

## **SMMT RESPONSE TO BEIS CALL FOR EVIDENCE ON A SMART FLEXIBLE ENERGY SYSTEM 12 JANUARY 2017**

1. The Society of Motor Manufacturers and Traders (SMMT) is one of the largest and most influential trade associations in the UK. It supports the interests of the UK automotive industry at home and abroad, promoting a united position to government, stakeholders and the media. The automotive industry is a vital part of the UK economy accounting for more than £71.6 billion turnover and £18.9 billion value added. With some 169,000 people employed directly in manufacturing and 814,000 across the wider automotive industry, it accounts for 12.0% of total UK export of goods and invests £2.5 billion each year in automotive R&D. More than 30 manufacturers build in excess of 70 models of vehicle in the UK supported by more than 2,000 component providers and some of the world's most skilled engineers.
2. SMMT welcomes the opportunity to comment on this call for evidence. We focused our responses only to particular questions around smart tariffs and then issues relating to motor vehicles. Whilst a smart flexible energy system is positive, we do have reservations about any form of singling out electric vehicle users to have to adopt smart systems or face additional costs, beyond what other electricity users are required to do. We must ensure that the emerging market for new energy vehicles is in no way impacted by any additional barriers to uptake.

***Questions 15: To what extent do you believe Government and Ofgem should play a role in promoting smart tariffs or enabling new business models in this area? Please provide a rationale for your answer, and, if you feel Government and Ofgem should play a role, examples of the sort of interventions which might be helpful.***

3. Whilst the automotive manufacturing sector is a major user of electricity in the UK, and so should have potential to provide flexibility the opportunities may ultimately be quite small. Vehicle and component manufacturers are constantly looking at ways to reduce energy uses and cost, however, changing the time of electricity use would result in changes in the whole manufacturing process – given electricity cannot easily be substituted. Moving to night working or the like may increase costs in other areas (wages, lighting, heating, etc). Several plants already operate 24 hours a day, further limiting potential to change operating times.
4. This would limit industry's ability to take any advantage of smart tariffs, and may result in them facing higher charges (if energy suppliers had to increase peak times costs to create wider price differentiation).
5. Whilst introduction of smart meters could help some aspects of the sector, we would reiterate our long standing concern that any investment in energy savings equipment is associated with a rise in business rates – a measure often not identified by those proposing cost saving measures and seemingly at odds with the drive to energy efficiency.

***Question 17: Do you recognise the reasons we have identified for why suppliers may not offer or why larger non-domestic consumers may not take up, smart tariffs? If so, please provide details, especially if you have experienced them. Have we missed any?***

6. We recognise the barriers identified by the Government in relation to the greater uptake of smart-tariffs. For non-energy intensive industrial consumers, the relative savings to be had from smart meters are often considered to be outweighed by the complexity of new tariffs and the effort required to alter consumption patterns to maximise savings.
7. Beyond this, there is a clear lack of understanding, time and resources within many companies to enact the necessary changes to take advantage of smart-tariffs.

**Question 29: What evidence do you have in favour of or against any of the options set out to incentivise/ensure that these principles are followed? Please select below which options you would like to submit evidence for, specify if these relate to a particular sector(s), and use the text box/attachments to provide your evidence.**

