London Councils' Transport and Environment Committee

Overview of Vehicle Electrification Item No: 3

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Summary: This report advises members of the current situation with regards to the electric vehicle (EV) charging infrastructure in London, the options available and any potential future developments in the sector.

Recommendations: The Committee is asked to:

- Note the comments of this report.

Background

1. Over the last year there has been a considerable shift in the provision of and plans for electric vehicle recharging facilities in London. The report highlights what is on offer now and gives a brief summary for each of the options available for London boroughs with respect to EV charging infrastructure, and outlines some of the future plans.

2. What has become clear in London is that increased competition in the market and varying demands means that there will be more than one charging solution. The vision for charging infrastructure in London, as set out in London's bid to the Office for Low Emission Vehicles City Scheme bid, is for the following networks and solutions to meet London's charging demands:

    - Commercial public charging networks, such as Source London and the POLAR network, will provide 'top up', destination-based charging for private and business users, for example in shopping centres and leisure complexes. Boroughs may have more than one of these networks operating in their area.
    - Rapid charging provision, primarily targeted at commercial operations, will address the barrier to commercial ULEV uptake by providing charging solutions for fleets with intensive duty cycles.
    - Residential charging – to address the key barrier of the lack of off-street parking which limits the uptake by private users. To streamline the complex and costly process and minimise the demands on individual borough resources, it is

proposed that a new borough-led partnership with Transport for London (TfL) is established.

3. What is important is that this is managed effectively to ensure that there is sufficient growth in the sector, allowing ambitions for EVs in London to be realised without over-burdening the boroughs.

4. Whilst focussing on the current commercial offers to boroughs, London Councils is also working with TfL and GLA to understand how boroughs can best provide cost-effective, public sector-run, residential charging infrastructure for those without off-street parking. The next steps section of this paper outlines the current work on this, emerging from the City Schemes bid submitted in October.

Source London

5. Source London is a London-wide electric vehicle charge point network, which was introduced by the Mayor and TfL in 2011.

6. BluepointLondon Limited (BPL), a subsidiary of the Bollore Groupe, became the operator of Source London on 1 September 2014 when they took over from TfL. In order to make the scheme more efficient BPL proposed a variation to the existing terms of the Pan London Scheme (PLS) agreement. Two Member Briefings were produced in 2015 advising of the proposed variations and clarifying the proposals.

7. There are currently two types of agreement that exist between boroughs and BPL:
    - The Pan London Scheme agreements that exist from 2011. This currently includes the boroughs of: Barking and Dagenham, Bromley, City of London, Ealing, Haringey, Harrow, Hillingdon, Hounslow, Kingston, Lambeth, Merton, Redbridge, Wandsworth, Westminster
    - The Pan London Scheme agreement from 2014 (boroughs that have signed the variation agreement) which includes: Greenwich, Kensington and Chelsea Lewisham, Hackney, Hammersmith and Fulham, Southwark, Sutton and TfL.

8. BPL has indicated that six of the 14 boroughs yet to sign the variation agreement are in the process of doing so.

9. Whilst Brent and Camden opted out as partners of Source London, charging points owned by these boroughs remain accessible to Source London members. Both these boroughs are negotiating terms with BPL.

10. There are over 1,400 charging points located across 27 borough partners and 39 private partners, and a planned extension in those boroughs that have signed the variation agreement of at least another 300 additional bays by mid-2016. The majority of new locations will offer three or four bays with a charge point at each bay. It is likely therefore that some of these bays will be EV only, and some will allow parking for non EVs. BPL has also confirmed that there will be an additional 500 bays with private partners introduced next year. Future plans include the installation of further charge points in London to bring the total to 6,000 by 2018, and an advanced booking system.

11. BPL has indicated that once a borough signs the variation agreement, all non-operational charge points will be repaired or replaced within 3 months of the signing date at no cost to the borough. Currently the advised timescales are possible if BPL is able to utilise the

permitted development route, but longer if they have to go through the planning process. This can extend this time by up to three months. Therefore the average time in those is currently five months.

12. BPL has confirmed that they will bear all costs relating to the installation, the cost of the electricity and the communications costs. Boroughs will also gain access to both fixed and variable revenue fees each year as well as live usage management information.

13. A key plan for BPL is to finalise a green energy partner for Source London so that the scheme is associated with sustainable energy.

14. Customers using the Source London network would require a separate RFID card or app to utilise the POLAR network as the systems are not currently interchangeable. However, the options for pay as you go would reduce this requirement.

