

Best Practice: Electrical Vehicle Development

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CITY: LONDON

POLICY AREAS: CLIMATE CHANGE; TRANSPORTATION

BEST PRACTICE

In May 2009, the Mayor of London launched **The Electric Vehicle Delivery Plan**. The Plan aims to achieve 100,000 electric vehicles on London's roads as soon as possible, purchasing vehicles, installing charging infrastructure and providing incentives and support to facilitate this growth. Key targets are to install 25,000 charging points by 2015 and convert 1000 Greater London Authority (GLA) fleet vehicles to electric by 2015.

An electric vehicle uses an electric motor for propulsion, powered by energy stored in a battery. No gasoline or diesel is used. Electric vehicles offer a clean, green and economical alternative to gasoline and diesel powered transport.

ISSUE

There is an urgent need to improve air quality in London and reduce emissions of climate change gases. Cars are responsible for 16% of London's total CO₂ emissions and 46% of London emissions of NO_x and 83% of its PM₁₀ emissions come from transport.

While improvements to the internal combustion engine will continue to reduce vehicular emissions of carbon dioxide and air pollutants over the next few decades, it is generally agreed that the adoption of new vehicle technologies will be required to achieve emission targets. Of the potential candidates, there is growing consensus that electric vehicles (EV's) are the best near-to-market low-emission vehicular technology. With no emissions at point of use and "well-to-wheel" carbon dioxide emissions 30-40% lower than comparable gasoline or diesel-fueled vehicles, EV's will play an important role in tackling both local and global environmental challenges in the future.

There have been rapid advances in design and technology of electric vehicles, which makes new generation electric vehicle models similar in style, with all the usual conveniences of their gasoline and diesel counterparts. The range of the vehicles (in excess of 100-130 km/160-210 km) and the speed (up to 112 kph) makes them more than adequate for London driving, when 95% of London's motorists travel less than 80 km/day. The cost of electric vehicle technology is falling and fuel prices have risen, making electric vehicles more cost effective over their lifecycle. More vehicle manufacturers are bringing electric vehicles or plug-in hybrid electric vehicles to the market so the available choice will broaden.

GOALS AND OBJECTIVES

The Mayor of London's Electric Vehicle Delivery Plan is a three-themed strategy:

- **Infrastructure:** The Plan sets a target of installing 25,000 charging points across London by 2015. This will be delivered through working with the boroughs, the commercial sector and other partners.
- **Vehicles:** The Plan sets the target of 1,000 electric vehicles in the GLA fleet by 2015, with the intention that this will stimulate the wider EV market. As well as delivering this, the GLA will seek to support increasing the number of EV's in other public sector fleets (e.g. boroughs) and will work with businesses to expand the use of EV's in their fleets.
- **Incentives, marketing and communications:** In addition to guaranteeing the Congestion Charge 100% discount for electric vehicles, the Plan commits to working with the boroughs to encourage parking incentives, encourage the uptake of electric vehicles by car clubs and develop a London-wide membership plan for EV users, giving easy access to a charging point network.

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IMPLEMENTATION

Infrastructure

There are currently around 1,700 electric vehicles in London, representing 0.06% of the total number of vehicles registered. Over 250 electric charging points are currently in operation in London, distributed across 13 boroughs and the City of London in car parks, shopping and leisure centers and on-street locations. A map of these charging points can be found at: www.london.gov.uk/electricvehicles.

The Mayor has committed to work with the boroughs and other partners to deliver 25,000 charge points across London by 2015. The Draft Electric Vehicle Infrastructure Strategy (available at: www.london.gov.uk/electricvehicles) sets out detailed plans to deliver this network. 22,500 of the charging points will be installed at London's workplaces and 2,500 charging points will form a publicly accessible network. This publicly accessible network will be formed of 2000 charging points delivered in public car parks (such as station, supermarket, leisure and retail car parks) and 500 points on street. The aim is to work towards a network where no Londoner is more than 1 mile from a publicly accessible charging point by 2015.

