The Move Towards Sustainable Transport
London

- World City and gateway to the UK
- 7.5m residents
- 4.6m people in employment
- 30 million visitors a year
- 330,000 businesses
- 23.8 million trips per day
- Growing population
London Plan population forecasts

London’s population 1971–2031

Source: GLA DMAC
Mayor’s Transport Strategy

Six goals in Mayor’s Transport Strategy

• Support economic development and population growth

• Enhance the quality of life for all Londoners

• Improve the safety and security of all Londoners

• Improve transport opportunities for all Londoners

• Reduce transport’s contribution to climate change and improve its resilience

• Support delivery of the London 2012 Olympic and Paralympic Games and its legacy
London
Traffic management
- 580km of major roads (including bridges and tunnels)
- 6,000 traffic signals
- Congestion Charging Scheme

London Underground
4m journeys per day

Expenditure in 2009/10 = £9.0bn

Responsibilities

London Buses
- 8,500 buses
- 6m journeys per day

Taxis and Minicabs
- 22,000 black cabs
- 44,000 minicabs

River Services
- Docklands Light Railway, Tramlink and London Overground
- Dial-a-Ride
- Cycling

Walking

Low Emission Zone
Demand for London’s transport

**Buses**

**London Underground**
London Overground

260% Growth in passengers (2007-2012)
Emirates Airline

An average of 31,601 passengers per week
Crossrail

30-40% Capacity Increase
Public transport capacity:
Line capacity increases on the Underground

Increase in Peak Capacity into Central London

Note: Circles show percentage increase from 2006 in peak capacity for each individual line.
Tube Upgrade Programme

- Upgrades to every Tube line – trains, track, signalling
- Stations
- Accessibility
- Tackling high temperatures
- Communications and customer information
- Keeping London moving while we transform the Tube
## Capital delivery – already delivered

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jubilee line</td>
<td>Two minute peak service timetable delivered</td>
</tr>
<tr>
<td>Victoria line</td>
<td>Upgrade complete with full fleet replaced; new timetable in place</td>
</tr>
<tr>
<td>SSR upgrade</td>
<td>Full S8 fleet now in service; first H&amp;C trains now in service</td>
</tr>
<tr>
<td>Northern line</td>
<td>New signalling live between West Finchley and High Barnet</td>
</tr>
<tr>
<td>Overground</td>
<td>Record demand; orbital route now complete</td>
</tr>
<tr>
<td>Emirates Air</td>
<td>Over 31,000 trips in one day during the 2012 Games</td>
</tr>
</tbody>
</table>
But we have a lot more still to deliver

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Contactless Bank Card Technology</td>
</tr>
<tr>
<td>2014</td>
<td>Northern line Upgrade Completion</td>
</tr>
<tr>
<td>2014</td>
<td>Wimbledon Pinchpoint</td>
</tr>
<tr>
<td>2015</td>
<td>18% Reduction in 2010 LCH (Annex B)</td>
</tr>
<tr>
<td>2015/16</td>
<td>Overground Additional Cars</td>
</tr>
<tr>
<td>2016</td>
<td>TCR New Facilities Open</td>
</tr>
<tr>
<td>2017</td>
<td>Congestion Relief at Bond Street Complete</td>
</tr>
<tr>
<td>2018</td>
<td>SSR Signalling Upgrade Complete</td>
</tr>
<tr>
<td>2018</td>
<td>Victoria Station Upgrade Complete</td>
</tr>
<tr>
<td>2019</td>
<td>DLR North Double Tracking Complete</td>
</tr>
<tr>
<td>2016-2020</td>
<td>Jubilee and Vic line up to 36 TPH</td>
</tr>
<tr>
<td>2020</td>
<td>Battersea Extension Complete</td>
</tr>
<tr>
<td>2021</td>
<td>Bank Congestion Relief Complete</td>
</tr>
<tr>
<td>2022</td>
<td>Northern Line Upgrade 2 Complete</td>
</tr>
<tr>
<td>2024</td>
<td>Bakerloo + W&amp;C Line Upgrades Complete</td>
</tr>
</tbody>
</table>
Performance

- 2011/12 – best ever Tube performance despite carrying more passengers than ever before
- Reliability – 40% reduction in delay since 2007/08 (measured by LCH)
- Customer satisfaction – best ever results in 2011/12 – score of 80 (85 during Games)
- Volume of service – running more trains than ever before - 72.4m train km in 2011/12
- Focus on predicting and preventing failures; responding more quickly to problems; and rolling out better equipment
- Mayoral commitment to reducing delays by a further 30% by 2015
Smarter Travel initiatives

Smarter Travel - persuasion and the provision of information, supported by small-scale infrastructure schemes, designed to encourage greater use of sustainable travel modes.