15. There are future plans for BPL to introduce a tariffs or user charging mechanism in 2016 for EV charging. No details regarding the planned cost for users of this charge or when charges will be introduced have been formally not been announced.

16. For further details please see https://www.sourcelondon.net/

Chargemaster PLC

17. Chargemaster were established in 2008 and are the largest manufacturer, supplier and operator of electric vehicle charging equipment in the UK, and currently manufacture 2,000 charging units per month at their plant near Luton. They currently have 15,000 public and workplace charging points across the UK and over 18,000 domestic charging units.

18. Chargemaster operate the POLAR network which is currently the largest charging network in the UK with over 4000 charging points nationally. In London there are 300 publically available charge points within eight boroughs. Around 250 of these are currently within the Source London network which will in all likelihood leave this network before the end of December 2015. There is a commitment to add a further 1000 charge points in London over the next 18 months.

19. Chargemaster is currently offering to replace any existing faulty charge points free of charge in all London boroughs. Boroughs will own the unit and the parking space whilst Chargemaster pay for the electricity, maintenance and communications costs. All units would have a Pay As You Go facility and all would be linked to the POLAR network. Any existing Chargemaster charge points owned or controlled by Chargemaster would be removed from Source London and operated in the POLAR network.

20. Chargemaster offer a range of charging infrastructure including rapid charging points, which are not currently offered by Source London.

21. Chargemaster also offer a pay as you go option called ‘POLAR Instant’ which does not require an RFID card, and is therefore open to anyone. This can be accessed by downloading a smart phone app and registering as a user.

22. The POLAR network is not directly interchangeable with the Source London network. However pay as you go options using the above app provide flexibility for EV users.

23. For further information please see http://www.chargemasterplc.com/

POD Point

24. POD Point is a UK based charge point supplier who developed and launched the first of their own charge points in 2009. Prior to the revised Source London variation agreement they had 130 units across boroughs in London.

25. POD Point is currently offering to replace any borough owned POD Point electric vehicle charging points (of any age or condition) with a brand new twin charging point at zero cost to the borough. This would be applicable for any charge point outside of the Source London network and would include a brand new unit, the swap out of the old unit, the disposal of the old unit, all data fees, and ongoing support for the life of the unit which is currently seven years. The only cost to the borough will be the supply of the electricity, which is no change from the current situation. POD Point include a 1:5 support SLA with all units, which means a one day remote fix SLA if a unit is not functioning correctly, and a five day swap SLA for units that cannot be fixed if required.

26. The offer includes free borough access to their online charge point management system which will allow boroughs to monitor their POD Points and collate management information.

27. It should be noted that any offer to replace equipment would not be applicable to those boroughs that have signed the Source London variation agreement.

28. POD Point has indicated that they are looking to work with any borough that wishes to expand their charge point offering, and is currently involved in a number of discussions of this nature. There are a range of options that can be discussed regarding any potential future expansion, including whether the charging will be free to use or pay as you go, and whether the borough wishes to enter into a profit share or not.

29. POD Point has introduced a scheme called Open Charge which allows drivers to utilise a phone app instead of an RFID card. RFID cards are often unpopular with users, and are not seen as ideal in a competitive market with a variety of suppliers as users would require a number of different RFID cards. Open Charge is fully operational, but does need a change to the hardware on older charge points as it does not operate on the RFID equipment.

30. For further information, please see http://pod-point.com/

Rapid Charging Infrastructure

31. It is clear that a range of different types of charging infrastructure will be need across London to both meet demand and cater for differing charging requirements.

32. The existing charging infrastructure in London is primarily 3kW or 7kW. This can typically charge a vehicle in 3-7 hours. The availability of rapid charging in London, which can charge a vehicle in 30-60 minutes, is extremely limited. This represents a challenge to high mileage and intensive use vehicle fleets where the traditional charging infrastructure does not meet the sector's requirements. Rapid charging provides the ability to charge during the course of the working day, minimising any operational downtime.

33. Research indicates that 150 rapid charge points would be required by 2018 to support zero emission capable taxis, private hire and commercial fleets. By 2020 it is estimated that at least 300 rapid charge points will be required if vehicle adoption rates follow an accelerated curve.

