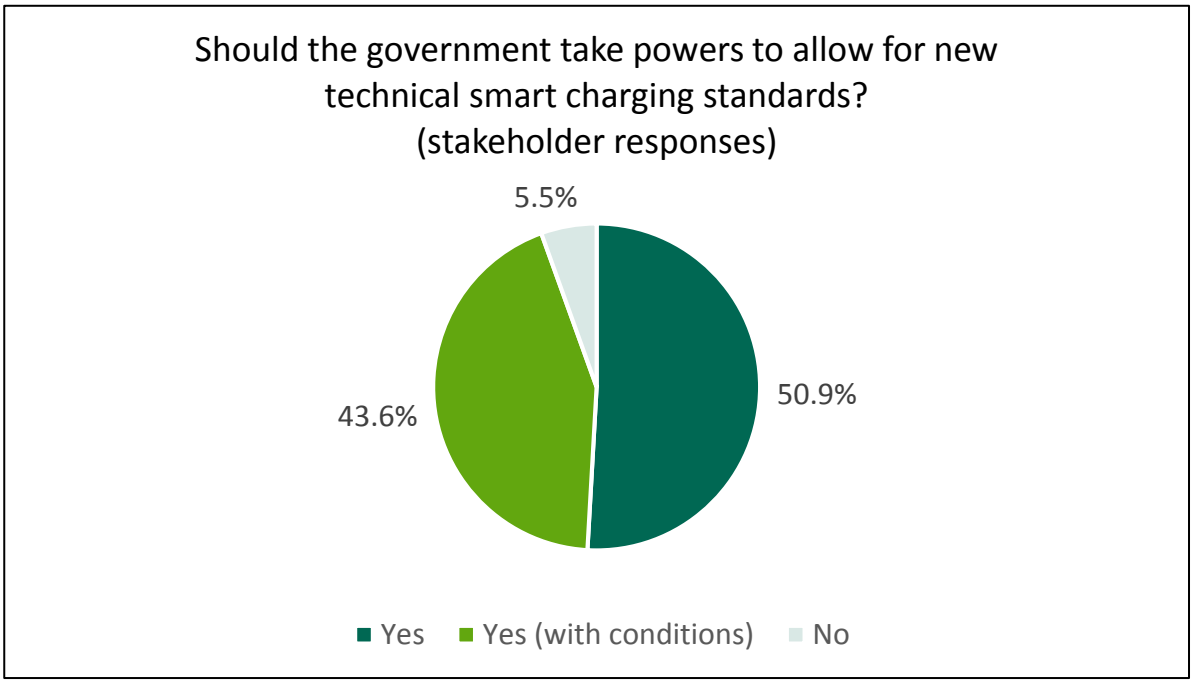
55 11 (9.9%) respondees did not agree. The most common comment was:

- Industry should be allowed to develop a solution without government interference



56 Of the 55 stakeholders (see Annex A) who responded:

- 52 (94.5%) respondees agreed with the proposal (including 24 who had additional comments)
- 3 (5.5%) respondees did not agree



Do you agree that that technical standard requirements would best apply on sale and installation of a chargepoint?

57 97 responses were received to this question. 87 (89.7%) respondees agreed with the proposal (including 16 who had additional comments).

58 Of the 16, the most common comments were:

- Smart chargepoints should be optional to consumers
- Minimum safety standards must also be met
- International standards should be agreed to minimise costs

59 7 (7.2%) respondees did not agree. Of these respondees, the most common comment was:

- Technical standards should be applied at production of the chargepoint

60 3 (3.1%) respondees stated that they needed more information to make a determination.

What could the direct costs of this capability be, and on which party are they likely to fall?

61 There were 39 responses to part one of the question. Most respondees (34; 87.2%) were not able to quantify financial costs of the capability. Of these respondees, 10 suggested benefits would outweigh costs. And 5 suggested the costs would be low.

62 Of the 24 stakeholders who responded to this question, 3 (12.5%) believed the additional cost would be between £0-300 per unit. A further 2 (8.3%) stakeholders suggested the cost of upgrades would not be significant, but did not quantify the cost.

63 There were 58 respondees to 2nd part of the question. The most common suggestions were:

- 26 (44.8%), the consumer
- 6 (10.3%), the electricity supplier
- 6 (10.3%), the installer of the chargepoint
- 4 (6.9%), the manufacturer
- 4 (6.9%), the government.

Are there any other regulatory or non-regulatory ways by which widespread smart charging capability could be achieved?

64 There were 74 responses to this question. The most common suggestions were:

- Financial incentives and/or variable pricing for smart charging (10 responses, 13.5%)
- through public education (6 responses, 8.1%)
- incorporate smart charging capability directly into EVs (4 responses, 7.3%)
- DNOs to control when charge is supplied (3 responses, 4.1%),

Do you have any other comments on government's proposed intervention in this area?

65 There were 78 responses to this question. 13 respondees (16.7%) expressed support for the proposal, but did not provide further comments. 5 (6.4%) respondees commented that there should be no government intervention. A number of respondees responded that Government should be wary of intervening in the market too early and that should avoid too much legislation as this could stifle innovation.

(b) Summary:

66 The vast majority (90%) of respondents were supportive of the need to introduce smart requirements for chargepoints, with one saying that "with these measures, EV charging demand could form a controllable load of immense proportions at a national scale". Of the remaining 10% of respondents who felt that the government should not introduce technical standards for smart charging, most agreed that these standards will be needed, but concluded that it is too early to intervene – "it would be sensible to have standards, on the face of it… We believe that intervention at this stage could have unintended consequences in this sector where technology and products are fast developing and ideas emerging".

67 On the question on where these technical standards should be applied, 87% of respondents agreed that these should be placed on installers and sellers of chargepoints. Of the remaining, 7% felt that these should be placed at the point of manufacture of the chargepoint, or the smart functionality should be built into the EV at manufacture. Some of these felt that smart functionality should only be a condition of receiving OLEV grant funding.

68 In terms of the potential additional costs that these technical standards might

add to the cost of a chargepoint, most respondees did not provide a cost, but of those that did, 12.5% thought it would add £150-£300 to the cost of the chargepoint. A majority, 44% of respondees, felt that ultimately this cost would be borne by the consumer.

69 In regards to whether respondees felt that there were any other non-regulatory ways of achieving widespread smart charging, a range of different ideas were proffered. The most common was more electricity differential pricing, that is, a greater different between peak and off-peak electricity prices. Others (8%) felt that the same outcome could be achieved by educating the public about the benefits of smart charging. Other responses included adding the functionality in the car at manufacture, and giving DNOs complete ability to control a car's charging.

