

Committee(s)	Dated:
Port Health and Environmental Services – for information Planning and Transportation – for decision	19 September 2017 3 October 2017
Subject: Electric vehicle charging	Public
Report of: Steve Presland – Transportation and Public Realm Director	For Decision
Report author: Samantha Tharme – Strategic Transportation Officer	

Summary

This report considers the need for electric vehicle (EV) charging in the City of London. Fast charge points are already in place in a number of City of London Corporation car parks. There is now a need to consider providing dedicated rapid charge points to encourage the operation of zero emission capable taxis in the City and support the taxi trade in meeting TfL's licensing requirements for all new taxis to be zero emission from 1 January 2018.

An overarching policy on charging for EVs is proposed. This policy has to balance the benefit of providing charging facilities within the Square Mile at appropriate locations, whilst guarding against the generation of additional vehicle trips and minimising the impact on the public realm. The proposed policy includes details of acceptable locations of charge points for different types of vehicles.

In line with this proposed policy approach, the report also seeks approval for the installation of eight rapid charge points for taxis in Baynard House car park. The installation of these charge points, and any enabling works, will be fully funded by Transport for London (TfL).

Recommendation(s)

Members are asked to:

- Approve the policy to support the installation of electric vehicle charge points at appropriate locations. This will take into account the need to guard against additional vehicle trips and have minimal impact on the public realm.
- Approve the implementation of eight rapid charge points for taxis at Baynard House car park.
- Approve the implementation on a trial basis of a rapid charge point at Noble Street taxi rest bay. To be reviewed and reported back to Planning Transportation Committee after 12 months to determine whether it should be made permanent.

Main Report

Background and context

1. The draft Mayor's Transport Strategy includes targets for improved emission standards for all vehicles in order to meet the required limits for air pollutants across London. The key dates and targets are set out in Appendix 1. The first restriction is a requirement for newly licensed taxis to be zero emission capable from January 2018. This measure will in due course benefit the City as taxis currently make up 19% of motorised traffic in the Square Mile, contributing 24% of all NO_x emissions and 50% of PM₁₀ from transport.
2. Zero emission capable means a vehicle able to operate with zero tailpipe emissions. An ultra-low emission vehicle (ULEV) is the collective term for such vehicles, including battery electric vehicles (BEVs), plugin hybrid electric vehicles (PHEVs), range-extended electric vehicles (RE-EVs) and hydrogen fuel cell electric vehicles (FCEVs). This report covers the provision of charging infrastructure for BEVs, PHEVs and RE-EVs, referred to as EVs for ease of reference.
3. The City of London Corporation recognises the need to improve air quality for those living and working in the City. National health based limits for exposure to the pollutants nitrogen dioxide (NO₂) and small particles (PM₁₀) are not being met in the City. The whole of the Square Mile has been declared an Air Quality Management Area and air quality improvement is one of the key policies in the Corporate Plan. Air quality is also on the Corporate Risk Register as a 'red' risk. The City Corporation supported the Mayor's proposal to introduce the ULEZ at an earlier date of April 2019 provided that a certified retrofit system is in place to allow heavy vehicles to be fitted and tested for Euro VI compliance. The Transport Co-ordinating Group is working to ensure the City's fleet is ready to meet the requirements for ULEZ.
4. A number of types of EVs have been on the market for some time, both fully electric vehicles and hybrids. Several freight and servicing companies already run fully electric vehicles, and many private hire vehicles are hybrid. New to the market is a zero emission capable vehicle which meets the requirements for London taxis. It is anticipated that this will be available by October 2017, in time to meet TfL's requirement for newly licensed taxis to be zero emission capable by January 2018. These vehicles are range-extended - they have a back-up petrol engine but are designed to be run in electric mode the majority of the time.

5. There are a number of different types of charging unit currently available, operating at different power outputs that determine the charging time. Charging units are not universal, with different vehicles requiring different types of charger. The type of unit available is likely to develop with emerging technology, including the possibility of induction charging, which is currently being trialled for buses. Charging units currently available are listed below. An illustration of the type of rapid (50kW) units in the TfL framework are in appendix 4 :

CHARGE TYPE	POWER OUTPUT	CHARGING TIME
Standard	3 kW	6-8 hrs
Fast	7-22 kW	1-4 hrs
Rapid	50 kW	30 mins

6. The charging requirements for different types of vehicles and recommended locations are set out in Table 1.

Table 1: Vehicle requirements and recommended locations for City of London.