- **Option A: Smart appliance labelling**
  - **Option B: Regulate smart appliances**
  - **Option C: Require appliances to be smart**
  - **Other/none of the above (please explain why)**
8. SMMT wishes to consider the sector of electric vehicle chargers (Modes 2 and 3); however, it does not consider that all such chargers are the same. Additionally, unlike most other appliances, a charger may be sold as complete appliance, or assembled from components by a competent person – much like a consumer unit can be bought pre-populated or populated by the installer – and different issues apply.
9. Mode 2 chargers are generally the lowest power EV chargers that typically plug into a household socket. These devices are commonly distributed with vehicles across all European markets with only minor firmware variations like current limit or different national plugs. Such devices do not currently have communications capability and SMMT members would not wish to be compelled to create such national variants. Such devices may be labelled if smart but available in both smart and non-smart forms i.e. Option A.
10. Mode 3 chargers are able to handle significantly more power and are hardwired into the home like an electric cooker. SMMT would generally welcome such appliances being required to be smart (such as by ZigBee compatibility) i.e. Option C to allow consumers to benefit from smart tariffs. However, SMMT is concerned that having Mode 2 and Mode 3 chargers in different categories could cause a shift towards Mode 2 charging which has other undesirable effects, and so SMMT would propose that Low Power Mode 3 charging be treated like Mode 2 (i.e. Option A). SMMT would not wish to see any mandatory requirement for a component-built charger to be smart until hardware to enable this is both available and reasonably priced. Such hardware might take the form of ZigBee module to mount on DIN rail.
11. SMMT would generally welcome the incorporation of smart chargers into the smart home able to reflect the owners' priorities by responding to tariff incentives. Such chargers could act in a grid-friendly manner by flattening EV charging over the available time period, rather than by charging briefly at relatively high powers. However, SMMT views attempts to create a DNO-led charging scheduling system as unnecessary, invasive, discriminatory, costly, and contrary to the market-led ethos of this consultation.

**Question 30: Do you have any evidence to support actions focused on any particular category of appliance? Please select below which category or categories of appliances you would like to submit evidence for, and use the text box/attachments to provide your evidence:**

- **Wet appliances (dishwashers, washing machines, washer-dryers, tumble dryers)**
  - **Cold appliances (refrigeration units, freezers)**
  - **Heating, ventilation and air conditioning**
  - **Battery storage systems**
  - **Others (please specify)**
12. Other: vehicle chargers  
SMMT would welcome a requirement for Mode 3 chargers to be smart (potentially ZigBee HAN compatible) as an eligibility criterion for the OLEV EV charger grant subject to the previous exemptions.
13. Other: battery storage systems  
An electric vehicle may be considered a mobile battery storage system either for V2H or V2G. Electric vehicle manufacturers would welcome increased certainty in the potential revenue available to consumers to assess the attractiveness of such a feature to consumers; the demand from consumers for such a feature; and the price that consumers are likely to pay. Uncertainty – such as the potential abolition of deemed export (which currently makes electricity for self-use / storage free) – will not help build confidence. Early adopters of smart technologies like battery storage or heating are likely to feel aggrieved by the abolition of deemed export which potentially changes use of surplus electricity from being 'free' to use to being costlier than gas and so renders prior investment in some technologies like water heating valueless.

**Question 33: How might Government and industry best engage electric vehicle users to promote smart charging for system benefit?**

14. All electric vehicles have the facility to vary their charge current based on signals from the charging equipment, and almost all such vehicles include timing facilities that can be configured so that the vehicle won't draw current until the cheap time window regardless of when the vehicle was plugged in. Some vehicles also allow the user to be more restrictive on the current draw than the limit imposed by the charging equipment. Opinion as to how much these facilities are used varies, although it may be that relatively recent buyers are less likely to use such facilities than more established users – potentially because newer users have recent memories of what their fuel costs for petrol/diesel were (and thus still recall the significant savings made), while more established users see the car as another (and potentially their largest) consumer of electricity.
15. SMMT believes that it's unreasonable to impose upon electric vehicle users to achieve system benefit – EV sellers don't screen their customers for altruistic motivation. Imposing restrictions on EV charging is likely to damage EV sales. While there are clearly system benefits from DSR, SMMT doesn't believe that any single sector or group of electricity consumers should be singled out for less-favourable treatment. Standards should be developed to solicit and reward demand side response from smart homes, but it shouldn't matter what appliances or storage systems provided that response within the home, and it shouldn't be necessary to report appliance-level data.
16. However, many consumers may be completely unaware that the grid suffers capacity and generation constraints at particular times, but might voluntarily respond to public information being made available.

