# Air Quality Fact Sheet: Emissions Savings from ULEZ Policies

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## Impact of ULEZ on London's Emissions

1.1 London's Low Emission Zone (LEZ) came into force in 2008 to help reduce traffic pollution in London, and the standards became more stringent in March 2021. The Ultra-Low Emission Zone (ULEZ), originally covering the congestion charge zone in central London, came into force in April 2019, and was expanded outward to the North and South Circular Roads in October 2021 (referred to as the Inner London ULEZ in this report). The ULEZ was expanded again to cover all of outer London at the end of August 2023.

1.2 The Mayor of London's One Year Report on the Inner London ULEZ[1] evaluates the impacts of the Inner London ULEZ one year on from its expansion to Inner London, and the LEZ over one and a half years after the more stringent standards came into force.

1.3 The report provides estimated emissions reductions that have occurred as a result of the Inner London ULEZ and LEZ policies, and the reductions that would have occurred regardless of its implementation (i.e., due to the natural turnover of the vehicle fleet towards cleaner technologies). It estimates that the implementation of the Inner London ULEZ and LEZ policies reduced NOx emissions from vehicles between 2019 and 2022 by:

- 27% in Central London;
- 26% in Inner London; and
- 21% in Outer London.

1.4 It also estimates that the Inner London ULEZ and LEZ policies reduced $PM_{2.5}$ emissions from vehicles between 2019 and 2022 by:

- 19% in Central London;
- 10% in Inner London; and
- 5% in Outer London.

## London's Emissions in 2019

1.5 The London Atmospheric Emissions Inventory (LAEI) dataset[2] provides NOx and $PM_{2.5}$ emissions generated by different sources within Central, Inner and Outer London. The latest baseline year within the LAEI dataset is 2019, and it includes forecasts for both 2025 and 2030; the values from 2019 have been used here. Figure 1 shows the proportions from each source to total NOx emissions in Central, Inner and Outer London and the entire Greater London Authority (GLA) area, and Figure 2 shows the $PM_{2.5}$ emissions.

1 Mayor of London (2023), Inner London Ultra Low Emission Zone – One Year Report

2 GLA and TfL (2021), London Atmospheric Emissions Inventory (LAEI) 2019 [online]. Available: https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2019

1.6 Figure 1 illustrates that in 2019 in Inner and Outer London, Road Transport is by far the largest source of NOx emissions, while in Central London the largest source is Industrial and Commercial Gas Combustion; 24% of all NOx emissions in Central London, 45% in Inner London and 45% in Outer London were estimated to be due to Road Transport emissions.