Vehicle type	Charge type	Comments	Recommended locations
Taxi	- Rapid	Charging for taxis can be accommodated in car parks, taxi rest bays and possibly taxi ranks. Due to the nature of use, taxis need rapid charge units in central London. Lack of top up facilities would restrict range and ability to operate effectively	- off-street public car parks
Private Hire vehicle	- Fast - Standard	The private hire vehicle trade already has a reasonably high number of hybrid vehicles in the fleet and this is expected to increase. Standard or fast charging at locations close to drivers' homes is likely to remain most appropriate, making provision in the City less necessary. Some PHV companies are considering dedicated private facilities particularly rapid charging.	- off-street public and private car parks
Private car	- Fast - Standard	Off-street car parks are most appropriate for residents and other private vehicles. On-street residential and P&D parking locations are not recommended given the nature of footways and the limited amount of on-street parking within the City.	- off-street public and private car parks
Commercial/ freight – LGV	- Rapid - Fast	Commercial/freight vehicles need rapid charging facilities to maintain range and operational ability. Provision is considered appropriate in off-street car parks, private loading bays within buildings, consolidation centres and private distribution centres. A number of commercial operators already operate electric vehicles and meet their own needs at depots.	- off-street public car parks; - freight consolidation centres; - private building loading areas
Commercial/ freight – HGV	n/a	Heavy goods freight vehicles are less suited to battery operation than light vehicles; some trials are in operation with buses and freight, for both hybrid and hydrogen fuel cells. There is no anticipated need for vehicles to be serviced in the City.	not currently applicable

Notes Conclusions based on information from 'Electric Vehicle Charging Infrastructure: Location Guidance for London' and research undertaken on Ultra Low Emission Vehicles (ULEVs) TfL website at tfl.gov.uk/ulev-research

7. The City Corporation has provided electric vehicle charging for 15 years. New and improved charging facilities have recently been installed in the Corporation's five public car parks, providing 50 charge points overall:
 - Baynard House
 - London Wall
 - Minories
 - Smithfield
 - Tower Hill

These fast (7kW) charge points take up to four hours to deliver a full charge. Users pay to park at the standard rate and pay an additional fee to belong to the charge point operating company.

8. Additional off-street charging for Barbican residents will be delivered as part of the Low Emission Neighbourhood (LEN), along with a fast charge point in the Golden Lane Estate car park for use by City Corporation fleet vehicles (Housing and Cleansing) and residents.
9. Two fast and two standard charge points are available at Walbrook Wharf for use by services for Cleansing/Waste and Transport (DBE) and Markets and Consumer Protection and Environmental Health. These facilities are also available to City of London Police.
10. A fast charge point is provided in the Members car park and a procurement process for the installation of further four fast charge points is underway.
11. Local Plan Policy 16.5 requires new developments to provide infrastructure to support the use of electric vehicles in off-street loading or parking areas. The draft Freight Servicing SPD gives further guidance on providing infrastructure suitable for commercial vehicle needs. The Local Plan review Issues and Options paper asked whether measures should be introduced to improve air quality, including the implementation of EV charge points. This received a number of supportive comments in the consultation responses.
12. The Energy Savings Trust (for TfL) has carried out a significant amount of research to identify the likely demand for EV charge points required to support the introduction of the ULEZ and meet anticipated market demand. The most immediate need is for rapid charging to support the switch to zero emission capable taxis. This is forecast to require the installation of 75 rapid charge points across central London by December 2017, increasing to 90 dedicated taxi charge points by December 2018. The Energy Savings Trust have estimated that by December 2018 there will be 1,400 zero emission capable taxis operating in London, assuming current vehicle replacement rates are maintained (EST, November 2016, 'Feasibility Study into rapid chargepoint network for plug-in taxis', Executive Summary, see Appendix 3).
13. Some City of London car parks are operating under capacity and have the potential to accommodate rapid charge units in addition to the fast charge points already provided. London Wall Car Park is currently being considered for closure

as a public car park, but there may be a future opportunity to introduce a rapid charging hub at this site, depending on alternative uses. It is understood that the new owners of Minories car park want to redevelop the site so the future of this is uncertain.

14. Any rapid charging would initially be for taxis only, with the potential for future provision to also serve commercial vehicles. As the City Corporation has a policy of reducing vehicle trips, the aim is to accommodate the needs of vehicles that have business in the area without attracting any additional traffic. Following advice from the Energy Saving Trust the number of charge points provided will initially be quite low, with any expansion in provision based on monitoring of use.