70 With regard to other comments relating to smart charging, there were a wide range of comments, from suggestions we link OLEV incentives to Demand Side Response functionality, to calls for greater public engagements of smart charging, to supporters and detractors for vehicle to grid technology.

(c) Government decision:

71 There was a clear majority response in favour of government taking powers for intervention in this area. We therefore intend to proceed with powers to allow for regulations on smart technical standards for chargepoints, including powers to require that any access requirements or protocols necessary to access smart functionality are made openly available to ensure interoperability. We intend these requirements to apply to retailers and installers of chargepoints.

72 A number of respondents to our consultation referenced the need to know the location of chargepoints that are smart charging. We agree that this information is likely to be important to those parties looking to make use of smart charging in providing offers to business and consumers. We intend therefore to ensure that the scope of powers for smart charging allow for requirements relating to communication of geographic information.

73 We recognise concerns from some stakeholders that this is still a nascent market and that government must be careful not to stifle innovation. It is our intention to work closely with industry to ensure that the detailed requirements support innovation in delivering smart functionality to meet user needs at the lowest cost.

74 Some respondents suggested that we exclude some very fast public or very slow chargepoints from the measures, as these would have less potential benefits for the grid and could harm the uptake of electric vehicles. For these primary provisions, we propose to keep the legislation broad but to allow for these exemptions as part of the detailed regulations, following further engagement with industry.

Provision of infrastructure

Proposed powers:

7. Power to require that operators of motorway service areas (MSAs) ensure a minimum provision of electric and hydrogen fuels for ULEVs at MSAs

8. Power to require a minimum provision of electric and hydrogen fuels for ULEVs at large fuel retailers

(a) Responses to questions:

What provision of fuel for EVs at Motorway Service Areas, and at fuel retailers, is necessary now, and desirable in the short, mid and long-term futures? This might include recharging infrastructure for battery electric vehicles, and/or hydrogen refuelling for fuel cell electric vehicles.

75 There were 118 responses to this question. A total of 32 (27.1%) respondees stated that charging infrastructure should be mandated at certain locations. Of these respondees, 15 (12.7%) stated there should be mandatory provision at both MSAs and fuel stations, and 10 (8.5%) stated that this should only apply to MSAs.

76 45 (38.1%) respondees stated that more provision of EV charging was necessary, whereas 7 (5.9%) stated that the current provision was adequate, though further investment may be needed in future. 9 (7.6%) respondees commented that there should not be exclusivity agreements in place at MSAs, so that there is competition between EV charging operators.

Can provision of fuel for EVs at Motorway Service Areas, and at fuel retailers, be improved by non-regulatory means?

77 There were 92 responses to this question. The most common responses were:

- 29 (31.5%) respondees stated that provision of fuel for EVs at MSAs and fuel retailers could not be improved without regulation (this included 5 responses stating that regulation would be needed to end exclusivity agreements, and 3 responses stating that there would be a limited market for EV and hydrogen suppliers).
- 60 (65.2%) respondees stated that it would be possible (including 22 responses suggesting market forces would be sufficient given profitable business model, 17 responses through subsidies or incentive).

What standards of provision and availability should be provided by EV infrastructure at Motorway Service Areas, and at fuel retailers?

78 There were 102 responses to this question. The most common responses were:

- 50 (49.0%) respondees stated that more rapid EV chargers are required at MSAs and fuel stations
- 9 (8.8%) respondees stated that availability and provision should be determined by market demand
- 4 (3.9%) respondees stated that 24 hour accessibility and support required
- 3 *(2.9%)* respondees stated that fuel cell electric vehicle refuelling is required at MSAs/fuel stations
- 3 (2.9%) respondees stated that fuel stations are not good locations for EV chargers
- 3 (2.9%) respondees stated that infrastructure should meet existing British Standards Institute standards

What would the impacts of mandatory provision of fuel for EVs be on Motorway Service Areas and fuel retailers, and how might this vary between different sizes and types of fuel retailer?

79 There were 74 responses to the first part of this question. The most common responses were:

- 19 (25.7%) respondees stated that the capital expense associated with installation and maintenance would be an impact (of which, 4 respondees suggested improved grid connections would also be expensive)
- 14 (18.9%) respondees stated that the government should not mandate, as market forces would be sufficient
- 11 (14.9%) respondees stated that the proposals would lead to increased sales, due to increased use of services by consumers.
- 7 (9.5%) respondees stated that many fuel stations do not have space to allow for the long turnover time of EVs
- 7 (9.5%) respondees stated that the proposals would result in improved charging coverage, which would support the adoption of ULEVs

80 There were 36 responses to the second part of this question. The most common responses were:

- 19 (52.8%) respondees stated there would be a greater financial impact on smaller/rural retailers

- 12 (33.3%) respondees stated that smaller retailers may not have sufficient space to install infrastructure

Should provision just be required at some fuel retailers, and how should they best be differentiated?

81 There were 84 responses to this question.

82 49 (58.3%) respondees agreed that the provision should only be required at some fuel retailers. The most common suggestions were:

- 12 respondees stated only large retailers with space should be mandated
- 5 respondees stated only retailers with high turnover should be mandated
- 4 respondees stated requirement of provision should be differentiated by the distance between chargepoints, to ensure even distribution
- 3 respondees stated that the focus should be on fuel stations on major roads
- 3 respondees stated that the expected demand in the local area should be taken into consideration

83 21 (25.0%) respondees suggested charging infrastructure should be required at all fuel retailers.

84 14 (16.7%) respondees suggested the government should not mandate this requirement.

