London’s Low Emission Zones and Freight Management

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  – Setting the right standards
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Background
London and the Role of the Mayor

- Population – 8.7 million
- Size – 1,572 km²
- 33 Local Authorities

- The Mayor of London’s work includes:
  - making it easier for people to move in and around the city
  - improving London’s environment
  - helping the capital’s businesses to thrive
  - providing Londoners with more affordable housing
  - giving young people in London more opportunities

- TfL is a statutory body of the Mayor of London
Air Quality in London – PM10

Greater London - Annual Mean PM10 concentrations 2013

Legend
PM10 (μg/m³)

- 16
16 - 19
19 - 22
22 - 25
25 - 28
28 - 31
31 - 34
34 - 37
37 - 40
40 - 43
43 - 55
55 - 58
58 - 73
73 - 76
76 - 97
> 97

Limit

MAYOR OF LONDON
GREATER LONDON AUTHORITY

EVERY JOURNEY MATTERS
Air Quality in London – NO2

Greater London - Annual Mean NO₂ concentrations 2013  

Legend
NO₂ (µg/m³)
- < 16
- 16 - 19
- 19 - 22
- 22 - 25
- 25 - 28
- 28 - 31
- 31 - 34
- 34 - 37
- 37 - 40
- 40 - 43
- 43 - 55
- 55 - 58
- 58 - 73
- 73 - 76
- 76 - 97
- > 97

Limit

MAYOR OF LONDON
GREATER LONDON AUTHORITY
CLEANER AIR FOR LONDON

EVERY JOURNEY MATTERS
NO$_2$ – A Europe Wide Challenge
Health and Equalities

Health

• We estimate an equivalent of around 9,400 deaths were caused by long-term exposure to air pollution.

• A baby born in 2010 and exposed to that same level of air quality for its entire life would lose 2.2 years (if male) and 2 years (if female) of life expectancy.

Fairness

• The health impacts associated with air pollution fall disproportionally on our most vulnerable communities, affecting the poorest and those from minority ethnic groups more acutely.

• Tackling air pollution is about social justice and there is an urgent need to do more to tackle public health inequalities.
Sources of Pollution
- London Atmospheric Emissions Inventory (LAEI)

2013 - NO\textsubscript{X} from Road Transport

- Motorcycle: 14%
- Taxi: 10%
- Petrol Car: 19%
- Diesel Car: 28%
- Van: 15%
- TfL Bus: 27%
- Non-TfL Bus and Coach: 16%
- HGV: 16%
London’s Low Emission Zones
Timeline

- 2008 Low Emission Zone launched
- 2012 Low Emission Zone tightened
- March 2015 - Ultra Low Emission Zone in central London from September 2020 confirmed
- May 2016 Sadiq Khan elected Mayor
- June 2016 Announcement of package of air quality measures to bring in ULEZ sooner and expand it
- 2017 consult on expanding ULEZ options
Tackling PM$_{10}$ – The Low Emissions Zone

Heavy Vehicles
- 2008 - Euro 3 standard for PM$_{10}$ ~2000 onwards
- or £200
- In 2012 tightened to Euro 4 standard ~2005 onwards

Vans
- 2012 - Euro 3 standard for PM$_{10}$ ~2001 onwards
- or £100

~size of Greater London

24/7
Ultra Low Emissions Zone

- Euro 4 petrol: ~2006 onwards
  - ...or £12.50 a day
- Euro 6 diesel: ~2015 onwards
  - ...or £12.50 a day
- Euro 3: ~2006 onward
  - ...or £12.50 a day
- Euro VI: ~2014 onwards
  - ...or £100 a day

Exempt vehicles: ~21 km²
Expanding ULEZ to Inner London for All Vehicles

~360 km²

24/7
Expanding the ULEZ Across London for Heavy Vehicles

~size of Greater London

24/7
Emissions Surcharge

- October 2017 start date
- Higher congestion charge of £22.50 for the oldest vehicles (pre-Euro 4)
- Stepping stone towards ULEZ in 2019
Considerations
- how people are affected
Many more residents

