Minutes from meeting of the All Party Parliamentary Group on Electric and Autonomous Vehicles

Event name: Tackling grid-related barriers to the mass adoption of EVs

Event synopsis: an in-depth discussion on the roll-out of charging infrastructure needed in the UK with senior speakers from the power transmission, distribution, and EV charging sectors.

1st March 2018 | Committee Room 9 | House of Commons | London UK

Speakers:

- Graeme Cooper, Director Electric Vehicles, National Grid
- Mark Dale, Innovation and Low Carbon Networks Engineer, Western Power Distribution
- Peter Stephens, Head of UK External & Government Affairs, Nissan

Chair:

- The Rt Hon Dame Cheryl Gillan MP (Con)

Key takeaways:

- **A range of policy and regulatory barriers remain that are blocking the development of an accessible, reliable, and strategic national EV charging infrastructure**
- **Developing charging infrastructure is a critical element in the development of a domestic market, which is a critical component in building domestic manufacturing capability**
- **Smart charging offers an opportunity to reduce added strains on the electricity grid from EV charging. Numerous trials, including the Electric Nation and the Open LV projects, are aiming to move smart charging forwards**
- **Local and national grid infrastructure investment needed**
- **There is a range of charging types, including home, on-street, workplace, destination and along major motorways**

Note: All presentations are available alongside the minutes from the meeting.

Meeting began at 10.00am

Introduction from the Chair, Dame Cheryl

- Dame Cheryl thanked guests for attending and the Renewable Energy Association for their support and for helping organise the event.
- Made note of wide array of stakeholders present, which highlights the number of parties looking to find solutions to collective problems and deliver the Government's agenda –
    - Manufacturers such as Nissan and Tesla
    - Charging companies such as Pod Point and Chargemaster
    - Developers such as MAMIMeyes Group and Alfen
    - Financers such as Aviva Investment
    - Fleet operators such as Enterprise and Uber
    - Energy companies such as Centrica and Octopus Energy
    - Parliamentary colleagues
- Introduction to recent market changes – manufacturers and sales commitments. Dame Cheryl made note of the recent reports that Dyson will hire an additional 300 people as part of their EV manufacturing programme.
- Parliament is considering the Automated and Electric Vehicles Bill and debate are on-going.
- There are issues on power distribution, range anxiety, growing feeling around MPs that no new planning permission should be granted if certain sites do not have an ability to charge cars.
- Makes note of the future car on demand and how automation and ride sharing will change transportation patterns.

Graeme Cooper, Director Electric Vehicles, National Grid

- Graeme's background is in mobile network development, which is another legislation-driven sector. He then moved to the wind industry .
- EV forecasts are changing on an annual basis. In his view, in reality there will be sharp peaks in sales and it will not be a smooth line as present deployment trends anticipate.
- Graeme discussed National Grid's role in supporting the EV transition
    - The annual National Grid Future Energy Scenarios to 2050 is a key document
- His key question is 'what does NG need to do to be an enabler to EVs rather than a barrier?'
- If you want to get over range anxiety one needs to look at actual daily vehicle use (for first and second cars). Also notes that cars are not bought by consumers based on average use patterns but on other factors – the once-yearly trip to Scotland from London for example.

- Issues for consumers include the availability of charging, range of vehicles, and range of models available
- Discussion of home charging vs proactive charging vs destination charging
- National Grid is working with motorway service stations.
- Note that 70% of charging at home, but for the 'one long journey' charging hubs along motorway service stations will be important
- Only 7% of drivers go to the motorway service station exclusively for a fill up. 90% + use the toilet as well, which adds on to time spent at the station. 'Biology will drive the future!'
- Discussion of passive charging vs proactive charging (grazers vs gorgers). Charge companies are approaching NG for direct access to the transmission network.
- Chargers need to be smart, there should be a enough generation if the infrastructure is smart, and will smooth out the peaks and troughs
- Transmission lines run across many motorways – there is a 60% synergy between the two. It's a major opportunity.
- Ultra-rapid charging (350kW) should unlock long-distance range
- NG has a vision for 50 ultra-rapid charging hubs, with around 30 chargers on north bound side, 30 chargers on south bound side. Charging a longer-range EV will take around 8 minutes at such stations.
- 50 strategic sites will produce future proof infrastructure, and will also offer hydrogen options NG can do this quickly, but needs the customer need or direction from parliament or regulator
- Over 90% of the UK population could be put within 50 miles of an ultra-fast EV charger
- If the Government and industry can address short term issues there will be a virtuous circle

