Powering Ahead

Fast track to an all electric-city
Electricity is the fuel of the future, allowing us to go about our daily lives with minimum impact on the environment.

Why an all-electric city?

Anyone who has ever struggled to hear a mobile phone call in a London street or choked on a mouthful of fumes would be forgiven for craving a quiet, fume-free city.

It is also becoming a necessity. One in four Londoners has seriously considered moving out of London because of the city’s noise and air quality. 4,300 Londoners die every year from breathing bad air out of 29,000 across the UK. Carrying on ‘business as usual’ will lead to London falling to meet its own greenhouse gas reduction targets. If the capital is going to be one of the world’s leading cities, attracting jobs, growth and investment, then faster action is required.

This paper suggests that a London which is all-electric for power, for heating, for travel, by 2035 is a practical answer.

What is an all-electric city?

London today is powered by a mix of electricity, mains gas, diesel and petrol. In our all-electric city, gas powered heating and petrol / diesel vehicles are progressively replaced with electric sources as they reach the end of their lives. Buildings will be heated and cooled by heat pumps, rather than gas. Our vehicles will all be electric – supported by a city-wide network of electric hire cars. They will all be running on much lower carbon electricity as the National Grid decarbonises in the coming years.

Electricity does not emit any pollution at the point of use and is quiet, so there are huge possibilities to improve air quality whilst reducing noise pollution and carbon emissions.

This all-electric city might look and sound utopian, but much of it is on the way right now. Heat pumps use the same technology as fridges and are widely used for heating and cooling buildings in Europe today. Electric vehicles are widespread, and innovation will transform them further over the coming 20 years. The sharing economy is becoming a multi-million pound business, especially for cars.
London generated

44.6%

million tonnes of CO₂ IN 2010

All-electric by 2035 is both possible and affordable

The all-electric city is almost in reach. Energy infrastructure is being upgraded to anticipate new energy demand. Decarbonisation of the UK’s electricity supply from the National Grid is already underway. By 2035 almost every bus, taxi and car on the road will have been changed from today’s fleet. The vast majority of existing boilers will have reached the end of their life and been replaced. So it’s a simple change to progressively deliver our vision.

The all-electric city is also affordable. Most of our ideas to deliver our all-electric city are no or low cost or can be funded on a commercial basis. They also take into account the current economic situation and the importance of keeping energy bills low.

The challenge is to start now

Our all-electric London – or indeed any leading city – will be achieved by clear direction, by policy decisions and leadership.

The biggest challenge is to make a commitment. The all-electric city won’t happen by chance and it will also take time. Buses, taxis, cars and boilers all have an economic life of around fifteen years. Every year of ‘business as usual’ is a year later for delivery of our low noise, clean air city. That’s why we believe 2035 is a reasonable target – close enough to encourage momentum, but far enough away to be realistic.

Going electric - Here’s what you think

In October 2014, WSP teamed up with polling and research consultancy, ComRes, to interview over 1,000 adults living in London about all-electric urban living. Our findings were:

- Almost two in three (63 per cent) Londoners support the city becoming fossil free in the next twenty years.
- Air pollution (16 per cent) is the highest day-to-day problem Londoners face after crime levels and cost of living.
- One in four Londoners (25 per cent) have seriously considered moving out of London because of air and noise pollution.
- Reducing energy bills was the second most important investment priority (18 per cent) for Londoners after building more social housing.
- A majority of Londoners (58 per cent) would support an electric hire scheme.
- The fact that 29,000 people in the UK currently die each year due to harmful air pollution is the top reason for becoming all-electric followed closely by it being cleaner and quieter.

Electricity London was ranked 38th in this year’s Mercer’s quality of life survey - way behind cities such as Vienna and Zurich because of its air pollution and traffic congestion.