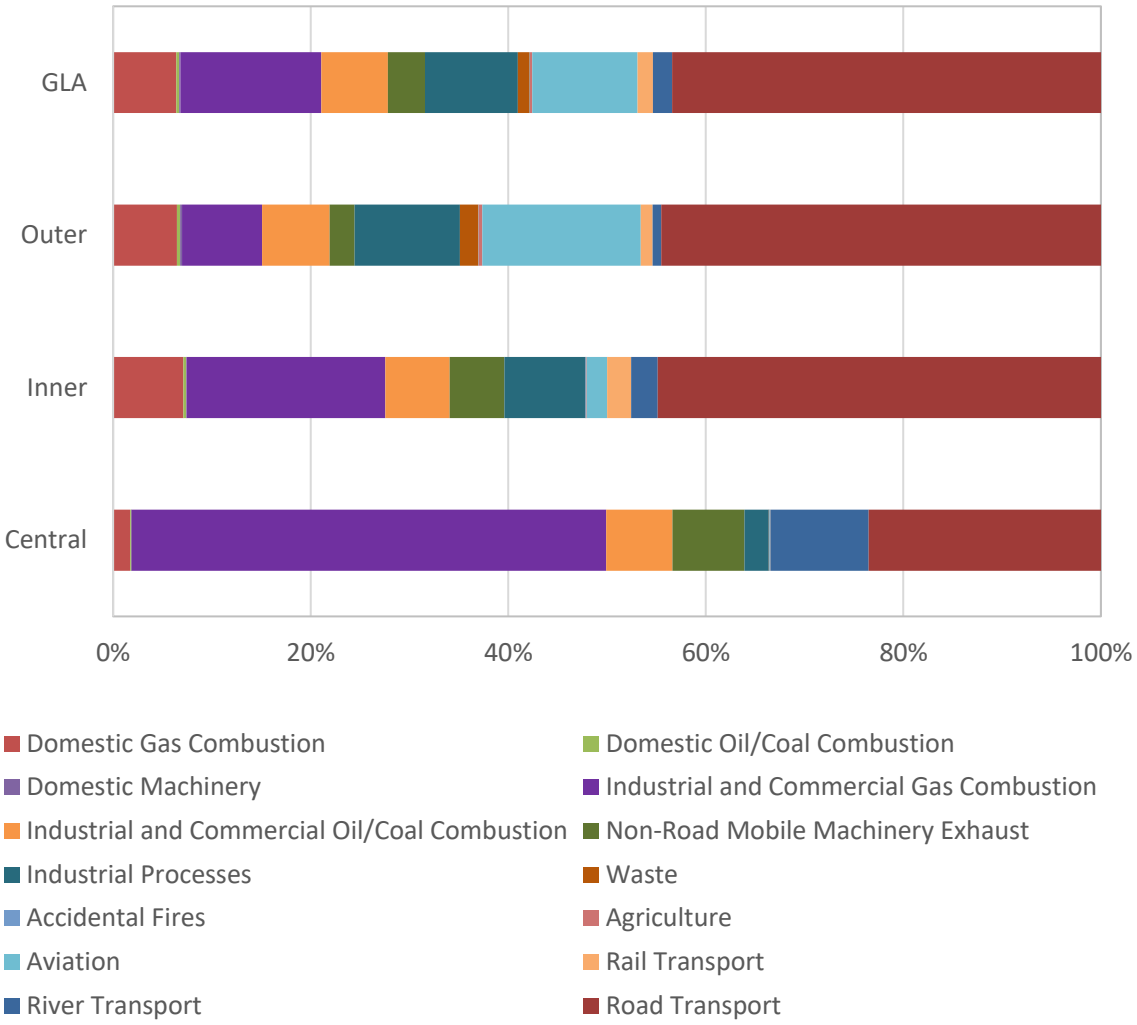


**Figure 1: Proportion of NOx emissions by source in 2019 from the LAEI.**

1.7 $PM_{2.5}$ emissions from Road Transport make up a smaller proportion of the total compared to NOx, with 11% coming from road traffic in Central London, 30% in Inner London and 34% in Outer London, however Road Transport is still the largest source of emissions in Inner and Outer London. In Central London the largest source is Commercial Cooking (Figure 2).