Mark Dale, Innovation and Low Carbon Networks Engineer, Western Power Distribution

- Distribution Network Operators (DNOs), who run the lower-voltage power grid, will be at the front line of issues regarding electric vehicles
- The Electric Nation trial that they are a part of is designed to prove theories about "smart charging"
    - Project involves around 700 EV users, as part of the project 560 smart chargers have been installed. The project particularly looks at home charging.
- WPD expects quite rapid EV uptake
- DNO profits are structured by the regulator Ofgem and they are currently locked into terms between 2015 and 2023.

- Next price review 2023 – at which time they will already be into deep deployment of electric vehicles
- *See modelling in attached slide pack*
- 4-7pm on weekdays is the period with most significant grid stress
- There is a need for shifting the electricity demand. There is enough production and network capacity if you can shave the peak, this will also save costs.
- DNOs is good at understanding diversity of housing usage, we need to do the same for EVs.
- Trying to give consumers choice over charging periods responding to price, allowing them to opt out
- WPD has a vision of a smart home of the future, every house should have bi-directional charger, solar, heat pumps and batteries. But crucially we need three phase power supplies in new homes.
- Public and workplace charging infrastructure will be needed, particularly for the portion of the UK population that won't have access to home charging.
- 56% of people not at all worries about having their charge be managed. Only 3% are "very worried" about managed charging.
- This needs regulations, smart meters and TOU tariffs
- WPD is reaching out to a range of stakeholders
- The Open LV project that WPD is also involved in is creating local network substation intelligence.

Peter Stephens, Head of UK External & Government Affairs, Nissan

- Encouraged by the last 18 months of policy reform.
- Welcomed integrated approach to low emission transport being driven by Clean Air Zones – uses London as an example for joined-up action
- Positive mention of the 2040 Government target for the end of the sale of petrol and diesel cars and vans
- Peter gives view on three challenges:
    - First, increasing the range of models on the market as presently not a wide range of models available. The main passenger car models are the LEAF and Zoe. The current model range for vans is more limited, although significant expansion of model range is under development
    - Second, the upfront price point must match or beat petrol or diesel equivalents. This requires economies of scale (which are improving). Example of cost reduction is that the new 40kW LEAF is the same price as the 24kW LEAF.
    - Third, the perception of range anxiety and availability of charging stations. Next year will see real world BEV ranges of 200 miles, which will break down a psychological barrier

- Currently seeing 30% year on year growth, with forecasts of one million EVs on the road by 2022
- The market will tip quite quickly
- We need charging infrastructure, charge congestion will harm the industry
    - Certain consumer segments, such as "road pounders" who regularly drive long distances on motorways, will rely on larger charging hubs. This will be critical infrastructure for them.
- The industry is beginning to arrive at an optimal battery size. Eventually we will see the growth of battery size level off
- Off street parking will be a challenge in achieving mass market pick-up
- A mixture of charging patterns will emerge depending on the type of vehicle usage, the vehicle itself, and where the customer lives
- Lamppost charging will have role to play and destination charging will become more important. Charging hubs will play a significant role, particularly in longer range journeys.
- A "Game Changer" will be charging guarantees such as France's 'right to plug' and the Milton Keynes Promise – which allows EV owners to ask your Local Authority to install a charge point outside of or near to their home
- EV supply chain not fully developed yet in the UK and will be needed if the UK is to develop its EV manufacturing capacity
- Visibility of chargers will be an important issue. Early movers have a "near encyclopaedic" knowledge of where working chargers are located, but the mass public will need better signposting and visibility
- Enforcing parking at EV charging locations will also be an important to keep cars moving

Questions and answers to the panel

Q: Dame Cheryl

- As cross departmental issues are always challenging, as electric vehicles cover DHCLG, DfT, DEFRA, BEIS, DCMS and others, and as we currently are seeing piecemeal change, should we see dedicated minister for EVs?