- London was ranked 38th in this year’s Mercer’s quality of life survey - way behind cities such as Vienna and Zurich because of its air pollution and traffic congestion.
- Buses and taxis are responsible for almost 50 per cent of all NOx emissions in the City of London.
- Commercial and domestic gas use accounts for 14 per cent of total NOx emissions.
- Air pollution has been linked to heart problems, asthma and other lung diseases, including cancer.
- According to the GLA, 4,300 people a year die every year in London because of poor air quality; the UK-wide estimate is 29,000 premature deaths.
- Full electrification of London by 2035 could bring an overall 37 per cent reduction in NO2 emissions (which harm the airways in our lungs), with greater reductions possible on a local level.
- London has failed to meet European Union agreed air quality standards and recently revealed that it could still fall short in 2035.
- Electric cars emit 100 per cent less pollution than diesel or petrol cars from the exhaust.

1 in 4 Londoners admitted that they had “seriously considered moving out of London because of air and noise pollution”
Electric dreams – our vision

The all-electric city is a great prize. Home and office windows will be thrown open all over the city. Londoners will get a better night’s sleep. Today’s traffic choked, noisy streets will be revitalised as places to relax and drink a coffee. A leading, competitive city that continues to grow and attract jobs and investment. A true breath of fresh air.

In order to achieve an all-electric city by 2035, WSP has a number of practical proposals that could be implemented in London as an example for other cities to follow:

### For Buildings

1. **All new houses and offices to be all-electric from 2018**
   Build a new house today and gas will usually power the heating. The all-electric city will require new houses to be all-electric for heating and cooling to significantly reduce CO₂ emissions.

2. **Replace gas boilers with heat pumps when they reach the end of their life**
   This is not a mandatory change out – just a progressive replacement as existing boilers wear out and need changing.

3. **Do more energy efficiency, faster**
   Currently, the government’s minimum energy performance standards (MEPS) already requires buildings being let to have an Energy Performance Certificate (EPC) rating of E or better from 2018. In order to make a more significant impact we are suggesting amending the target to make all buildings C-rated or better by the 2030s and retrofitted with heat pumps.

4. **Put measures in place to support electric heating**
   To make London an all-electric city we will also need training of the workforce to cover new electric-related skills. London will also need finance for supporting the installation of heat pumps, most likely from the Green Investment Bank.

### For Transport

5. **Create a large scale electric vehicle hire scheme**
   It is fair to assume that by 2030 electric vehicles will be much more cost effective than today, but most likely they’ll still need to be charged. Without having to build a network of cables stringing across the pavement, or buried onto every parking space, we’ll need a network of electric vehicle hire scheme. Similar to the Boris bike scheme but covering the whole of Greater London. This would make it easy to pick up a car and go when you need it.

6. **Larger ultra-low emission zones for drivers coming into the city**
   London could expand its upcoming ultra-low emission zone from the centre to cover Greater London. Demonstrational ‘Electric Only Areas’ could be set up initially in certain areas to address areas of worst air quality.

7. **Taxis and buses take the lead**
   London could set minimum standards for taxi licences and making all electric a requirement for bus concessions from 2021. This will deliver a virtually all electric fleet by 2035 on natural vehicle turnover. Cities could accelerate this phase out by running a taxi scrappage scheme, which could start in 2018.

### Leadership

8. **A bold vision**
   The all-electric city will be achieved by clear signposting, by policy decisions and leadership.
Facing facts - our research taking the London air

Around 29,000 premature deaths in the UK each year are directly attributed to exposure to harmful air pollutant concentrations, with 4,300 of which occur in London.

London’s air quality is bad.

Studies by St George’s Hospital in Tooting have shown that one in 50 heart attack patients arriving into London hospitals are thought to be the victims of air pollution. Current estimations suggest that around 29,000 premature deaths in the UK each year are directly attributed to bad air quality and more than 4,250 of these occur in London. It is also estimated that air pollution is responsible for a six-month reduction in life expectancy per person, averaged across the population.

We know more needs to be done. London regularly breaches European air quality standards for nitrogen dioxide (NO₂) and particulate matter (PM₁₀). The calls for action are growing and – in a business as usual world – London won’t meet the European standards anytime soon.