15. It will be important to align any provision in the City of London with neighbouring boroughs to prevent drivers travelling to the City purely for charging purposes, generating additional traffic. The following central London boroughs are expected to install rapid charging for taxis by early 2018:

- Westminster
- Islington
- Royal Borough Kensington & Chelsea
- Southwark
- Lambeth
- Tower Hamlets

Hackney have already installed on-street rapid charge units that are available to taxis. We are awaiting clarification on Camden's approach to rapid charging. Further details on charging facilities in neighbouring boroughs are provided in Appendix 2.

16. Given current and planned provision the risk of attracting additional journeys into the City to charge vehicles by installing a small number of rapid charge points for taxis is low.

Recommended policy on Electric Vehicle charge points for the City of London.

17. Air quality improvement is one of the key policies in the City's Corporate Plan. A policy setting out appropriate locations for EV charge points is needed to manage requests and support the introduction and use of EVs in the City.

18. It is recommended that the City Corporation adopts the following policy on EV charge points:

The City of London Corporation recognises the need to reduce traffic, and reduce emissions from remaining vehicles, in order to improve air quality. Public and private charge points for electric vehicles support the use of ultra low emission vehicles (ULEVs) within the City of London.

The number and location of charge points will aim to meet the needs of vehicles accessing and serving the Square Mile without generating any additional vehicle trips. Charge points will only be installed in locations that

have minimal impact on the public realm and do not add to street clutter or restrict pedestrian movement.

To meet the needs of the different vehicle types, the following locations will be acceptable for installing charge points.

Vehicle type	Charge type	Location
Taxi	Rapid Fast	Off-street public car parks On-street by exception
Private Hire	Fast/Standard	Off-street public/private car parks
Private Car	Fast/Standard	Off-street public/private car parks
Freight and servicing	Rapid/Fast	Off-street public/private car parks Freight consolidation centres Private off-street loading areas

The installation of charge points will be supported by other measures to encourage the transition to ULEVs for taxis, freight and servicing vehicles. These could include ULEV only taxi rest bays and ranks and on-street loading bays.

This policy will be kept under review as the ULEV market and charging technology develops. The use of all charging infrastructure will be closely monitored to enable trends in demand to be tracked.

Rapid charging for taxis at Baynard House Car Park

19. As noted above, TfL has identified the need to install 75 rapid charge points for taxis across central London by December 2017. The installation of these charge points will be funded by TfL, who have made £18m available for the implementation of 300 charge points by 2020.
20. A framework for procurement has been set up by TfL with five suppliers who meet appropriate standards. The framework covers procurement of service to supply electricity. All equipment maintenance, replacement costs and management is covered within the installation fee and the charging equipment will remain the property of the service provider. The framework is designed to provide electricity at a competitive cost rate for drivers measured against diesel or petrol costs. Contracts to supply electricity at any given location would usually be let for an eight year period.
21. Some charge points will be required in the City to support the use of zero emission capable taxis in the Square Mile and to support the taxi trade in meeting the requirements of the Mayor's taxi licensing policy. Potential on-street charging locations at taxi rest bays in the City have been looked at, two of which are deliverable on practical grounds at Ropemaker Street and Noble Street. Installation at Ropemaker Street is not recommended due to the impact on the public realm and obstruction of the footway.

22. A rapid charge point could potentially be installed on a trial basis on Noble Street without pedestrian obstruction. A charge point in this location would support the aims of the City Low Emission Neighbourhood project, it is therefore proposed that one is introduced here on an experimental basis to be reviewed and reported back to Planning and Transportation Committee after 12 months to determine whether it should be made permanent. Levels of usage of the charger and any impact on traffic volume will be monitored and reported on. The LEN project also holds a budget and could fund this charger including relocation if deemed appropriate after a trial.
23. Further site assessment is necessary to understand if this site is considered suitable by UK Power Networks for a rapid charge point, if so the enabling works would be covered by TfL. If it is not possible to install a rapid (50kW) charge point, at Noble Street, a report considering the merits of installing a fast (22kW) charge point will be brought back to P&T committee for consideration. The 22kW charge points are smaller but can only be used at limited capacity by one of the new taxi types manufactured (there are two vehicle manufacturers at present).
24. TfL is also in discussion with Network Rail to install rapid charge units for taxis within Liverpool Street station.
25. Baynard House Car Park has been identified as a suitable location for installing rapid charge units. There is sufficient space within the car park which is not used to capacity. Baynard House also allows for the creation of a dedicated taxi charging area in the basement, which can be segregated from the rest of the car park with separate entrance and exit off Castle Baynard Street. This area can accommodate 12 charge points.
26. Both TfL and the City Corporation wish to guard against installing equipment which is not well utilised. It is proposed that eight charge points are installed initially. Usage will be monitored to assess the need for further charge points. Some upgrade to the power supply to the building will be required plus enabling works. All costs will be met by TfL and the upgrade will be sufficient to cover power requirements for 12 rapid charge points. Subject to final agreement with TfL and the tendering process we expect the charge points to be installed by the end of 2017.