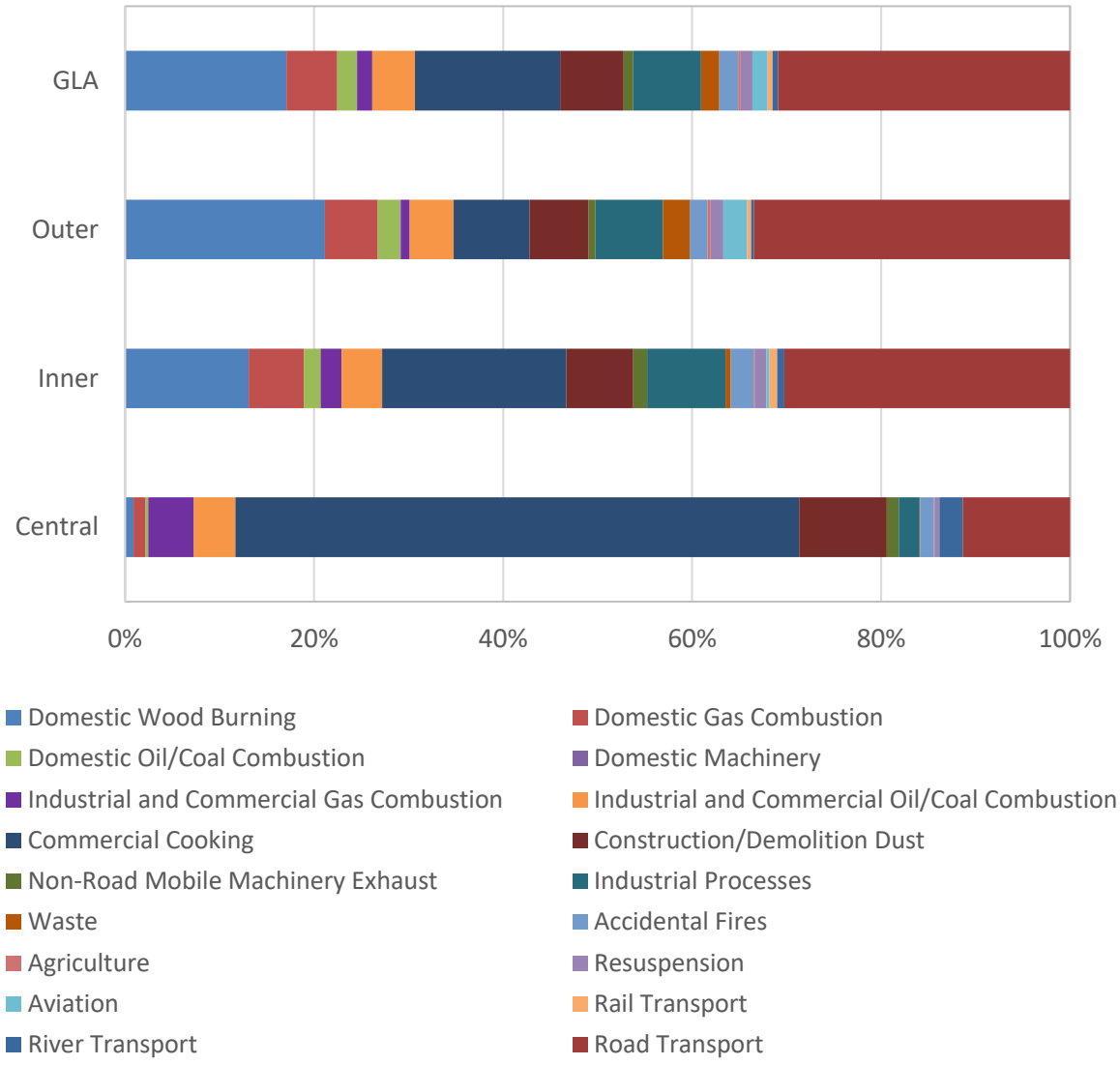


**Figure 2: Proportion of $PM_{2.5}$ emissions by source in 2019 from the LAEI.**

## Equivalent Emissions

### *NOx*

1.8 The One Year Report[1] estimates that the implementation of Inner London ULEZ and LEZ policies reduced road traffic NOx emissions by 4,928 tonnes between 2019 and 2022 for the Inner London ULEZ area (a 26% reduction overall). Across London, the Inner London ULEZ and LEZ policies were estimated to have led to a reduction of 13,554 tonnes (a reduction of 23%). This can be compared to NOx emissions within the GLA area in 2019, based on the LAEI, from:

- **Example 1:**
  - All River Transport (including commercial shipping, passenger shipping and small private vessels = 702 tonnes); and

    - All Industrial and Commercial (including heat and power generation, commercial cooking, construction, industrial processes and waste = 12,620 tonnes)
- **Total 13,322 tonnes**[3].

1.9 Or:

- **Example 2:**
    - All Domestic (including heat and power generation and household and garden machinery = 2,431 tonnes);
    - Aviation[4] (3,807 tonnes); and
    - Industrial and Commercial Heat and Power Generation (7,502 tonnes)
- **Total 13,740 tonnes**[3].