A strategic network of publicly accessible faster charge points will be installed as part of the base coverage at key international, metropolitan and major centers as well as at strategic nodes on the road network and motorway service stations.

The Mayor is currently consulting on new London Plan policy for 20% of parking in new developments to be equipped with charge points. This could yield 7,000 charge points spaces per year.

Vehicles:

Detailed investigations have established the operational requirements of the GLA fleet vehicles, putting London in a position to publish a detailed procurement framework in 2010 to buy 1000 electric vehicles for the fleet. The Mayor is seeking funding from the national government to help deliver this major introduction of electric vehicles, recognizing the potential this has to catalyze the market.

To promote the use of commercial electric vehicles in London's fleet, the Mayor has established the Electric 10 partnership. This group is formed of ten major companies that are already using electric fleet vehicles on daily basis: Sainsbury's, Tesco's, Marks and Spencer, UPS, TNT Express, DHL, Amey, Go Ahead, Speedy and Royal Mail. The Mayor is working with these companies to learn from their experiences and encourage other companies to follow their lead.

Electric car manufacturers are working on a cost model to ensure that over a four to five year period electric vehicles are as cheap, or cheaper to run as gasoline or diesel vehicles. The higher upfront purchase cost of an electric vehicle (currently £10-15k), which is mostly made up of the cost of the battery, is off set by the reduced annual operating costs including:

- Lower fuel costs: Typically around £400-£500 for an average annual mileage of 10,000 miles. This compares to a gasoline cost of around £1200 per year - a saving of £700-£800 per year.
- Exemption from the Congestion Charge: £1,700 per year
- No Vehicle Excise Duty (VED) to pay - compared to a Band D car (car with emissions of 121-130g/km of CO₂): £125 per year
- Reduced rate parking and free charging at £14 per day: £2,800 per year

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Incentives:

National

- Incentives to purchase: The Department for Transport (DfT) announced in April 2009 that £250 million would be allocated to incentivize the market uptake of electric vehicles in the UK. The plan will become operational in 2011, allowing each electric vehicle purchaser to receive a rebate of £2,000 - £5,000. The announcement also includes funds to promote infrastructure installation and support technological development.
- No vehicle tax: Electric vehicles are exempt from purchase and annual vehicle tax. From April 2010, purchasers of an average new car (the new Band G) will pay a one off £155 showroom tax and an annual vehicle tax of £155. Electric vehicles are tax-free.
- EU emission targets: The EU is setting new car fleet emissions targets that all manufacturers will need to achieve - a new car sales fleet average of 95g/km of CO₂ by 2020.

Local

- Congestion Charge: The Mayor will guarantee the 100% exemption of the congestion charge for electric vehicles will remain in place. This discount is £8 per day (£7 for fleet account users) and up to £1,700 per year for regular travelers into the congestion-charging zone.
- Parking: A number of boroughs offer subsidized parking for electric vehicles. For example, parking at public car parks in Westminster is free, saving the user up to £6,000 a year. The Mayor will encourage this best practice of parking incentives amongst all London boroughs.
- Car clubs: The Mayor supports and encourages car clubs in London, as they reduce the use of vehicles. The Mayor will encourage existing operators to migrate towards electric vehicles and assist this process by funding the installation of dedicated bays and charge points for car club electric vehicles.
- London wide membership plan for EV users: The Mayor will establish a one stop website and membership plan for electric vehicle drivers. Currently electric car drivers have to register in each borough they charge up in, whereas this will provide a single point of information and payment option to access charge points across the capital.

Partnerships:

Working in such a new market, London has prioritized a partnership approach to facilitating the Electric Vehicle Program:

- **The London Electric Vehicle Partnership (LEVP)** was formed in November 2008 and brings together a key network of 50 representatives from the motor and energy industries, London boroughs and other stakeholders. This partnership is the Mayor's sounding board for policies and projects and assists in accelerating the delivery of new technology and increasing the level of support for drivers of electric vehicles in the capital. Isabel Dedring, the Mayor's Advisor on the Environment chairs the partnership.
- The **Electric 10 partnership was formed in Autumn 2009, bringing together 10 major** companies who are already using electric fleet vehicles on daily basis: Sainsbury's, Tesco's, Marks and Spencer, UPS, TNT Express, DHL, Amey, Go Ahead, Speedy, Royal Mail. The Mayor is working with these companies to learn from their experiences and encourage others to take their lead.
- London is part of the **C40 Electric Vehicle Network** of 14 cities who are making the commitment to make their cities more friendly to electric vehicles. This forum is an opportunity to share experiences and work towards common goals to:
 - Facilitate the planning and deployment of charging infrastructure and related electricity supply systems in collaboration with local utilities.
 - Work with relevant stakeholders to streamline permitting processes associated with charging equipment to encourage the safe and expeditious installation on customer premises and elsewhere.

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- Coordinate monetary and non-monetary incentives available to the general public and organizations purchasing electric vehicles, and contribute appropriately to the incentives package.
- Develop and publish a plan to mobilize demand for electric vehicles in city fleets for the period 2010 - 2013 and rally private fleets to the same ends.
- Transport for London is working with several public and commercial sector organizations to apply for funding through the national government "Plugged in Places" Electric Vehicle Infrastructure Framework. TfL is also a partner in an application for European Commission funding associated with a large-scale electro-mobility demonstration project.
- The Greater London Authority group is creating a joint procurement framework to purchase electric vehicles across the GLA fleet, and is looking to join with other public bodies to achieve economies of scale. The framework will enable the purchase of a range of alternatively fuelled vehicles, from multiple suppliers.

COST

The estimated cost of the 25,000 charging points and conversion of the Greater London Authority fleet to kick-start London's electric vehicle revolution is £60 million. The Mayor has pledged to fund £20m of this and is calling for the national government and the private sector to commit the remainder.

Central government announced £250 million of funding to support the development and introduction of electric vehicles in the United Kingdom.

RESULTS AND EVALUATION

The rate of EV adoption will be monitored through the Driver and Vehicle Licensing Agency (DVLA) and via registrations for the Congestion Charging discount. Once a base level of charging infrastructure has been deployed, use of points and the level of membership of the pan-London program will be monitored to inform both the rate and location of infrastructure roll-out in the future. Market research will also be undertaken to ensure the needs of early EV adopters are being adequately addressed. The appropriateness of the overall infrastructure strategy will be reviewed periodically.

TIMELINE

The key Mayoral targets are to install 25,000 charging points and convert 1000 GLA fleet vehicles to electric by 2015.

Key milestones in 2010 include:

- London consortium to submit bid for European funding – January 2010
- London consortium to submit bid for Plugged in Places (DfT) funding – January 2010
- First charging points installed at London Underground car parks – Spring 2010
- Further charging points installed using London Implementation Plan (LIP) funding - Summer 2010
- Electric Vehicle Exhibit at the London Transport Museum –Summer 2010
- Electric vehicle brand and website – Summer 2010

LEGISLATION

See 'National incentives' for government initiatives supporting the development of electric vehicles.



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LESSONS LEARNED

Being at the forefront of the electric vehicle revolution, London is learning as we go. The Mayor's approach has been to tackle the key barriers to take up of electric vehicles: the costs of ownership, lack of infrastructure and public awareness, and to take an integrated, partnership approach to delivery.

TRANSFERABILITY

With no emissions at point of use and "well-to-wheel" carbon dioxide emissions 30-40% lower than comparable gasoline or diesel-fuelled vehicles, EV's will play an important role in tackling both local and global environmental challenges in the future. London has set challenging targets, with an aim to shift to mainstream urban electric vehicle use. Electric vehicles prove themselves to be a clean, practical, and economical option for city driving, and with the range of vehicle models and technological advancements of the technology expanding, will only become more so.

CONTACTS

Email: ev@London.gov.uk or visit: <http://www.london.gov.uk/electricvehicles/>

This report is based on an exhibition from the 2009 Copenhagen Climate Summit for Mayors Future Cities Exhibition. Innovative initiatives demonstrating how cities around the world are combating climate change were on display. For more information, visit www.climatesummitformayors.dk.