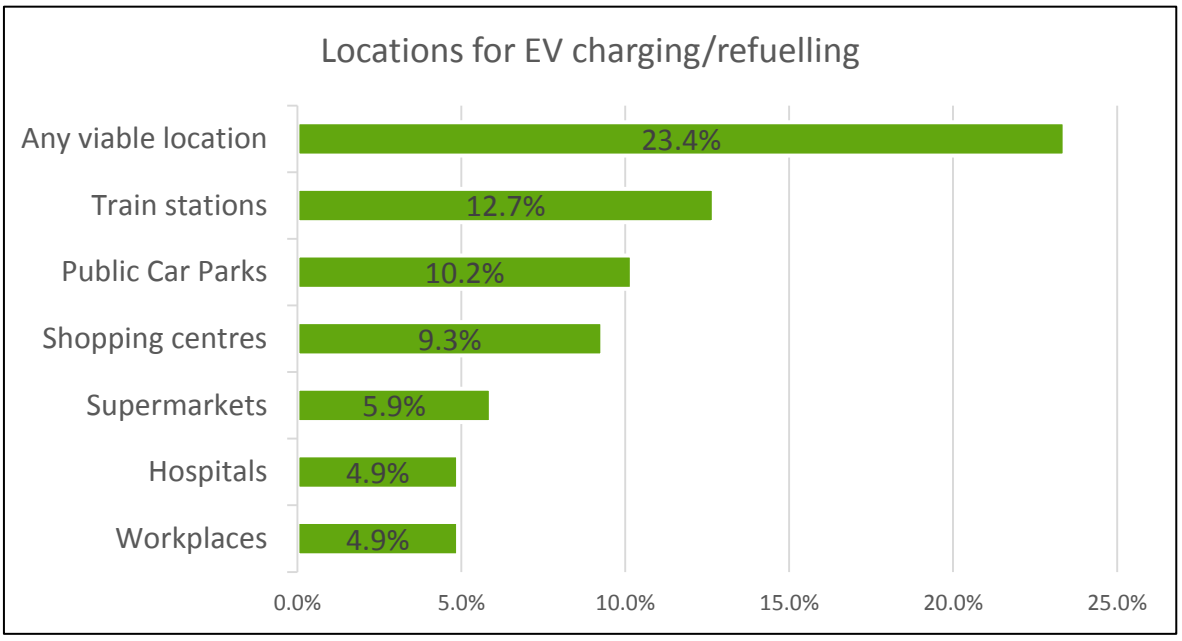
Are there any other strategic sites might it be appropriate to require provision of fuel for EVs? For example, train stations, bus stations, public carparks, retail/leisure developments, hospitals, educational establishments. For any such locations, who should be responsible for providing the fuel for EVs?

85 142 respondees provided suggestions of suitable charging locations for EVs.

86 Of the 205 suggestions, the most popular were:

- 48 (23.4%) for any location where cars are parked for a sufficient time to charge
- 26 (12.7%) were for train stations
- 21 (10.2%) for public car parks

- 19 (9.3%) for shopping centres
- 12 (5.9%) for supermarkets
- 10 (4.9%) for hospitals
- 10 (4.9%) for workplaces



(b) Summary:

87 A significant proportion of respondents were supportive of the need to deliver increases in provision of EV charging at the locations proposed, with 38.1% of respondents stating that more provision of EV charging was necessary. This was in contrast with a small proportion of respondents, 5.9%, who stated that the current provision was adequate although further investment was needed in the future. 27.1% of respondents stated that charging infrastructure should be mandated with one, stating that, 'EV charging is required from now onwards at both types of locations, on an escalating basis to ensure provision grows as vehicle numbers grow. Motorway service station charging is a requirement for longer journeys while at fuel retailer sites in urban areas this is more for visibility and emergency charging'.

88 In terms of the role of regulation, a large proportion of respondents, 65.2%, stated that provision of fuel for EVs could be improved by non-regulatory means Most of these respondents favoured adoption of a 'market based approach'. On encouraging hydrogen refuelling infrastructure, one respondent stated that the government's proposal that subsidies are unlikely to continue post 2020 is 'too soon' as 'stations built from 2020 onwards would not necessarily be profitable.'

89 Regarding standards of provision at motorway service areas and large fuel retailers, by far the most prominent measure, with the support of 49% of respondents, was to introduce more rapid chargers with a more specific response highlighting the need for 'a minimum of two 50kW tri standard rapid chargers and in the future a minimum of some 150kW high power chargers'. One respondent stated that 'at a minimum there needs to be enough access to charging and hydrogen refuelling points to ensure that users are not discouraged from adopting BEVs or hydrogen vehicles due to concerns about vehicle range and being stranded with no means of powering their vehicles.' The next most prominent measure was to leave the standards of provision to be determined by market demand, this was supported by 8.8 % of respondents.

90 In relation to how mandatory provision might impact MSAs and retailers and vary by size and type of retailer, the most significant was viewed as capital cost, with 25.7% of respondents highlighting this. Some felt that this capital cost should not be viewed as an obstacle, with one stating that 'in the medium to long term government and regulators should not be unduly concerned about passing the cost of this service provision onto fuel retailers providing the burden is shared equally as a proportion of turnover'. Whilst others were more concerned, particularly by potential impacts on smaller fuel retailers, exemplified by the response that 'mandatory provision for all retailers could impose significant costs on small providers, especially in rural areas where demand is likely to be low'. It was suggested that a 'size threshold' and a 'phased approach' could mitigate negative impacts.

91 Focussing consideration on whether provision should just be required of some retailers and how best to differentiate, a majority of respondents, 58.3%, agreed any requirement should be limited to 'some'. 'Large' retailers with physical space were highlighted most, followed by turnover as categories for selection. High levels of intervention where also supported by some, with one respondent stating that 'Ideally, provision should be provided at all fuel retailers, so that electric/ hydrogen fuelled vehicles start to be considered as more mainstream and this will assist in promoting electric vehicle use.' Conversely, responses also indicated that free market principles should be adhered to as 'fuel retailers should be free to decide themselves whether they want to install charging infrastructure'.

92 In terms of other strategic sites for provision of fuel for EVs, train stations, public car parks, shopping centres and supermarkets were all highlighted by above 5% of respondents. Another suggestion was that the 'requirement should be based on the number of parking spaces, e.g. any location with at least 100 parking spaces must have at least some provision for EV charging infrastructure.'

(c) Government decision:

93 There has been significant recognition that there is a need for increased in

public infrastructure provision for EVs – through this consultation and more widely. It is also recognised that there is not yet a universally strong commercial case for investment in infrastructure, especially with regard to hydrogen refuelling. We intend to proceed with these powers so that Government can regulate the provision of EV infrastructure, and to share the costs of the transition with businesses which have a stake in vehicle refuelling. However, we also accept that compliance costs could be particularly high in certain situations where installation of infrastructure is a challenge, and/or demand may currently be low. We commit to working further with fuel retailers and with EV infrastructure providers before introducing any regulatory regime, to understand where on the fuel retailing network it might and might not be appropriate to install EV infrastructure.

94 The new measures would give Government the power to oblige large fuel retailers and MSA operators to have provision of electricity and/or hydrogen available in their forecourts to refuel ULEVs. This may mean that they need to engage a third party operator to provide the required infrastructure, and indeed we are aware that existing providers are already keen to identify suitable hosts for new chargepoints. Given the strategic location of many fuel retailers and their familiarity to motorists, many may be attractive locations for EV infrastructure and the Government would welcome commercial arrangements which capitalise on this opportunity and might make regulation unnecessary.