Financial Implications

27. TfL has made £18m available to fund delivery of the 300 rapid charge points across London; therefore there are no capital costs to be incurred by the City Corporation. A percentage of revenue generated is payable to the authority, and the rate will be part of the terms proposed in the bidding process.

Health Implications

28. The proposals support the improvement in air quality in the City of London and should contribute to positive health impacts.

Conclusion

29. If approved, the recommendations will enable a reduction in vehicle emissions in the City, with associated improvements in air quality. Monitoring of use and of developments in the ULEV market will be undertaken to try to ensure optimum provision. The results of this monitoring will be shared with the Committee 12 months after installation. Any recommendations on expansion of the EV charging network will be brought to the Planning and Transportation Committee for decision.
30. Given the expected provision of charge points in neighbouring boroughs the proposals in this report would not be expected to add unnecessary journey times into the City and therefore should not impact upon congestion.

Appendices

- Appendix 1 – Draft Mayor’s Transport Strategy targets and deadlines.
- Appendix 2 – Forecast delivery of taxi charge points in neighbouring boroughs to City of London.
- Appendix 3 – Executive Summary and extracts from Energy Savings Trust ‘A feasibility study into a rapid charge point network for plug-in taxis’.
- Appendix 4 - Illustrative charge point designs (TfL framework suppliers).

Samantha Tharme
Strategic Transportation

T: 020 7332 3160

E: Samantha.Tharme@cityoflondon.gov.uk]

Appendix 1: Draft Mayor's Transport Strategy targets and deadlines for vehicle emissions

Date	Targets and required installations rapid charge points across central London	comment
Dec 2017	75 – taxi only	Based on identified requirements coming from TfL research with Energy Savings Trust
Jan 2018	Newly licensed taxis must be zero emission compliant	
Dec 2018	150 – total (of which) 90 – taxi only	
April 2019	Introduction of Ultra Low Emission zone for central London. (all vehicles except taxis)	Subject to final decision by Mayor date as per draft MTS. (proposed as earlier date in consultation)
Jan 2020	Private hire vehicles under 18mths newly licensed to be ZEC	140 rapid charge points will be needed to serve the electric PHV fleet in 2020 – based on market analysis of PHV fleet
Dec 2020		9,000 zero emission taxis in order to meet AQ targets
Jan 2023	All private hire vehicles newly licensed to be ZEC	

Appendix 2: Forecast delivery of taxi charge points in neighbouring boroughs

It will be important to align any provision in the City of London with neighbouring boroughs to prevent drivers travelling to the City purely for charging purposes, generating additional traffic.

TfL have been working with boroughs to identify sites and the current position for those relevant to the City is listed below. The priority for TfL is on providing charge points dedicated for taxi use.

Neighbouring boroughs and TfL are expected to be looking for further sites in their areas over the period to December 2018.

Islington: Multiple rapid sites for taxis identified. Three sites with five charge points are forecast for delivery late 2017 / early 2018

Tower Hamlets: Tens of potential sites identified and the locations for the first three or four sites are currently being finalised. It is estimated that six charge points to be delivered in early 2018.

Westminster: Tens of suitable taxi rest rank sites identified but awaiting on decision EV policy/strategy before proceeding. It is not clear yet how many charge points will ultimately be provided.

Southwark: A private site in a taxi park will be delivered shortly with a further six rapid charge points identified for delivery early-mid 2018.

Hammersmith & Fulham: Three sites are forecast to be delivered by early 2018 and two further by mid-2018; providing a total of eight to ten charge points

Kensington & Chelsea: 8 rapid charge points identified for delivery early-mid 2018.

Camden: Pending confirmation.

Hackney: already have three rapid charge units in place that will be available to taxis

Transport for London Road Network (TLRN): TfL are planning to install an estimated 60 charge points at 40 sites across central London boroughs over a 12 month period to September 2018. Further information on which sites are going ahead should be available by the end of September 2017.