Core Elements:

• School travel planning
• Workplace travel planning
• Personal travel advice and information
• Advertising, marketing and promotion
• Car clubs
• A car sharing scheme
• Cycle parking
• Active Steps (Physical Activity Project)
Smarter Travel initiatives

Over 3 years the programme has resulted in:

• a 75% increase in cycling
• a 16% increase in bus patronage
• a 3% increase in walking, and
• a 6% decrease in car use
...and London is taking new bold steps to accelerate EV adoption
Marketing and incentives

• Pan London brand will highlight information, charging and other incentives across London

• Incentives
  ➢ UK Government grant for Electric cars
  ➢ No congestion charge
  ➢ Business fund providing grants for workplace charge points
  ➢ Vehicle trials

• Communication strategy aimed at likely early adopters and businesses
Hybrid buses

• By 2012 all new buses coming on to London’s roads will be hybrids.
• Hybrid buses are cleaner and greener than their diesel counterparts.
• Hybrid buses are also significantly quieter than diesel buses.
Reducing emissions from transport (1)

New smarter travel schemes – building on existing TfL initiatives
- Promoting eco-driving
- Travel plans (inc freight)
- Anti-idling campaigns and enforcement

Promoting cleaner vehicles
- Electric Vehicle Delivery Plan
- Procurement processes

Tailored action plans for priority locations (from summer 2010)
- Power washing streets and applying dust suppressants
- Redeploying cleanest buses
- Traffic management

Reducing emissions from public transport
- Reductions in bus fleet emissions
- Age based limits for taxis and PHVs
Reducing emissions from transport (2)

Low Emission Zone:

- Tighter standard for lorries, buses and coaches from 2012
- Vans and minibuses included from 2012
- New NOx standard for lorries, buses and coaches

Air Quality Action Days and Special Measures

- Special measures during extreme pollution episodes
- Planned regular events to encourage mode shift to cycling and walking.

Congestion Charge

- Already resulted in reduction in CO₂, NOx and PM10’s
Improved Driver Efficiency: Driver training

• First Group trial in 1,000 buses in London using in-vehicle monitoring devices

• Real-time feedback on driving style and driving reports to focus training

• Around 5% fuel saving already achieved

• Explore possibility of similar applications for other professional drivers
New bus for London

• 3 doors
• 2 staircases
• 15% more fuel efficient than existing hybrid buses.
• 40% more efficient than conventional diesel double deckers.
• Red bus with a green heart
November 2010
The New Bus for London story
# Emissions test comparison

<table>
<thead>
<tr>
<th>TfL “route 159” test</th>
<th>CO₂ g/km</th>
<th>Economy Mpg</th>
<th>NOx g/km</th>
<th>HC g/km</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBfL target</td>
<td>750</td>
<td>10.3</td>
<td>5.00</td>
<td>0.015</td>
</tr>
<tr>
<td>NBfL certified result</td>
<td>640</td>
<td>11.6</td>
<td>3.96</td>
<td>0.000</td>
</tr>
<tr>
<td>Avg. Hybrid</td>
<td>864</td>
<td>8.6</td>
<td>7.70</td>
<td>-</td>
</tr>
<tr>
<td>Avg. Euro V diesel</td>
<td>1,295</td>
<td>5.8</td>
<td>9.30</td>
<td>-</td>
</tr>
</tbody>
</table>
The New Bus for London story

- Hearts for decorations
- Stand clear of doors
- Flowerly heads to be seen well
- Safety

© TfL 2012
Better streets, walking and cycling

Proposals for ‘making walking count’
• Better streets
• Making it easier to plan journeys on foot
• Development of the Key Walking Route

Bringing about a revolution in cycling in London
• Working in partnership
• Raising awareness and ‘mainstreaming’ cycling
• Improving cycle infrastructure, cycle training and safety
• Superhighways and cycle hire
Legible London
Complete roll out of Legible London across TfL estate
Build on the success of wider LL application to deliver wider objectives, such as congestion relief.

- Legible London maps - tool to promote and support walking campaigns
- Explore the use of Legible London during events to manage station capacity and large-scale footfall
Proximity of Tube Stations

Transport for London
Cycling

THE MAYOR’S VISION FOR CYCLING IN LONDON
An Olympic Legacy for all Londoners

MAYOR OF LONDON
Transport for London
London Cycle Hire scheme

- 6,000 bicycles
- 400 cycle stations
- Evenly distributed
- 10,200 docking points
- Area 45km²
- 24 hour operation
- Summer 2010 scheme launch
- 800,000 cycle hires / month
A new network of cycle routes in central London
- catering for the high density of potential cycle trips in Central London

Central London Cycle Grid

This will provide:

- Separated cycle ways, with segregation and low speed environments where practicable and appropriate