95 These provisions will be in the form of primary legislation and have no immediate effect. These will give broad powers now, but require further secondary legislation to introduce any requirement for new mandatory provision. Issues such as how to define which large fuel retailers should be affected, and exactly what provision should be required, would be set out in that secondary legislation following work with fuel retailers and EV infrastructure providers.

96 We can recognise now that there are four key factors which any new mandatory requirement would need to take account of:

- The commercial viability of fuel retailers and their forecourts, and MSAs, and the effect that mandatory EV infrastructure would have
- The space available given total land take and existing facilities
- The capacity of the local electricity grid, in the case of chargepoints
- The existing or future proximity of EV infrastructure within the proximity of the fuel retailer or MSA

97 Any regulatory regime will need to take account of those factors, and the degree to which they vary between different fuel retailers. It will need to exclude locations where it would not currently be possible or sensible to provide EV infrastructure – either through setting the scope of the regulation, and/or through allowing targeted exemptions. Through that process we would be limiting any new requirements to large fuel retailers only, and would expect that

a significant majority of forecourts will not be regulated in this way.

98 Regarding the issue of grid upgrades, costs are only likely to become more challenging where there is provision of multiple rapid chargepoints. The regulation would nevertheless need to take into account circumstances where this could be a problem. Government continues to look closely at the issue of grid capacity for EV charging with Ofgem and the network operators.

99 If these measures are proposed to be brought into effect through secondary legislation, they would be subject to a further consultation process and require a detailed impact assessment.

100 The Government is committed in its manifesto and through the Climate Change Act to achieving an all zero emission fleet of cars and vans by 2050, which will require significant growth in market share during the 2020s. The Modern Transport Bill is just one part of the Government's plan to increase significantly the provision of necessary charging infrastructure, and we are keen to support provision in all suitable locations. Grant schemes are already in place to support the installation of chargepoints at workplaces and at homes – both on-street and off-street;[2] Highways England is investing £15m to ensure there is a chargepoint at least every 20 miles on the Strategic Road Network; and an initial network of 12 hydrogen refuelling stations is now coming online. The Department for Transport is considering how to encourage further provision of charging infrastructure at railway stations through the rail franchising process. Regarding mandatory provision, the European Commission has recently published proposals to amend Directive 2010/31/EU on the Energy Performance of Buildings, which include requirements for pre-cabling and chargepoints in new residential and commercial buildings. The Government will consider these proposals carefully and respond in due course. Most recently, HM Treasury has announced enhanced capital allowances for charging infrastructure investments, and an additional £80m of Government funding for chargepoints. Any new regulations would be complementary to these and other such Government interventions.

[2] www.gov.uk/government/collections/government-grants-for-low-emission-vehicles

Proposed power:

9. Power to franchise hydrogen refuelling

(a) Responses to questions:

Would granting franchises for hydrogen refuelling infrastructure help attract investment?

101 77 respondees.

- 26 (33.8%) yes (10 general support, 3 that it will be effective, but will be costly and may not be necessary, and 2 that it will remove first mover disadvantage for investing in hydrogen)
- 25 (32.5%) no (6 general disapproval, 6 cited high cost and low returns, 5 suggested there was no market for hydrogen fuels)
- A further 20 (26.0%) responses stated suggested that hydrogen was not yet established as a suitable fuel source, but did not address the question directly

(b) Summary:

102 The views of respondents were quite evenly split in quantitative terms on the issue of whether granting franchises for hydrogen infrastructure would help to attract investment. However it was notable that of those who broadly approved, there were some respondents who caveated this by stating it will be costly and may not be necessary.

103 One such respondent felt that the measure 'requires additional review' whilst another who initially described themselves as being in favour stated, 'franchises are a form of brand protection and profit maximization which is not necessarily useful for commodity products'' they went on to say that further consideration is required on 'whether this is the optimum solution to attract investment.'

104 Amongst those respondents who expressed disapproval the 'lack of a market', 'high costs' and 'low returns' were all cited as key reasons why franchising would not be an appropriate measure for the government to introduce. Generally the respondents who disapproved of this measure displayed vociferous levels of opposition with one respondent stating that franchising was 'an approach we do not support. Not only is it contrary to the UK's free market economy, it may infringe on relevant competition laws. It is also unlikely to provide good value to the consumer or to encourage them to engage with emerging technology options'.

105 Whilst the government could introduce a franchising or licencing regime that complied with UK law through the creation of regulated regional monopolies the language and tone used by the respondent serves as a useful indicator of the strength of opposition evidenced by responses.

(c) Government decision:

106 Having listened to the strong opposition and noted the lack of significant support evidenced in the consultation responses, the Government will not proceed with a provision on franchising hydrogen refuelling stations and will not seek to take powers to this effect as part of the Modern Transport Bill. Instead the Government will actively monitor market developments in the hydrogen for transport sector and continue to engage with key stakeholders to ensure that any appropriate frameworks are in place to support its growth.