London’s pedestrians and cyclists won’t be surprised that almost half of all nitrogen oxides (NOₓ) and fine particulates comes from road transport. Of this, buses and taxis – mainly diesel-run vehicles – are responsible for almost half as well – especially in Central London.

Outside of road transport, burning gas for heating and cooking is also a significant contributor to London’s NOₓ levels.

London is beginning to make progress, but not fast enough. The congestion charge zone has helped reduce NOₓ by 13 per cent and PM₁₀ by 15 per cent compared to 2002 levels. The Mayor has also announced proposals for an ultra-low emissions zone (ULEZ) for the square mile – a zone where only hybrid and electric vehicles will be allowed to enter.

But this won’t be enough.

Cars are getting more efficient but, as the GLA has noted, the Euro standards and other air quality improvement measures have consistently failed to provide the predicted reduction in pollution. The planned ULEZ only covers the very heart of London not the city as a whole.

Air quality continuous monitoring sites London-wide. A red cross indicated exceedence of at least one of the limit values as outlined by the EU limits.

Sources of NOₓ and PM₁₀ in London: Road transport contributes nearly half of total emissions and is the target for the majority of actions outlined in the local Air Quality Attainment Plans (AQAPs). There is a relatively large contribution from non-road mobile machinery for both pollutants, as well as gas for NOₓ and resuspension for PM₁₀. [Source - London Emissions Inventory]
What is Particulate Matter (PM10)?
Particulate matter is released into the atmosphere from a number of sources. The major mobile source is road transport, which produces primary particles when fuels are burned or lubricants used up in the engine, when tyres and brakes wear down and from road dust. The main stationary sources are the burning of fuels for industrial, commercial and domestic purposes. Particles cause the most serious health problems among those susceptible groups with pre-existing lung or heart disease and/or the elderly and children. There is evidence that short and long term exposure to particulate matter cause respiratory and cardiovascular illness and even death.

What are NOx and NO2?
NOx and NO2 is released into the atmosphere when fuels are burned (for example, petrol or diesel in a car engine, or natural gas in a domestic central heating boiler or power station). There is evidence that high levels of NO2 can inflame the airways in our lungs and, over a long period of time, affect how well our lungs work. People with asthma are particularly affected. NO2 can also affect vegetation.

Going electric solves the NOx problem
Electricity emits zero NOx emissions at the point of use, including car exhausts.

Our modelling shows how an all-electric London cuts NOx emissions by around 37 per cent by 2030, compared to a business as usual scenario. Most importantly, an all-electric London is able to meet European NOx air quality standards right across London by 2030, with the exception of the area around Heathrow Airport.

![2014 NO2 map](image1)

An all-electric London meets European NOx target levels faster than a business as usual scenario.

The all electric city cuts NOx levels across London by 37% compared to a business as usual scenario.

<table>
<thead>
<tr>
<th></th>
<th>2014 (µg/m³)</th>
<th>2022 (2030 BAU) (µg/m³)</th>
<th>2030 Electric City (µg/m³)</th>
<th>Total reduction between BAU and Electric City</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLA Average NOx annual mean concentration</td>
<td>24.7</td>
<td>18.8</td>
<td>11.7</td>
<td>37.6</td>
</tr>
<tr>
<td>CLA Average PM10 annual mean concentration</td>
<td>20.1</td>
<td>18.8</td>
<td>18.6</td>
<td>1.3</td>
</tr>
</tbody>
</table>

2022 business as usual

2030 all electric

4: The year 2022 was used to represent likely background concentrations in 2030 (assuming a ‘Business as Usual’ approach) as estimated decreases in background concentrations are not declining in line with the projections. It is therefore considered a conservative approach to take an interim year (2022) to be more representative of a distant future year (2030), and this method is commonly supported by air quality officers within CLA local authorities.
**Particulate emissions will improve as well, especially at street level**

Our modelling on page 10 shows average dust (PM10) emissions are reduced across London, but in lesser amounts than NOx. This is because dust from road traffic comes from both exhausts, vehicle wear and tear – tyres and brakes – and also from traffic stirring up dust on the roadside back into the air. Electric vehicles will still cause this kind of pollution.