1.10 The reduction in traffic NOx emissions as a result of Inner London ULEZ and LEZ policies between 2019 and 2022 across London, and the equivalent NOx emissions in 2019 set out in Examples 1 and 2 above are shown in Figure 3.

[3] Based on unrounded numbers.

[4] The LAEI 2016 Methodology document (https://data.london.gov.uk/download/london-atmospheric-emissions-inventory--laei--2016/02dc3d47-2324-43af-bada-aee4805e64b6/LAEI%202016%20methodology%20-%20Final.pdf) describes the aviation emissions subsector as including Heathrow Airport, London City Airport and all other small airports within the LAEI boundary. For each airport, emissions from aircraft, airside vehicles, landside vehicles and stationary sources have been included where relevant.

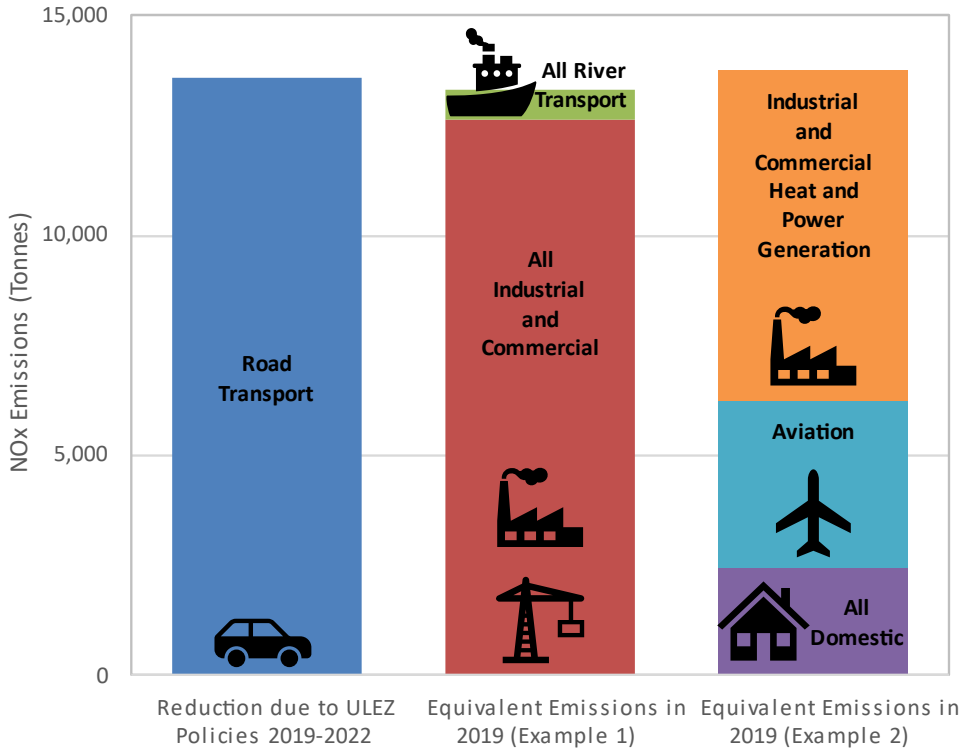


**Figure 3: Estimated reductions in NOx (tonnes) due to ULEZ policies between 2019 and 2022 and equivalent 2019 emissions from different sources within the LAEI.**

### *$PM_{2.5}$*

1.11 In terms of $PM_{2.5}$, the One Year Report[1] estimates that the Inner London ULEZ and LEZ policies reduced road traffic emissions by 80 tonnes in the Inner London ULEZ area between 2019 and 2022 (a reduction of 10%), and 181 tonnes across London (a 7% reduction). This can be compared to $PM_{2.5}$ emissions within the GLA area in 2019, based on the LAEI, from:

- **Example 1:**
  - Aviation (54 tonnes);
  - All River Transport (including commercial shipping, passenger shipping and small private vessels = 18 tonnes);
  - All Rail Transport (including freight and passengers = 20 tonnes);
  - Accidental Fires (67 tonnes); and
  - Agriculture (8 tonnes)
- **Total 166 tonnes**[3].