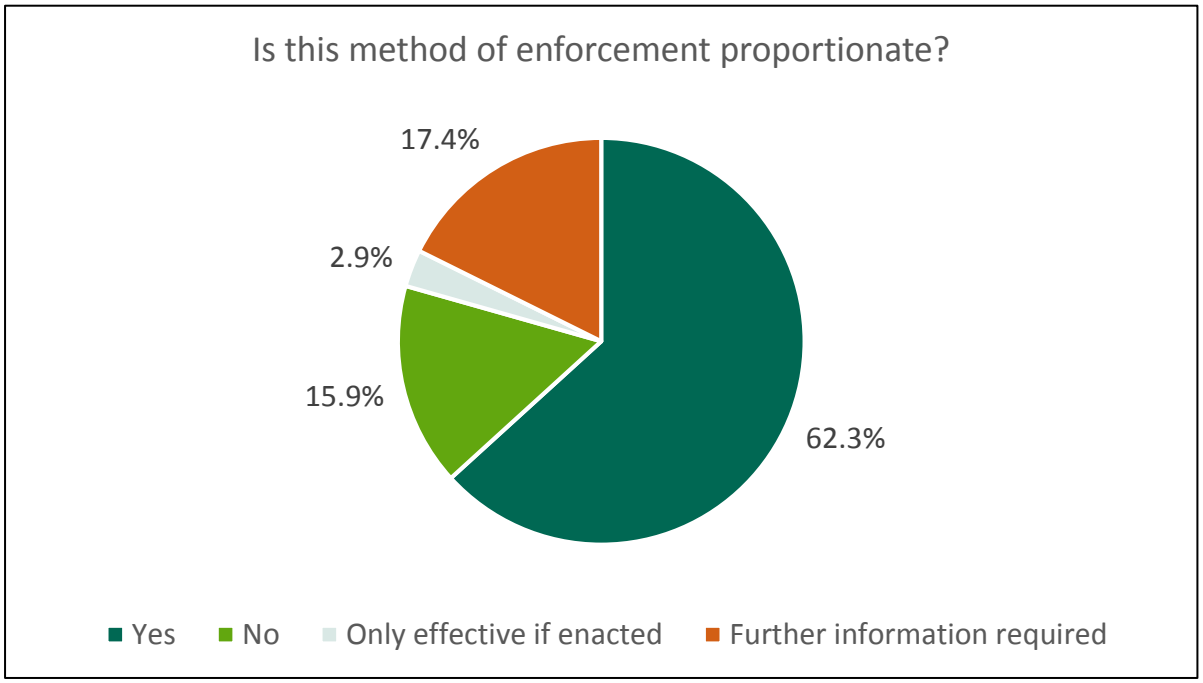
Enforcement

(a) Responses to questions:

Do you agree this method of enforcement is proportionate to potential offences?

107 There were 69 responses to this question:

- 43 (62.3%) respondees agreed (2 respondees stated incentives should be used as much as possible)
- 2 (2.9%) respondees stated that enforcement would only be effective if enacted
- 11 (15.9%) disagreed (3 respondees stated that the optimum approach should not require enforcement)
- 12 (17.4%) respondees requested further information about the specific proposed measures in order to inform their opinion.



Are there other measures, that alongside enforcement, the Government should consider to encourage compliance? If so please explain your views.

108 There were 51 responses to this question. The most common comments were:

- 13 (25.5%), no other measures to be considered

- 6 (11.8%), government subsidies on chargepoint installation
- 6 (11.8%), government should publish guide explaining how to comply
- 6 (11.8%), government should not legislate

What appropriate factors should be taken into account when determining the level of civil penalty which should be levied for non-compliance with data accessibility requirements?

109 There were 39 responses to this question. The most common responses were:

- 8 (20.5%), civil penalty not appropriate
- 6 (15.4%), technical problems encountered by the operator
- 4 (10.3%), no factors to take into account
- 3 (7.7%), company turnover/profit margin
- 3 (7.7%), level of inconvenience to public

(b) Summary:

110 Overall respondents were generally supportive of the need to enforce the proposed measures, should they be introduced as part of the Modern Transport Bill. Only 16% of respondents did not feel the proposed enforcement method was proportionate but a further 17% felt they needed further information on the specifics of proposed measures before they could provide an informed opinion.

111 Of the responses received regarding whether there were any other measures that should be considered to encourage compliance, the majority (25%) felt there were no other measures to be considered. Other ideas suggested include: Government subsidies to support the installation of compliant chargepoints, guidance on how to comply, and a request that Government does not legislate.

112 In regard to the particular factors which should be taken into account when determining the level of civil penalty, 20% of respondents reiterated that they did not think a civil penalty is appropriate, while 10% felt there were no additional factors which should be considered. Other factors highlighted include: technical problems encountered by the operator, and the level of penalty when compared against the company's turnover or profit.

(c) Government decision:

113 When introducing new legislation it is necessary to specify an accompanying enforcement mechanism to ensure compliance with the powers. The Modern Transport Bill is primary legislation, and the electric vehicle measures will place no requirements on any parties at this stage. Compliance will become relevant at the secondary legislation stage, where the powers delegated by an enactment of primary legislation are implemented and administered. As such the proposed enforcement regime described in the consultation document is set out in relatively broad terms and would not be introduced until the secondary legislation stage. Detail regarding the specifics of enforcement, such as instances where civil penalties could be applied and the degree of penalty will be developed and agreed at this stage to reflect the proposed regulation(s). This will be the subject of further consultation.

114 We will deploy a civil, rather than criminal approach to enforcement. Application of criminal penalties, although likely to provide a suitable deterrent, was not felt to be a proportionate approach.

115 With regard to other ways of enforcing these measures, Government grant funding will continue to include conditions of compliance, however a civil enforcement regime is also appropriate given that grant funding will diminish as the EV market grows. Clear guidance on compliance with any new regulations will be made available to minimise the need for any enforcement activity.

116 The level of civil penalty would be set at a secondary legislation stage, and will consider factors such as revenue/size of company. At this stage further detail regarding the proposed enforcement method for each individual power will be provided. Our objective when deciding the specific enforcement mechanism for each power will be to ensure a suitable level of deterrence, whilst remaining proportionate and not unduly burdensome.

2. Quotations

To further illustrate the range of views provided by stakeholders, a selection of responses are quoted below against each consultation question.

Q1: What are the costs and benefits of requiring infrastructure operators to provide open (static) data on geographical locations of publicly accessible chargepoints and refuelling points? In what standardised format should this most appropriately be provided?

PodPoint: "There is clear benefit to providing locational data for chargepoints, as it makes it easier for EV drivers to find chargepoints and thus increases their usage. The better the supplier of charge points can show the location of its charge points, the more likely that their infrastructure will be used. Thus, there is an organic incentive to provide geographic data, without any need for government intervention.

There would be no cost to POD Point to continue to provide the locational data it already does. The costs of implementing a standardised format for provision of such information will depend on how different that standard is to current approaches. Furthermore, implementing a common standard would risk reducing/removing the capability of hardware providers to innovate in this space."

UK Hydrogen and Fuel Cell Association: "In the emerging markets for hydrogen and electricity for transport, access to information which provides a geographic understanding is of much greater importance as it is an underpinning factor for market growth. This is particularly important for hydrogen refuelling stations (HRS) because it will be some years until a sufficient national level of geographic coverage is achieved".

Q2: Do you agree that live (dynamic) data should also be openly available? What proportion of existing publicly accessible chargepoints and refuelling points have the technical capability to provide information on the live availability of services?

Shell – "Where it is not prohibitively expensive to provide, live data i.e. whether the chargepost is currently functional, is beneficial. Whether there is a car connected or whether power is flowing is one further beneficial step. However,

in the short term, this may not be consistently available across all chargepoints and may not even indicate if the chargepost is available to a driver e.g. by virtue of another car being parked in the space, so could cause more frustration than benefit to a consumer".

The AA – "Live data on the location and availability of chargepoints should be openly available. An AA-Populus survey of over 20,500 motorists found that 13% said that having access to real time information about the location and availability of chargepoints was the most important issue to them when considering a range of possible issues related to electric vehicle (EV) charging".