Our modelling suggests that particle dust levels would be around one per cent less on average across London in our all-electric world. However, the real benefits of all-electric transport on dust come at street level.

As an example, our models looked at the impact of going all-electric on fine dust concentrations at Oxford Circus, part of London with the worst air quality. Here, buses dominate and cars and taxis sit idling before accelerating away from the lights. Our models showed that fine dust concentrations would be up to 20 per cent lower in the all-electric city – representing an annual average mean reduction in PM10 concentrations of between 4.5 and 6.5 ug/m3.

**Going all-electric: good for London and Londoners’ health**

The 1950s saw the introduction of the Clean Air Act in response to the pea soup fogs. Today’s pollution is less visible but still a key health issue. The solution requires a brave and strong plan to address NOx and PM10 quality. Going all-electric solves the largest problem of all, NOx. It is not a panacea for dust, but going all-electric makes a huge difference for London and for Londoner’s health, whilst making the capital a global air quality leader.
Reducing noise

Cities are noisy places. From the hum of road traffic, emergency sirens, planes taking off and coming into land, and construction work. As the diagram below shows, the streets are the noisiest parts of London and the main source of this noise is road traffic.

Imagine if they could be quieter, like Sunday morning on a weekday?

In our recent survey, road traffic noise ranked as the fourth biggest day-to-day problem for Londoners. In the same survey tackling noise was also ranked fourth for issues the Mayor should prioritise, and one in four Londoners admitted that they had ‘seriously considered moving out of London because of air and noise pollution.’

Traffic noise is the largest source of noise concern to residents, according to the London Household Survey.

Streets are the noisiest parts of London¹
(Source – GLA, 2006.)

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¹ This map displays the Lden parameter at 6 metres above ground, which provides an indication of the annual 24 hour weighted noise level that is used across Europe to focus noise action planning.
Electric (car) Zero exhaust

Diesel/Petrol (car) 0.06/case 0.18

100,000

140,000

80,000

20,000

k g CO 2 per kWh

Electric (car) 0.05

Diesel/Petrol (car) 0.16

160,000

140,000

60,000

80,000

k g NO x emissions

Traffic noise is the largest source of noise concern (Source – London Household Survey 2002)

Reducing noise will help give London a better night’s sleep and may have other health benefits.

All-electric travel has a huge part to play in achieving this. Noise from cars comes from both the engine and from tyres. Below 30mph it’s the engine that contributes most noise, so this is where the most impact can be made, especially given that Central London’s average traffic speed is only 9mph, rising to 12mph as you move further out.

As expected for buses, our measurements show electric versions are much quieter than their diesel counterparts.

Traffic noise is the largest source of noise concern (Source – London Household Survey 2002)

Electric buses are quieter than their diesel counterparts (Source WSP measurements for this study. Note dB are measured in log scales, so a reduction in 10dB is equivalent to a halving of noise levels).

Taking all of these considerations into account, our noise models of the all electric city show a huge difference to today’s city.

A London that is quiet and relaxed, like an early Sunday morning every day is a compelling vision. We can’t promise our all-electric vision will be quite that – we’ll still have the sirens, the construction noise. But it will be much quieter and a better place to sleep.

6 - Mayor’s 2004 Ambient Noise Strategy for London
7 - TfL (2013) Travel in London
Carbon dioxide (CO₂) is the main greenhouse gas produced by human activity and the UK’s government policy is to reduce greenhouse gas emissions by 80% by 2050 compared to a 1990 baseline. In London, the GLA has committed to reduce CO₂ emissions by 60 per cent by 2025. We believe electrification of our buildings and transport is the only realistic way to achieve this target.

Much of the UK and London’s target will be achieved by a progressive switch to low carbon electricity. Generating electricity from small and large scale renewable technologies and, of course, a new fleet of nuclear power stations. This means that progressively using electricity will become a much lower source of greenhouse gases.