34. There are some issues with increasing the rapid charging infrastructure:
    - Difficulty in securing sites;
    - Availability of sufficient power supply and the cost of electricity grid infrastructure upgrades;
    - High initial capital costs from charge point installation means that currently returns on investment will only be realised over longer periods e.g. 8-10 years

35. In parallel TfL are developing plans for a procurement partner to finance, install, operate and maintain rapid charging points at agreed location. This is known as the 'concession model'. Through managing the deployment of rapid charging, TfL can help unlock private sector investment by overcoming the two key barriers which are currently preventing the expansion of private investor/operator models:
    - Securing suitable locations for hosting installation of charge points, particularly in the urban environment
    - Additional infrastructure costs incurred where upgrades are required to electricity supply infrastructure.

36. TfL has commenced engagement with boroughs and the private sector to identify possible locations for the development of rapid charging infrastructure to support new electric taxis, private hire and other commercial fleets. Potential locations would include on street locations (e.g. for taxis at taxi ranks) and off street charging 'hubs'. Much of the approach to site identification and agreement is likely to mirror that adopted for Cycle Hire docking stations. TfL is also examining its own property portfolio and the Red Route network.

37. The costs of additional electricity supply infrastructure upgrades are also a barrier to deployment. To help overcome this, TfL is also working with UK Power Networks to streamline the process for electricity network capacity assessments and upgrades.

38. Initial locations will be identified by summer 2016 and the concession contract will be awarded in autumn 2016, with deployment of the first rapid charge points in summer 2017.

LB Hounslow/Ubitricity Trial

39. One of the barriers for increased EV vehicle uptake in London is the provision of charging infrastructure in residential areas without off street parking, where existing parking demands are high. It is often seen as difficult to justify the introduction of charging infrastructure that may have a knock-on effect of reducing the number of residents' parking spaces without sufficient demand, and it is difficult to get the demand without the provision of the charge points. Whilst OLEV offers a grant for up to 75 per cent of the capital costs of a residential charge point, the small number of requests means that it is difficult to make a business case for installing a charge point.

40. The London Borough of Hounslow is trialling a scheme with German charging infrastructure partner Ubitricity, and has currently installed two prototype sockets in the borough. One is wall mounted at the Civic Centre. The second - perhaps more interestingly - is in an existing lamp column and used by a resident.

41. Ubitricity is able to retrofit a socket to any suitable existing street light infrastructure without the need to fully replace. This takes 30 minutes to complete and keeps installation costs to a minimum. The power output is able to produce 4.6kW (23v, single phase 20A) which has less impact on the grid. There are also current developments looking to increase the power output to a 7kW output.

42. The current unit price is approximately £300 for the socket and £450 for the Smartcable. All of the complicated technology is in the Smartcable which houses an electricity meter and all of the data communications components which allows the process for billing and reimbursement to occur. The sockets will only work with a Smartcable so nothing will happen if you plug a 'standard' charging cable into the socket. For the trial the cable is owned by Hounslow, but there is flexibility in the future so that cables could be purchased by the borough and leased to residents, or purchased by residents once the infrastructure has been installed

43. LB Hounslow has estimated that to make the project worthwhile, you would need 80-100 sockets and 50 cables. What is beneficial is that there is little or no change required to on street parking infrastructure, and the initial 'over supply' of sockets in street lights could be a significant driver in the purchase of electric vehicles by residents.

44. LB Hounslow has indicated that there has been some interest from other residents, and a number of boroughs. So far, whilst the technology is proving reliable there are a number of legal and regulatory questions regarding EV charging which need to be addressed before a wider roll out can be undertaken. It should also be stated that at the time of writing the product is not fully available to the market.

45. For further information please see https://ubitricity.com/en/start

BT Fleet (a subsidiary of BT Group)/ EMS Powerstar

46. London Councils were approached by British Telecom Fleet (BT Fleet) some months ago about the feasibility of utilising existing BT Fleet infrastructure to create both on and off street charging points. Initial considerations surrounded the charging of BT Fleet's own vehicles as they sought to significantly increase their electric fleet, but further examination of the charging infrastructure market meant that there was scope to role this out to non BT vehicles as well.

47. BT Fleet is currently working with EMS Powerstar to create a rapid charging point that incorporates additional features. Currently in the early design phase, BT Fleet is looking to introduce a basic trail unit in Ipswich with the infrastructure situated in one of their car parks. This would allow BT Fleet to charge their own vehicles, but would also allow for some charging for their customers. Once this phase has been fully tested and the technology has proved itself BT Fleet would look at the wider opportunity and scope to utilise existing street furniture, including old phone boxes and junction boxes which already have a power supply.