**Question 34. What barriers are there for vehicle and electricity system participants (e.g. vehicle manufacturers, aggregators, energy suppliers, network and system operators) to develop consumer propositions for the:**

- **control or shift of electricity consumption during vehicle charging; or**
  - **utilisation of an electric vehicle battery for putting electricity back into homes, businesses or the network?**
17. SMMT believes that electric vehicle owners should be treated no differently from other electricity consumers, and therefore that the question ought to address how the behaviour of consumers is influenced via their smart homes, rather than how any specific appliance is remotely-controlled by some external agency.
  18. There are obvious issues with remotely controlling any appliance to achieve an objective for the grid, including that appliances in a smart home may be running from stored or locally-generated energy where turning off the charger, changing its power level, or time-shifting its operation has complex interactions which don't necessarily result in a change in grid load, but may increase costs for the householder. The benefit to a consumer from having an energy manager will be diminished if its judgements are being overridden by an uninformed external source.
  19. SMMT members wonder how the consumer's relationship with aggregators might be managed with the risk that different aggregators might work with different types of appliance. This could lead to a single consumer having relationships with a different aggregator for each appliance and one wonders how this unwieldy structure would be responsive to that consumer's personal energy priorities. It seems more logical that, if required at all, a smart home should have a relationship with a single aggregator, potentially managed through the smart energy manager, allowing the home to respond to the consumer's priorities with the minimum of different user interfaces.
  20. Most electric vehicles are already provided with timers to allow charging to be shifted to periods of cheap-rate power, and all electric vehicles are subject to current constraints (potentially dynamic) imposed by the charging equipment. SMMT would welcome smart chargers able to respond to cost signals from the smart meter to deliver charging at the lowest cost to the consumer either directly as a CAD or through an energy manager. Such an arrangement would automatically move EV charging away from a future early evening peak rate.
  21. However, if there is a need to ration electricity due to local supply constraints SMMT believes that the resource should be divided equitably between all consumers, that the consumer should set their personal priorities, and that the smart home energy manager should prioritise use of the resource consistent with the consumer's priorities. SMMT does not believe that is desirable or necessary to give an external agency the ability to schedule domestic EV chargers – it is the role of the energy manager in the smart home to schedule load consistent with external price signals. If a suitable price

signal was available, then a smart charger could easily flatten an EV charge profile to charge at the lowest current / cost consistent with the available charging time – for example 7.0 kWh energy for a typical 20 miles daily driving delivered as 1.4 kW x 5 hours rather than 7.0 kW x 1 hour (or charging at 6 Amps rather than 30 Amps). However, with current tariffs there's no cost difference between these alternatives, although their grid impact is potentially very different should all homes have vehicles charging simultaneously.

22. SMMT understands that in Holland smart meters set a realistic cap in terms of the power available per home, and that EV chargers commonly respond dynamically to the difference between the consumer's other electricity consumption and the cap – in a similar way to an EV charger tracking the output of a solar panel. However, in the UK no such realistic cap exists. The ultimate limit of the company fuse to a UK property is far removed from the capability at the grid to support simultaneous demand at that level. Something like a rising block tariff with time of use might provide a soft mechanism to encourage demand to be spread more evenly within the home.
23. Both V2G and V2H are theoretically possible although the cost for the additional hardware to achieve either is significant. Vehicle manufactures would need to understand the savings or revenue opportunity that would be available to consumers in order to assess potential demand and whether a system could be delivered at a reasonable cost. While it is possible to do some assessment of a consumer's home to assess and benefit of V2H to a consumer, the opportunity for domestic V2G requires a commercial payment mechanism; and that mechanism would likely require a high confidence estimate of revenue much like the SAP assessment for solar PV. The consumer cannot be expected to buy expensive equipment without some guarantee of payback.

***Questions Q35 - What barriers (regulatory or otherwise) are there to the use of hydrogen water electrolysis as a renewable energy storage medium?***

24. We note role of hydrogen for both vehicles and also for manufacturing processes. Public hydrogen charge points will be primary source of refuelling (rather than EVs being primarily charged at home/office). We responded to the OLEV modern transport bill consultation supporting greater engagement by Government with industry on this issue, particularly through the UKH2 Mobility project. Requirements for minimum safety requirements and harmonisation of equipment, ideally on a pan-European basis, to provide customers with as simple and intuitive a system as possible should be sought.

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