For this reason, the all-electric city emits much lower levels of greenhouse gases than one which continues to run on a mix of electricity, gas, petrol and diesel.

In our all-electric city, buildings are heated and cooled using heat pumps and people get from A to B in electric cars. It’s much more efficient. Using electric heat pumps in our homes, offices and shops will emit much less CO₂ emissions than either gas heating or combined heat and power engines (CHP).

Taking to the streets in electric cars would also bring significant results, as they emit 70 per cent fewer CO₂ emissions than petrol and diesel cars (see table 1). They also require less energy consumption than their non-electric equivalents.
London won’t meet its greenhouse gas targets without doing something different.

London will not reach its target if it continues ‘business as usual’ and does not make the commitment to electrify the city.

In fact, WSP’s analysis of current GLA projections – which take into account some energy efficiency measures and an increase in population (figure 2) – suggest that if we were to continue without increased electrification of the city, emissions will not only fail to meet the 2025 GLA target by 2030, but energy consumption will actually increase as the population rises. This is the case even if we make the optimistic calculation that 25 per cent of vehicles will be electrified by 2030.

Conversely, total citywide electrification from switching to heat pumps and electric vehicles would reduce energy consumption to below 80,000GWh, because electricity is much more efficient than natural gas and petroleum. In addition, there will be a far greater reduction in emissions than currently expected by 2030, meeting the GLA’s emissions target for 2025 on the way.

Overall, if London were to become an all-electric city it would result in a reduction in CO2 emissions by 2030 of 17.19Mt CO2 per annum compared to the business as usual plan. This equates to about the emissions of Birmingham (5.85Mt), Manchester (2.94Mt), Glasgow (3.56Mt) and Leeds (5.04Mt) combined at 2012 levels.

Why switch to heat pumps?

Heat pumps take heat from the air or ground and upgrade it to a useful temperature where it can heat our buildings or provide hot water by compression. Heat pumps deliver heat (or cooling) from National Grid electricity. We are all familiar with heat pumps – if you have a fridge you already own one. In many countries they are ubiquitous.

They’re cost effective as well. Heat pumps are widely installed now and costs continue to come down as technology improves. Running costs are similar to gas boilers and cheaper than most district heating from combined heat and power engines.

They’re also a tool of the future, as our homes and offices will need cooling as well as heating, as the climate warms. Without electrification, Londoners will be buying boilers and cooling separately.

FIGURE 6

Electric heat pumps and cars are much more efficient than their fossil-fuelled competitors. (WSP | Parsons Brinckerhoff analysis)

<table>
<thead>
<tr>
<th>Buildings</th>
<th>Kg CO2 emissions per kWh (20 year average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas boilers</td>
<td>0.22</td>
</tr>
<tr>
<td>Gas boilers combined heat and power (CHP) boiler</td>
<td>0.23</td>
</tr>
<tr>
<td>Heat pumps</td>
<td>0.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport</th>
<th>Kg CO2 emissions per km (20 year average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel / Petrol car</td>
<td>0.1</td>
</tr>
<tr>
<td>Electric car</td>
<td>0.03</td>
</tr>
</tbody>
</table>

FIGURE 7

London’s total energy use goes up in a business as usual world and it’s greenhouse gas emission target won’t be met. The all electric city is the solution.
Heat pumps are a better answer than combined heat and power or gas boilers.

In contrast to heat pumps, combined heat and power (CHP) engines use gas to produce both heat and electricity – reducing the demand for electricity from the National Grid. CHP has been favoured in the London Plan9 because today the electricity they generate, alongside the heat, is much less carbon intensive than the standard National Grid supply. However, as mains electricity progressively decarbonises, this advantage erodes. From the mid-2020s we calculate that gas-fired CHP becomes a more carbon-intensive way of supplying heat and electricity than the mains electricity (see Figure 8).