Replies:

- WPD sees value in there being a single point
- National Grid sees there currently being disconnect in the energy, digital, and automotive sectors, all of whom think they are leading
- Nissan replies that there may not need to be a single EV minister, but a cabinet sub-committee would be valuable

Q: Octopus Energy

- Octopus Energy has launched a new Time-of-Use tariff for EVs. Argues that energy suppliers are relatively disempowered relating to managing demand. Asks what is the role for retailers in this transition.

Replies:

- Comment that the level of energy engagement with a homeowner often spreads, that those who seek better tariffs often then seek home generation (solar PV), and then a storage unit...
- Significant behaviour change expected if the market works, which requires smart meters and Time of Use charges, which will reduce the impact on a DNO. But there may be a lag.

Q: Smart Energy GB

- How should local authorities be engaging with this transition?

Replies:

- Nissan comments that there are interesting initiatives happening within local authorities however Government grants are not presently being taken up
- There may be a lack of capacity or expertise within some Local Authorities to deal with charging needs
- Nissan notes that Clean Air Zones will be constructive in driving an integrated approach.
- Comment from audience asking if Government will move away from its technology neutral approach as it is clear that electrification of transport is taking place

Q: Chargemaster

- Raises concern about there being potentially too many stakeholders. "Automated" aspect of the APPG may be a distraction and is a separate market trend from electrification.

Replies:

- Dame Cheryl mentions that the group is keen not to confuse the two issues

Q: Citizens Advice

- Asks who will pay for grid upgrading costs relating to EVs

Replies:

- Comment that the consumer will be charged for re-enforcement of the local grid. DNOs are judged on minutes lost, but in the future DNOs will have a greater role in managing demand.
- Comment that fuel duty and road tax are possible levers to pay for infrastructure upgrades.
- Comment that there also needs to be a switch in mind-set on car ownership, and low incomes could benefit from car clubs as part of this agenda.
- Comment concerning the need for Government to invest in more electricity infrastructure, which presently won't happen at the needed scale until the end of the current DNO price review period (2023).

Q: ChargePoint

- Can the speakers list their top issue policy that needs to be tacked to support EV charging?
- In ChargePoint's view there needs to be more workplace incentives, continuity of funding, and there is concern about the amount of public money moving into closed networks.

Replies:

- Nissan mentioned the importance of long term certainty relating to the plug in car grant.
- National Grid mentioned there needs to be clarity around what the Government wants to do and wants to invest in.
- Western Power Distribution mentioned there needs to be greater confidence in the strength of the networks. They wish to see mandated managed charging and powers allowing DNOs to intervene in charging situations.

Q from Smart solar panel company:

- How will Treasury revenues from fuel duty be replaced?

Replies:

- Comment that there is likely a move to road charging, switch would make sense with EVs

Q: WWF

- Looking internationally we see a range of EV production quotas and looming bans on the sale of new petrol and diesel engines. The UK is at the bottom of the league with their 2040 target. What additional signals could the Government give? What about moving the target to 2030?

Replies:

- Nissan comment that the UK has good offers with OLEV and Faraday Challenge. They are keen to see a larger roadmap which details how all the strands of building this industry, ranging from R+D to supply chain development and skills development be brought together into a whole Government roadmap.
- WPD mentioned the UK needs to invest more in energy infrastructure and that won't happen before 2023
- National Grid commented that we need to be careful to compare countries.

Q: MAXIMeyes Group

- How can we encourage a new infrastructure model, like co-ops and community ownership?
- How do we ensure the electricity going into electric cars is renewable?

Replies:

- WPD commented that they are looking new ways of incorporating local, decentralised power generation.
- National Grid comments that there are great synergies between local generation and demand.
- In an unsubsidised renewables world, we should try and match them up with EV consumers.

REA comments that the Smart Systems and Flexibility Plan was released last year.

Standalone comment from Chargemaster:

- the earlier point made about public investment in closed networks is untrue, all existing public networks will be ad-hoc accessible to consumers by November in accordance with the Alternative Fuels and Infrastructure Directive.

Closing comments from the Chair

Event ends at 11:35pm

Event summary compiled by the Renewable Energy Association – secretariat to the APPG on Electric and Automated Vehicles. Contact: info@r-e-a.net