Q3: How could a roaming platform, or bilateral roaming solution between operators be developed to best serve users and operators? Could this be delivered without legislative intervention?

Bluepoint London – "The development of a roaming platform would be to the benefit of our network. Our sole mission is to drive the uptake of EVs and anything that further opens up the network we would endorse. We believe this could be delivered without legislative intervention through the extensive networks of trade associations and government related bodies that could work with Infrastructure Operators to develop a platform to provide a single point of access".

London Taxi Company – "Any changes to chargepoint operation, data, pricing or technical standards should consider the particular needs of EV commercial vehicles and taxis. Their requirements are different from passenger cars as commercial vehicles undertake unpredictable duty cycles within and between cities, and require reliable access to charging in order to maximise time on the road and a good level of customer service"

Q4: What are the costs and benefits of requiring EV infrastructure operators to deliver a roaming platform solution for open public access? How could the Government best support this?

Ecotricity – "The costs are substantial to deliver a new platform however solutions already exist. It is a requirement already by OLEV that all networks should be open access and PAYG in order to qualify for funding. Ecotricity see no need for a roaming platform as they are already open access and PAYG".

Portsmouth City Council – "A roaming platform solution for public open space would be of huge benefit to users as it would allow for electric vehicle charging points across geographical and service provider boundaries. It would give greater mobility to electric vehicle users but may involve considerable cost to operators".

Q5: Provision for ad hoc access to publicly accessible chargepoints will be mandated by AFID. Is mandating a minimum specific ad hoc access method for consumers preferable to a roaming platform / bilateral roaming solution in the UK market? If so, should there be a minimum access method that is most appropriate as a minimum standard?

The RAC – "The RAC welcomes any movement towards harmonisation of charge point standards. In order to encourage take up of ultra-low and zero emission vehicles, motorists will expect it to be both as easy and as rapid as possible to recharge their vehicles".

Nissan Motor Company – "The solution should provide the maximum ease of use for consumers. We believe that mandating a minimum specific ad hoc access method for consumers is not preferable to a roaming platform solution, but rather would be complementary to a roaming platform approach.

More generally, the National Policy Framework for AFID should clearly define the standards of "publicly accessible" and "privately accessible" chargepoints. We understand "private" as referring to residential buildings, fleet depots and dealerships (repair & maintenance) and that therefore operators such as car dealerships and fleet customers would not be obliged to install chargers other than the standard they use".

Q6: How should operators of chargepoints and hydrogen refuelling stations and networks best display and make available pricing information for users?

Ubitricity – "The ad-hoc access price should be made available transparently, for example as price per kWh or per hour. Pricing information should be available online, via App/mobile website or e-roaming platform".

Mitsubishi Motors – "Mitsubishi Motors believes that a minimum solution to inform customers at the charge points should be that the price per minute or per kWh is displayed on the charge point. If, and when, dynamic pricing becomes applicable, then it should be displayed along with mention of the maximum price so that the driver is clearly informed".

Q7: If required, in what comparable format should the pricing of electricity from a chargepoint and hydrogen from refuelling stations be specified as a minimum? What other relevant regulations / guidance on consumer pricing is already in place, and could this be used for these purposes?

Downstream Fuel Association – "From a consumer perspective it would make sense if a consistent format for pricing is adopted for the provision of hydrogen and EV recharging. This should take the form of a legally controlled measuring instrument".

ABB – "Charging can be priced in kWh but today there are no MID-calibrated DC meters. However, the amount of electricity delivered to a vehicle can be accurately calculated by ABB chargers.

Also, the price should include the service being offered, not just the electricity used.

Time based charging works well because it can help drivers know when a charger will become free and incentivizes drivers to move on quickly releasing the charger for the next vehicle.

Also worth mentioning, drivers should also be charged dependent on the speed of the charger they use. For instance, a faster charger should be priced at a higher level than that of slower rate of charge."

Q8: Do you agree that the Government should take powers to allow for new technical standards to support smart charging?

Scottish and Southern Electricity Networks – "Absolutely. We feel that taking steps to support smart charging is necessary to facilitate the connection of greater numbers of ULEVs and also ensuring the ability to protect electricity networks, whilst still offering users and commercial organisations the opportunity to participate in flexibility markets. Standardising technical elements will minimise the risk of needing additional products or isolating users in the future from benefitting from smart charging".

Association of Convenience Stores – "Yes. We believe the Government should deliver new technical standards to support smart charging. It would be of great value for fuel retailers and other stakeholders that when they make investments in equipment they know it will meet appropriate technical standards and market needs in the long term, i.e. working for all types of EVs."

Q9: Do you agree that that technical standard requirements would best apply on sale and installation of a chargepoint?

European Copper Institute – "Yes, in order to ensure that there are no technical barriers for all users to access these charge points. In addition, the charge points should always be required to be smart at least with regard to automatic stop and restart of the charging process that may be needed in the event of network power outages.

Uber – **"**Defining universal technical standards for charge points is vital to ensuring ease of use for consumers and in the development of a large, comprehensive and reliable EV charge network. We support the Government's proposed action in this area".

Q10: What could the direct costs of this capability be, and on which party are they likely to fall?

Next Green Car – **"**While smart meters could be provided at relatively low cost, this cost is likely to be borne by the consumer who only gain some of the benefits (for example is charging at off-peak tariffs). However, if implemented at scale, the utilities are likely to gain greater advantage through network effects as smart chargers will tend to avoid the need for increasing the resilience of local distribution networks.

There is, therefore, an argument for the utilities sharing some of the additional costs of rolling out smart charging technology and/or offering incentives to customers using smart units through discounted tariffs which utilise smart charging capability".

The New Motion – "These costs are most likely the development of communicating units for those that do not manufacture them yet, followed by implementing Demand Side Response protocols when the time comes. The hardware costs are likely to be passed on to the end user and the implementation costs are likely to be taken by the charge point manufacturer or operator".

Q11: Are there any other regulatory or non-regulatory ways by which widespread smart charging capability could be achieved?

BEAMA – "It is important government policy supports the right conditions for a smart charging "market" to flourish, this includes energy network regulatory elements as well as communications.

Current purchasers of EVs are atypical in their levels of engagement with charging options and consider things such as smart charging, home energy storage and generation (although levels may still not be high enough). As EVs become mainstream it is highly likely most owners will overlook these aspects unless there are sufficient and obvious incentives to do so.