- Two-way cycling on one-way streets

- Clear way finding, strong identity and easy to see

The majority of the Grid will be complete by 2016
The Mayor’s Vision for Cycling in London

Key Outcomes

1. A tube network for the bike
   - Providing a network of cycle routes across London

2. Safer streets for the bike
   - A range of measures to improve cycle safety at junctions and targeting HGV safety

3. More people travelling by bike
   - Making cycling a mainstream and popular mode of transport

4. Better places for everyone
   - More cycling will benefit everyone, not just cyclists

TfL’s Business Plan includes circa £900m funding to deliver the Cycling Vision
A Cross rail for the bike
- a new cycle artery through London

This will:

• Substantially segregated two-lane cycle route
• Be the longest continuous substantially-segregated urban cycle route in Europe
• Link together as many of the existing (and proposed) radial routes as possible
• Provide peak-hour cycle journey times that are comparable to, or quicker than, their rail or car equivalents

Substantially delivered by March 2016
Better Barclays Cycle Superhighways
- higher quality routes for commuter journeys

- Existing Barclays Cycle Superhighways will be improved
- New standards will include:
  - More segregation from traffic
  - Mandatory cycle lanes
  - More protection for cyclists at junctions
  - Deeper ASLs
  - ‘Floating’ bus stops
  - Removal of parking

Delivery 2013 - 2016
Quietways
- *making cycling more comfortable and inclusive*

A cross-London network of high-quality guided Quietways will be created on low-traffic back streets and other routes so different kinds of cyclists can choose the routes which suit them.

This will:

– Offer cyclists the option of a network which offers low traffic, low speed roads with high quality routes

– Open up back street routes, parks and other green space

– Provide clearly signed, well surfaced direct routes

Delivery 2014 onwards
“Mini-Hollands” in the suburbs

The “mini-Holland” programme will target potential for cycling in Outer London by providing funding for the radical transformation of up to three outer London town centres to make them as cycle-friendly as their Dutch counterparts.

“Mini-Hollands” will include large-scale, radical and transformational cycle infrastructure including:

- A route for commuter journeys to central London
- Cycle superhubs at local railway stations
- A network of Quietways routes radiating from the centre
- Complementary and supporting promotional measures to accompany infrastructure improvements

Delivery 2014 onwards
Better Junctions + Cycle Hubs  
- reducing the number of collisions at junctions

- 85% of cycle collisions in London take place at junctions.

- Review of junctions across London, particularly to increase cycle safety

- Cycle Hubs – at mainline stations

- 80,000 extra parking spaces

Delivery 2012 onwards
Better Places for Everyone

Cycling will benefit everyone, not just cyclists, creating:

- **Better neighbourhoods for everyone**
  Improved streetscapes, road surfaces, safety and security measures

- **More prosperous places for everyone**
  Economic benefits of cycling to local town centres, individuals and the wider economy

- **Better cyclists for everyone**
  Improving the perception of, and behaviour of cyclists

- **Better transport for everyone**
  Reducing pressure on the public transport system

- **A healthier city for everyone**
  Cycling improves air quality for everyone.
Central London Congestion Charging Zone
London’s transport problems
Westminster Bridge – End of 19th Century
Why was Congestion Charging necessary?

• Despite 85% public transport usage, vehicular traffic major problem
• 185,000 cars entered central London each day
• Central London most congested area in UK; traffic speeds <9mph
• Congestion persisted throughout the day
• Congestion cost London an estimated £2 billion
• To address this, area-based charging scheme introduced in central London in February 2003
• Objectives of scheme:
  - Reduce traffic and traffic congestion
  - Raise revenue to re-invest in transport.
Average daily traffic entering Charging Zone* 2002 - 2009

* During charging hours (07.00-18.00)
Traffic congestion levels in Charging Zone 2002 - 2009

* Moving car observer surveys - during charging hours (07.00-18.00)
Charge Payment

- Monday – Friday, 7am – 6pm
- £10 on the day of travel
- £12 on the charging day after travel
- £9 for customers on CC Auto Pay
- Daily, weekly, monthly or annual payment for individual vehicle registration number
Payment Channels

- Pay online at www.cclondon.com
- Pay by mobile phone text message
- Pay at selected shops and petrol stations
- Pay by phone on 0845 900 1234
- Pay by post
- CC Auto Pay
- Fleet Auto Pay
Enforcement

• Signs placed at 165 Zone entry and exit points, and up to 17 miles away on main roads into London
• Comprehensive network of road markings exist on Zone boundary and within zone
• Vehicle registration numbers are observed by 650 cameras at 180 sites, covering entry/exit points and within zone
• Circa one million images captured and processed every charging day - cameras linked to Automatic Number Plate recognition (ANPR) technology
• If valid payment is not received for vehicle for the date of travel, the enforcement process commences….
Complementary Transport Measures