- Gas boilers emit the same amount of CO₂ for each unit of heat they generate.
- Air source heat pumps, generate heat from the National Grid. As this decarbonises, the carbon emissions per unit of heat go down.
- Gas fired combined heat and power engines burn gas to generate heat and electricity. Today emissions are low as the electricity used avoids using high carbon mains electricity. However as the National Grid is decarbonised, generating electricity by burning gas in a CHP becomes a higher carbon alternative. WSP analysis shows:

In future we will need to consider not just heating but cooling. UK town centres can today be up to 10°C hotter than the surrounding countryside. The average summer in the 2050s will be today’s heatwave. London faces a massive latent demand for air conditioning – driving a huge increase in energy demand. An all-electric city, driven by heat pumps and electric cars, using low carbon energy may provide a practical answer. Lower carbon emissions, lower energy demand will create a more resilient, leading city.

From the mid-2020s we calculate that gas-fired CHP becomes a more carbon-intensive way of supplying heat and electricity than the mains electricity

FIGURE 4

Comparison of ASHP, CHP, and Gas Boiler

Forward steps to an electric future

‘UK cities will be all electric by the end of the century.’

Given the power of the evidence, we believe that most UK cities will be all electric by the end of the century. The challenge is to make this happen faster, solving air pollution from traffic, building a quieter society and, using renewable energy, dramatically cutting carbon emissions.

By 2035, much will have changed from today. Almost every bus, taxi and car on the road will be new. The vast majority of existing boilers will have reached the end of their life and been replaced. Renewable energy will already be delivering much of our electricity and most cities’ electricity infrastructure will have been upgraded in line with plans that are already on the drawing board.

The building blocks are in place; the opportunity is to complete the job. Here are eight practical ideas to help London deliver the all-electric city by 2035.

For Buildings
1. All new houses and offices to be all-electric from 2018
Build a new house today and gas will usually power the heating. In the future heat pumps will provide the lowest CO₂ emission heating at the same operating price as a gas boiler. Heat pumps can also provide cooling as well as heating – something not usually needed today in London, but which will be an absolute necessity as cities become warmer. This is already an issue in some flats.
2. Replace gas boilers with heat pumps when they reach the end of their life
The all-electric city will be delivered by replacing gas boilers with heat pumps when they reach the end of their lives. We don’t suggest this is mandatory – just a progressive replacement as existing boilers wear out and need changing.

3. Do more energy efficiency, faster
Heat pumps work well in energy efficient buildings so getting on with insulating buildings and blocking up the draughts is key for the all-electric city. Few cities are really grasping the nettle today. London has a modest commitment to ‘have a plan’ for retrofitting buildings – by 2020. However, to be an all-electric city by 2035 faster action is required. London needs more funding for the existing energy efficiency schemes (RE:FIT and RE:NEXT) or a new financial model. Currently, the government’s minimum energy performance standards (MEPS) already require buildings being let to have an Energy Performance Certificate (EPC) rating of E or better from 2018. This will undoubtedly help improve energy efficiency in homes, but to make a more significant impact we suggest amending the target to make all buildings C-rated or better by the 2030s and retrofitted with heat pumps. To make London an all-electric city we will also need to:
- Upgrade the existing London Plan’s energy policies to provide local standards.
- Train London’s workforce, from architects to plumbers and engineers to electricians, to provide the necessary new skills. In London, this could be delivered through the GLA’s Strategic Labour Needs and Training (SLNT) programme, supported by the Skills Funding Agency, the National Careers Service and entry-level training programmes such as City and Guilds.
- Financially, it’s possible that the initial higher capital cost of installing heat pumps could be offset by grants or loans from the Green Investment Bank.