Equipment having the technical capability to smart charge will typically achieve nothing without strong price incentives for the user, high levels of comprehension of the opportunity, and convenience/ease of use. Equipment and service providers can fulfil the latter elements but government intervention is needed to foster the right circumstances for price incentives to develop and for these to be communicated to users".

Northern Powergrid – "It might be possible to require the metering and smart charging technology to be part of the vehicle and not the infrastructure. This would reduce infrastructure costs significantly, increasing the potential for a fast roll out, and allow for the roll out of upgraded charging standards as vehicles are replaced. It would also allow commercial compatibility between any vehicle and charging point.

Further, there is an option for charging points themselves to be potentially regarded as part of the regulated distribution network."

Q12: Do you have any other comments on government's proposed intervention in this area?

Zero Carbon Futures – "The market for smart charging is theoretical with many players making noise by press release and show products. To date peer reviewed material of the financial benefits is hard to come by".

CHAdeMO – "CHAdeMO protocol (IEC/EN/IEEE standard) is the only commercialised protocol that allows for bi-directional (smart) charging in terms of communication between the EV/PHEV and the charger. We do believe there should be standardisation in terms of communication from the charger and beyond (e.g. home), especially up to the grid".

Q13: What provision of fuel for EVs at Motorway Service Areas, and at fuel retailers, is necessary now, and desirable in the short, mid and long-term futures? This might include recharging infrastructure for battery electric vehicles, and/or hydrogen refuelling for fuel cell electric vehicles.

UK Petroleum Industry Association – "The provision of fuels at Motorway Service Areas (MSA) and at retail stations is a market and commercial matter for the operator of each station and these should not be mandated".

SMMT – “SMMT can see the benefits of having this provision, but the right infrastructure needs to be in the right place. This could mean ensuring a proper UK network, with sufficient provisions where demand is highest, and the provision of the right type of infrastructure (eg not rapid chargers at places where vehicles might be stationary for many hours on end). Charge points in visible places can also provide peace of mind for consumers about availability of recharging/fuelling points, to help encourage switch-over to ULEVs and fears over range anxiety”.

Q14: Can provision of fuel for EVs at Motorway Service Areas, and at fuel retailers, be improved by non-regulatory means?

UlemCo Ltd – “If you help create demand, then the refueling infrastructure investors will support the development of the national network. Other than lack of awareness and choice of vehicles, the main barrier for take up of hydrogen vehicle is the differential in price between hydrogen and conventional fuels. This is largely a factor of the early stage, lack of scale in the provision of hydrogen for vehicle refueling. Non-regulatory support in terms of incentives and balancing out the difference in price for the consumer would help create a market, as would allowing grid service payments, energy storage credits, renewable fuel transport obligations and fiscal support, for low carbon hydrogen production and use”.

BOC Ltd – “We would encourage a focus on captive fleets that operate on a back to base basis (commercial fleets and buses) as well as Motorway Service Areas. Back to base fleets use more fuel, more regularly, and therefore take away some of the risk associated with investing. In addition the more consistent nature of back to base operations provides a greater and faster route to air quality improvements than do an equivalent number of cars. Back to base stations can also be configured to allow for public usage, as BOC plans to demonstrate with the bus station in Aberdeen.

Whether back to base or private cars, we believe that the best non-regulatory method of encouraging growth at pre-market stage would be to create a regular funding stream for both vehicles and stations, so that demand/usage coincides with station deployment. This would give station investors, vehicle manufactures and vehicle operators the confidence to invest over the medium term.”

Q15: What standards of provision and availability should be provided by EV infrastructure at Motorway Service Areas, and at fuel retailers?

Transport For London – “We would recommend that more research needs to be conducted to determine the user needs in these locations. Standards should be in place to ensure that the infrastructure is well-maintained and that the

infrastructure remains open and operational. There is a risk that businesses will install the charge points and refuelling infrastructure and then fail to keep them in service".

Electric Blue UK – "With limited charge points the introduction of a booking system should be tested. All operators should already have the technical capability but we appreciate that the practical enforcement of the policy may be complicated. However, this offers drivers the ability to plan a more realistic journey by booking time charging times".

Q16: What would the impacts of mandatory provision of fuel for EVs be on Motorway Service Areas and fuel retailers, and how might this vary between different sizes and types of fuel retailer?

E.ON – "The underlying assumption that the provision of fuel for EVs in this context is required to achieve a high degree of electrification of road transport lacks evidence and commercial due diligence. Mandatory provision may therefore lead to loss making refuelling assets which will create cost that the customer has to bear".

Nottingham City Council – "Presumably, motorway service stations would not find the cost of Rapid chargers too prohibitive due to the power supply, however, smaller fuel retailers may find the cost (often £30,000 per unit) not realistic. Catering to demand will likely be difficult to guess too as larger fuel retailers at key locations will require more provision".

Q17: Should provision just be required at some fuel retailers, and how should they best be differentiated?

Durham County Council – "Away from the Strategic Highways this is likely to be decided by market forces. There may be some need for 'differentiation' where there is competition on the Strategic Highway network, either through several outlets at a single location or closer than optimal geographical distribution along the network. As long as there is minimal cover, over-supply should not in itself be an issue".

Petrol Retailers Association – "Yes. When assessing how provisions should be allocated and therefore where they are required, this should be based on consumer need. It is advisable to assess current need or projected need across the country".

Q18: Are there any other strategic sites might it be appropriate to require provision of fuel for EVs? For example, train stations, bus stations, public carparks, retail/leisure developments, hospitals, educational establishments. For any such locations, who should be responsible for providing the fuel for EVs?

Hertfordshire County Council – "Definitely train stations, public carparks, retail/leisure developments, hospitals. As for responsibility for providing the fuel, then it should be based at least on a cost- neutral basis, so that public sector funds are not spent on fuel, nor the cost of the charging infrastructure".

EV-Box – "Yes, there are many strategic places like you mention. The operators/suppliers from the fuel industry for EV's know these places, together with the city council. It is good however to look at the right combination of chargers. i.e. at public car parks AC charging can be the best solution on cost and deployment budgets, whereas, at hospitals or fast through traffic points a combination can work to offer the best solution. Cities want clean air and clean transport. They can only do that by supporting and offering enough chargers".

Q19: Would granting franchises for hydrogen refuelling infrastructure help attract investment?

Toyota Motors – "We support the intent of the proposals set out in the consultation and the inclusion of hydrogen alongside electric and plug-in vehicles within the Bill. It is appropriate that the Government provides itself with the powers to allow for hydrogen station mandating/ franchising should that be a decision it would like to proceed with in the future. It would be critical to get the detail of such measures right; this would require further discussion with related industry during any secondary legislation phase. Such items can already be found in the body of work carried out by the UKH2 Mobility project".