1.12 Or:

- **Example 2:**

- Domestic Gas Combustion (**179 tonnes**).

1.13 The reduction in traffic $PM_{2.5}$ emissions as a result of Inner London ULEZ and LEZ policies between 2019 and 2022 across London, and the equivalent $PM_{2.5}$ emissions in 2019 set out in Examples 1 and 2 above are shown in Figure 3.

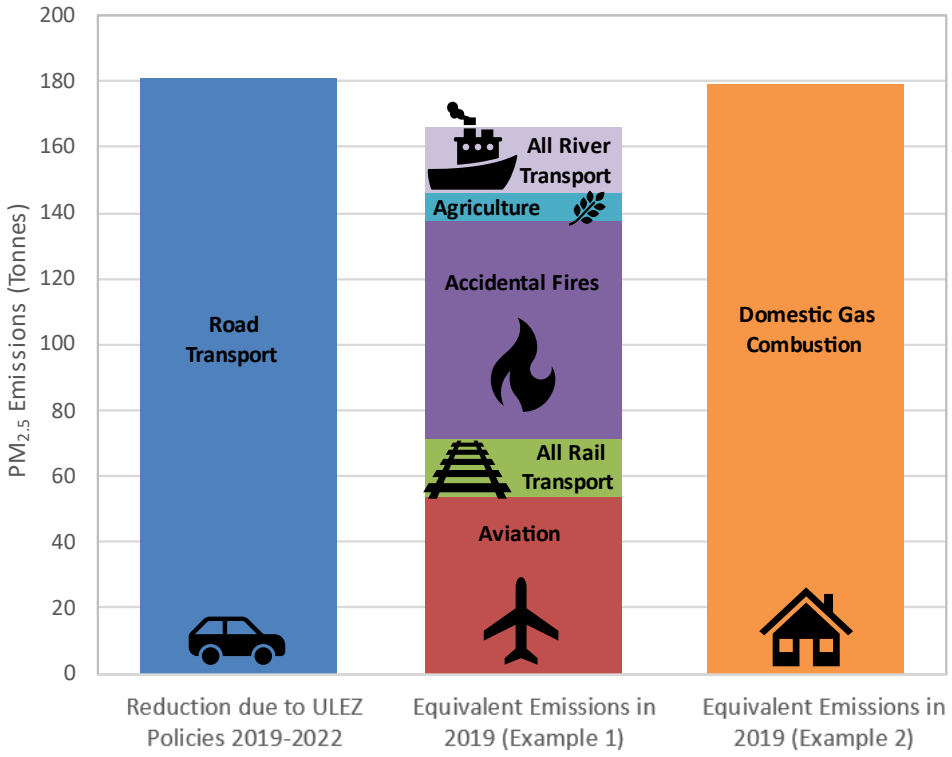


**Figure 4: Estimated reductions in $PM_{2.5}$ (tonnes) due to ULEZ policies between 2019 and 2022 and equivalent 2019 emissions from different sources within the LAEI.**

## Summary

1.14 Road transport was the biggest source of NOx and $PM_{2.5}$ emissions in Inner and Outer London in 2019, but the implementation of the Inner London ULEZ and LEZ policies is estimated to have led to a significant reduction in emissions across London, over and above the reduction that would have occurred due to the natural turnover of the vehicle fleet to newer technologies.

1.15 The reductions in emissions predicted across London as a result of the Inner London ULEZ and LEZ policies between 2019 and 2022 have been contextualised by comparing the totals with emissions from other sources in London in 2019. In some cases, several different sources have been combined to be able to reach equivalent emissions as those predicted to be saved by the Inner London ULEZ and LEZ policies. This highlights the significant impact that these policies are predicted to have in reducing overall emissions in London.