48. Initial designs are based on the size of an average bus stop and could include:
    - Rapid charging
    - Solar Power charging
    - Seating
    - Advertising space
    - Phone charging and Wi-Fi

- Real time data access/reporting
- Payment mechanism.

BT Fleet has indicated that the above will be assessed as the project moves forward.

49. BT Fleet has identified that there are potential issues with securing locations on street, and some locations would not be suitable due to the possible size of the infrastructure. BT Fleet believes that there is significant scope for the infrastructure to be housed in off street public and private car parks and commercial and business premises.

50. BT Fleet has indicated that the system will also offer the ability to claim Grid Tie incentives, which means there is an ability to supply electricity to the grid on demand.

51. Further information on the developments of this scheme will be forwarded to boroughs as a when information is available.

52. For further information see https://ems-uk.org/emsc-uk-ltd-company-profile/

Next steps

53. This paper has outlined the current offers, and some of the potential future options, but what are some of the current next steps.

Draft strategic Charging Infrastructure Location Guidance

54. Action 2 in the ULEV Delivery Plan is to: 'Publish guidance on charging infrastructure locations, based on research and stakeholder insight'. This action was set in recognition that boroughs and charge point network operators need more strategic support to help to understand where charging infrastructure will be needed. This will be crucial in ensuring all investment in charging infrastructure is effective in meeting the needs of London's future ULEV users.

55. TfL has been undertaking a programme of technical research to understand the various types of ULEV users and their charging needs, including residents, taxis, private hire, commercial fleets and car clubs. The research is now being brought together into this one guidance document to inform boroughs, charge point network operators and other stakeholders looking to deploy charging infrastructure in London. The guidance will be advisory, not mandatory.

56. TfL is currently working on a draft which will be shared with boroughs for comment from January.

OLEV Go Ultra Low City Scheme

57. Members will be aware of the opportunity to share £35m in funding from the Go Ultra Low Scheme competition.

58. London has submitted a full bid (as outlined in the report to TEC on 15 September 2015) which asks for £20m for four work streams:
    - EV charging infrastructure in residential areas

- EV charging infrastructure at car club bays
- Rapid charging infrastructure to support commercial fleets
- Locally developed Neighbourhoods of the future

59. The decision on the funding will not be made until later this year, but if the bid is successful there would need to be significant further discussions on the options available in London, and it is likely that some of these discussions may feature many of the aspects described above.

London-wide Residential Charging Delivery Partnership

60. The OLEV City Schemes bid provided the platform for the development of a proposed London-wide delivery partnership for deploying residential charging infrastructure in a more coordinated and cost-effective way. The proposed partnership between boroughs and TfL could help streamline applications for charging infrastructure and consolidate the knowledge and resources across the boroughs. It would offer a valuable centre of expertise with the capacity to manage installation requests, the installation process and ongoing maintenance.

61. The proposal was developed for the bid and at present it assumes a significant level of funding input from OLEV. Given the appetite from boroughs to find an alternative solution to the current process for residential charging, if this funding is not secured, we will look at other options, including working with OLEV on other ways to access their current residential charging funding pot. We understand that the current application process (responding to individual requests from residents with proof of EV purchase) and its challenging installation deadlines are seen as too resource intensive for many boroughs to be able to consider.

62. London Councils is in the process of convening a working group of boroughs to develop the legal and financial detail of this proposal.

Conclusions

63. The above information is not exhaustive, and it is clear that there will be other companies wishing to enter this competitive market. What the information above provides are details of what is happening now, the options available for boroughs, and what developments there may be in the future.

64. It is clear that to meet the targets on air quality and increase the uptake of EVs to the levels set out in the Mayors Ultra Low Emission Vehicle Delivery Plan for London, that a range of charging options will be required with more than one solution.

65. London Councils is believes that all networks should be easy to use, integrated and compatible with each other. In future the integration of near field communications technology into the charging infrastructure allowing the use of personal debit/credit cards to access the network would be more beneficial, as the carrying of multiple RFID cards does not make charging simpler for the user. It would also be sensible for any mobile app or network map to describe the whole network, rather than individual pieces run by specific companies. London Councils will be working with all key stakeholders to encourage and develop such joined up thinking.

Financial Implications

66. There are no financial implications arising from this report.

Legal Implications

67. There are no legal implications to London Councils arising from this report.

Equalities Implications

68. There are no equalities implications to London Councils arising from this report.

Recommendations

69. The Committee is asked to:

- Note the comments of this report.