BP – "Specifically for hydrogen, we see prohibitive costs for its application via fuel cell vehicles in the light duty vehicle segment compared to alternatives and hence we do not foresee significant uptake. Entry to the hydrogen refuelling market is not limited to fuel suppliers, therefore it should be a commercial decision taken by businesses should they wish to enter the marketplace".

Q20: Do you agree this method of enforcement is proportionate to potential offences?

Nuvve Corporation – "It should be taken into consideration that when providing grid services there will also be regulations and market rules for the energy sector that will incur fines if not met. We advise examining what crossover there may be with existing penalties".

TRL – “Yes. However, a sensitivity analysis should be carried out to understand potential variability and impact of such fines on various operators who may be liable to be fined”.

Q21: Are there other measures, that alongside enforcement, the Government should consider to encourage compliance? If so please explain your views.

Orkney Islands Council – “There should be a carrot rather than stick approach as this is still in development. Most of the refuelling facilities in existence have arrived as a result of encouragement of new technology. This is still emergent technology. There is no industry standard and until the technology is proven it is unfair to have such punitive measures”.

Stretton Climate Care – “Support and guidance should be offered in general terms to those bodies being required to facilitate the installation of chargepoints. Advice on securing appropriate legal advice and provision for termination of agreements should be given”.

Q22: What appropriate factors should be taken into account when determining the level of civil penalty which should be levied for non-compliance with data accessibility requirements?

Swarco – “Cellphone mast issues and client comms choices or client alteration to the ADSL line/service (or other comms solution) without notification to the network operator, should not result in disciplinary action against the network operator, charge point supplier or installer”.

3. Next steps

1 The Modern Transport Bill will be introduced to Parliament at the earliest opportunity. At that time, the proposed new legislation will be made publicly available. As described in this document, the Government will include in the Bill seven powers in relation to infrastructure for EVs, which will reflect the approach described in this consultation response. The seven powers taken forward from the consultation are as follows:

a) Power to require operators of publicly accessible chargepoints and hydrogen refuelling stations, and networks, to provide data in an open source format on the geographical location and live availability of charging and refuelling infrastructure

b) Power to require operators of publicly accessible chargepoints and hydrogen refuelling stations, and networks, to ensure consumers can use them without the need for multiple memberships

c) Power to specify minimum standards of design and functionality for new publicly accessible chargepoints and hydrogen refuelling stations and networks

d) Power to require infrastructure installed for the purposes of charging EVs to have 'smart' functionality to receive, understand and respond to signals sent by energy system participants (e.g. Distribution Network Operators (DNOs), energy suppliers, National Grid or other third parties) for the purposes of balancing energy supply and demand, and to require any technological functionality in EVs necessary to ensure ‘smart’ functionality

e) Power to require that technical standards used by operators of chargepoints and networks comply with the requirements set out in these measures are available and implemented on an open access basis. This includes making publicly accessible the necessary protocols to allow the charging infrastructure to communicate, understand and respond to signals or grid balancing

f) Power to require that operators of motorway service areas (MSAs) ensure a minimum provision of electric and hydrogen fuels for ULEVs at MSAs

g) Power to require a minimum provision of electric and hydrogen fuels for ULEVs at large fuel retailers

2 This legislation will be introduced to Parliament and reflect the particular approaches described in this document. It will then be considered, and amended as appropriate, by both Houses of Parliament. Subject to their

agreement it will thereafter receive Royal Assent, and become law from that point.

3 The powers for EV infrastructure are, without exception, delegated powers. This means that they will have no immediate effect, but will allow Government to introduce regulation in accordance with the provisions of the Act at a later point. Government will set out its intentions for new regulations in due course. These will reflect the feedback received during this consultation, further relevant research and analysis, and the state of the market for EVs and charging/refuelling infrastructure at that time.

4 Further consultation will be carried out in relation to the details of any new regulation brought forward, and this would also be subject to Parliamentary approval processes.

5 More widely, the Government remains firmly committed to the objective that by 2050 nearly all cars and vans in the UK should be zero emission vehicles. Measures brought forward through the Modern Transport Bill are an important part of the Government's plans for meeting that goal.

6 Non-regulatory action will continue, and will be informed by the response to this consultation, as well as more general engagement by OLEV. More than £600m is available in this Parliament to support the uptake of ULEVs, and this will be supplemented by a further £270m of funding announced at the Autumn Statement 2016.

7 In 2017 plans for the use of this additional funding will be set out, along with more details of the Government's strategy for almost all cars and vans to be zero emission vehicles by 2050.

4. Annex: List of respondents

- The AA
- ABB
- AngloAmerican
- Association of Convenience Stores
- BEAMA
- Bluepoint London
- BOC Ltd
- British Parking Association
- CHAdeMO
- Chargemaster
- Colt Car Company
- Cumbria County Council
- Daventry District Council
- Downstream Fuel Association
- Durham County Council
- E.ON
- EA Technology Limited
- Electric Blue UK
- Electric Highway (Ecotricity)
- Elexon
- European Copper Institute
- EV-Box
- Extra MSA Group
- ExxonMobil
- Franklin Energy
- Freight Transport Association
- Friends of the Earth
- Fuel Cell Systems Limited
- General Motors
- Gireve
- Greenpeace
- Hertfordshire County Council
- Hitachi-Zosen Limited
- ICU Charging
- IET
- Institute of the Motor Industry
- Liverpool City Council
- London Taxi Company

- Mitsubishi
- Moto Hospitality Ltd
- National Grid
- The New Motion
- Nissan
- Northern Powergrid
- Nottingham City Council
- Nuvve Corporation
- Orkney islands
- Petrol Retailers Association
- Phoenix Renewables
- Podpoint
- Portsmouth city council
- RAC
- Road Haulage Association
- Roadchef
- Scottish and Southern Electricity Networks
- Shell
- SMMT
- SSE plc
- Stretton Climate Care
- Sunderland, Newcastle, North East Combined Authority, and South Tyneside Councils (joint response)
- Sustainable Aviation
- Swarco
- Tesla Motors
- Transport for London
- Toyota Motors
- Transport for Greater Manchester
- Transport Research Laboratory
- Uber
- Ubitricity
- UK Hydrogen and Fuel Cell Association
- UK Petroleum Association
- UK Power Network
- UKH2Mobility
- UlemCo Ltd
- UPS
- Waltham Forest Council
- Welcome Break
- Western Power Distribution
- Zap Map
- Zapinamo
- Zero Carbon Futures