4. Put measures in place to support electric heating
For many, the economic case for heat pumps already adds up with the Renewable Heat Incentive, which pays participants that generate and use renewable energy to heat their buildings. For those without upfront funding, investors can already use the Renewable Heat Incentive to reduce the up-front cost of installations to no more than that of standard boilers. To make London an all-electric city we also need to:

For Transport

5. Create large-scale electric vehicle hire schemes
It is fair to assume that by 2030 electric vehicles will be much more cost effective than today, but most likely they’ll still need to be charged. To avoid having to string a network of cables across the pavement or bury them into every parking space, we’ll need a an electric vehicle hire scheme. This can be similar to the Boris bike scheme, but covering the whole of Greater London, making it easy to pick up a car and go when you need it. To do this, our leading cities need to act now by using existing trials as stepping stones to larger scale schemes.

6. Larger ultra-low emission zones for drivers coming into the city
London is one of a number of cities to have committed to implementing ultra-low emission zones that could be dominated by electric vehicles. London’s current proposals are clearly a step in the right direction but it affects only a small area, and still exempts diesel taxis and buses. A zone extending out from the square mile and Central London would provide the incentive to drive electric in our electric cities. As a starting point, leading cities could set up a series of demonstration ‘Electric Only Areas’ in the suburbs.

7. Taxis and buses take the lead
Stockholm has led the way on clean vehicle fleets since 2006. A key part of this has been demonstrating new technologies in buses, taxis and lorries that the city runs. Today only low emission taxis can serve Arlanda airport. London could provide a similar example by setting minimum standards for taxi licences and making all-electric a requirement for bus concessions from 2021. This will deliver a virtually all-electric fleet by 2035 on natural vehicle turnover. Cities could accelerate this phase-out by running a taxi scrappage scheme – similar to what is already proposed in London for private cars but more widely targeted. This could start in 2018, when all new taxis applying for licensing in London will have to be zero emissions capable.

Leadership

8. A bold vision
The all-electric city will be achieved by clear signposting, by policy decisions and leadership. It’s an optimistic vision, which needs current and future leaders to grasp the opportunity, to be bold, and to set commitments.
The need for speed

At WSP we don’t have a crystal ball, but the signs have been there for a long time that for sustainable city living, the future is electric.

There is a strong argument to speed up the process to clean up our cities and make urban life better for everyone.

This is not a ship that will sail without us; eventually we will live in all-electric cities. But the longer we fail to recognise it the more expensive it may be to get there and we will live in worse environments and less competitive economies in the meantime.

If you are as excited about the idea of going electric as we are, you will want to join the debate. You can find us at www.wsp-pb.co.uk

Making London the All Electric City

What's wrong?

According to the Greater London Authority (GLA):

- 43,000 people a year die every year in London due to poor air quality.

What Londoners think?

- 1 in 4 Londoners admitted that they had “seriously considered moving out of London because of air and noise pollution.”
- 58% would support an electric hire car scheme.
- 1 in 4 Londoners was ranked 38th in this year’s Mercer’s quality of life survey.
- 1 in 4 Air pollution is the highest day to day problem Londoners face after crime levels and cost of living.

WSP idea’s

- Gas boiler and gas powered combined heat and power (CHP) engines: X
- Electric heat pump: ✓
- Taxi scrappage scheme with a trade in value for old taxis: X
- Electric car hire scheme: ✓
- Full electrification of London by 2050 could bring an overall 37% reduction in NO2 emissions.
- Electric cars emit 100% less emissions than diesel or petrol cars from the exhaust.
WSP is one of the world’s leading engineering professional services consulting firms. We are dedicated to our local communities and propelled by international brainpower. We are technical experts and strategic advisors including engineers, technicians, scientists, architects, planners, surveyors and environmental specialists, as well as other design, program and construction management professionals. We design lasting solutions in the Property & Buildings, Transportation & Infrastructure, Environment, Industry, Resources (including Mining and Oil & Gas) and Power & Energy sectors as well as project delivery and strategic consulting services.

With 7,640 talented people in the UK and more than 42,000 globally, we engineer projects that will help societies grow for lifetimes to come. WSP has been involved in many high profile UK projects including the Shard, Crossrail, Queen Elizabeth University Hospital, Manchester Metrolink, M1 Smart Motorway, the re-development of London Bridge Station, and the London Olympic & Paralympic Route Network.