Introduction of scheme accompanied by measures designed to make public transport and other alternatives to car travel easier, cheaper, faster and more reliable:

• Substantial increase in bus capacity into and around Zone
• Freeze in public transport fares
• Better information for public transport users
• Frequency improvements on train & Underground services into Zone
• Traffic management measures on diversion routes and roads around Zone.
Other Impacts

• Economy
  – Broadly neutral impact overall on business

• Environment
  – Congestion Charging directly responsible for reductions of traffic emissions inside Zone equating to 8% of NO\textsubscript{x}, 7% of PM\textsubscript{10} and 16% of CO\textsubscript{2}

• Road safety
  – Reduced numbers of cars have led to less personal injury road accidents in the central zone

• Net revenues
  – In 2010/11 Congestion Charging raised £169 million to be spent on other transport initiatives within London.
Traffic congestion \rightarrow \text{CO}_2 \text{ emissions}

Carbon Dioxide Emissions from London

- Domestic: 44%
- Industrial: 7%
- Commercial: 28%
- Transport: 21%

London Transport Emissions

- Car and motorcycle: 49%
- Ground-based aviation: 11%
- Public Transport: 17%
- Road freight: 23%

Mayor’s Targets:

- 60% reduction of London’s CO$_2$ by 2025, from a 1990 base
- 58% reduction in NOx by 2015 from 2008 levels
- 14% reduction in PM10’s in 2011 from 2008 levels
LEZ Boundary
London Low Emission Zone

• Discourage most individually polluting heavy vehicles from being driven in London.

• Daily charge of £200 for non-compliant lorries, buses and coaches.

• By 2012 the LEZ had delivered reductions of:
  – 14% of the area of London where the air quality exceeds the annual PM$_{10}$ objective
  – 20% of the area of London where the air quality exceeds the annual NO$_{2}$ objective

• High rates of compliance have been achieved through targeted communications and warning letters, rather than Penalty Charges
### LEZ definitions and standards

<table>
<thead>
<tr>
<th>Vehicle type and definitions</th>
<th>Date of LEZ scheme implementation</th>
<th>Emission standard (for PM) required to drive in the LEZ at no charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavier lorries - Goods vehicles exceeding 12t</td>
<td>Feb 2008</td>
<td>Euro III</td>
</tr>
<tr>
<td>Lighter lorries - Goods vehicles between 3.5 and 12t</td>
<td>Jul 2008</td>
<td>Euro III</td>
</tr>
<tr>
<td>Buses and coaches - Passenger vehicles with more than eight seats plus the driver’s seat and exceeding 5t</td>
<td>Jul 2008</td>
<td>Euro III</td>
</tr>
</tbody>
</table>
Options for compliance

Options available to operators include:

- Fitting a particulate abatement device
- Fitting a new compliant engine in the vehicle
- Buying a new or compliant second-hand vehicle
- Reorganising fleet so only compliant vehicles travel in zone

Or pay the £200 daily charge

Failure to pay the charge will incur a £1,000 Penalty Charge Notice
Low Emission Zone compliance
Games-time travel planning
Well Connected

The Olympic Park
A Car Free Games - Results

The Emirates Airline had a record of 31,964 journeys on Saturday 11th August 2012.
Public transport for all
Games-time Scheduled Comms

C3 Structure
- Tested C3 structure and outputs
- 24 hour cover during the Games

Personally targeted information
- Twice daily press notices (7am and 4pm)
- Daily Metro content (5am)
- Daily customer emails (2pm)
  - Public transport users (approx. 2m recipients)
  - Road users (approx 1m recipients)
- Daily station posters (3.30pm)
- Twice daily business email updates (4.30am and 2pm)
- Daily stakeholder bulletin (5pm)
- Regular tweets (@TfL and @GAOTG)
- Ongoing online content and Journey Planner updates
However not everything went to plan...
Mode shift

2006
27.6m journey stages

- Car: 41%
- Public transport: 37%
- Walk: 21%
- Cycle: 1%

4% change since 2000

2025
31.2m journey stages

- Car: 32%
- Public transport: 41%
- Walk: 22%
- Cycle: 5%

5m extra journeys must be supported by public transport, walking & cycling
Modal Change 1993 – 2011

Modal Percentage Share of Trips in London (Primary Modes)

- Public transport
- Private transport
- Cycle
- Walk


Percentage of Total Trips: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Graph illustrates the changing modal share of trips in London from 1993 to 2011.
Reasons for Modal Shift

• Investment in Public Transport
  - Additional bus routes / Cleaner vehicles
  - Extra rail capacity
  - Success of Oyster
  - Better passenger information

• Congestion Charging
  - 21% reduction in cars entering Central London

• Emphasis on Walking / Cycling

• Smarter travel initiatives
Thank you for your attention

Further information at www.tfl.gov.uk