Central ULEZ

- 220,000 (residents)
- 85,000 (households)
- 45,000 (cars registered with DVLA which includes business vehicles)
- 30,000 (cars or vans available to households)
- 25,000 (households with at least one car or van available to them)

Less than 30 per cent of households in the zone have a car or van available

Inner ULEZ

- 3.6 million (residents)
- 1.3 million (households)
- 815,000 (cars registered with DVLA which includes business vehicles)
- 780,000 (cars or vans available to households)
- 600,000 (households with at least one car or van available to them)

45 per cent of households in Inner have a car or van available
Who is affected and how?

1. Who has access to cars?
   - ~1.4 million households in the inner charging zone
   - 45% of these have a car or van available
   - Average of 0.6 vehicles per household.
   - Spatial variability with households further out from the centre having on average 1 or more vehicles per household

2. Will these cars be compliant?
   - The average age of cars registered in the inner zone is 8 years
   - Approximately 75% of the cars registered in the inner charging zone will be compliant with the ULEZ standards

3. Areas of multiple deprivation, income and car ownership
   - Multiple deprivation takes into account household income, employment, education, health, crime, barriers to housing / services and living environment. Some of England’s most deprived areas are within the inner charging zone (see the two darker shades for 10% most deprived areas in England).
   - Typically the areas of higher car ownership in map 1 correspond to areas of least deprivation.
   - In addition, data from LTDS shows that car ownership increases with higher household incomes. In households with an average income of less than £10k, only 15% own a car with this increasing to 30% for household earning between £15k and £20k.
   - The more deprived areas in the north of the zone also correspond to areas of below average compliance (around 65% to 70%)
Considerations - setting the right standard
Legislative Standards

Euro 3
- 0.15g/km

Euro 4
- 0.08g/km

Euro 5
- 0.06g/km

Euro 6
- 0.06g/km

Euro 4 petrol is an equivalent NOx standard to Euro 6 diesel

(diesel)

0.08g/km

0.18g/km

0.25g/km

0.50g/km

(petrol)
Real-world performance

Source: ICCT
TfL’s Own Drive Cycle

New European Drive Cycle (NEDC)

TfL Passenger Car Drive Cycle
TfL Test Data

In-service emissions performance of Euro 6/VI vehicles.

A summary of testing using London drive cycles.

https://www.london.gov.uk/priorities/environment/clearing-londons-air/euro-6-emissions
Considerations - setting the right charge level
How people might respond to the charge

All vehicles in zone

Will meet the emissions requirement

Will not meet the emissions requirement

- Charge has make the cleaner, compliant vehicle the cost effective option for people
- Want to encourage frequent users of the zone (and therefore contribute most to pollution) to change their vehicles
- Want to still allow low levels of infrequent travel but at a cost

- Buy a compliant vehicle
- Pay the charge
- Change travel behaviour
  - Divert
  - Re-mode
  - Re-time
  - Forgo trip
Using Our Camera Data

Stay in non-compliant vehicle

Buy compliant vehicle

Cost of vehicle per day in CCZ

Number of days in CCZ per year

- Non-compliant vehicle
- Non-compliant vehicle + daily charge
- Compliant vehicle
Freight Management
Freight Policy Needs Support From Across the Public Sector and the Supply Chain

**Mitigate the impact of freight trips**
- Each delivery in the safest and cleanest vehicle.
- This includes vehicles servicing TfL buildings and public sector projects.
- Supporting businesses transition to ULEZ compliant vehicles.
- Looking ahead to plug in and alternative fuelled vehicles.

**Minimise trips**
- Land use planning policy to minimise freight trips.
- Encourage more trips by water, rail or bike where practical.
- Encourage more consolidation. Many companies already consolidate to save money.
- Restrict or charge for access to the road network to drive change.

**Match freight demand to network capacity – right time, right route, right place**
- Shift freight trips out of peak periods.
- Ensure freight uses the right routes and the right delivery points.
Case Studies