



FIA Foundation and the International Council on Clean Transportation (ICCT) have established The Real Urban Emissions (TRUE) Initiative. The TRUE Initiative seeks to supply cities with data regarding the real-world emissions of their vehicle fleets and equip them with technical information that can be used for strategic decision making.

### **The Real Urban Emissions (TRUE) Initiative comments on London's planned ULEZ expansion**

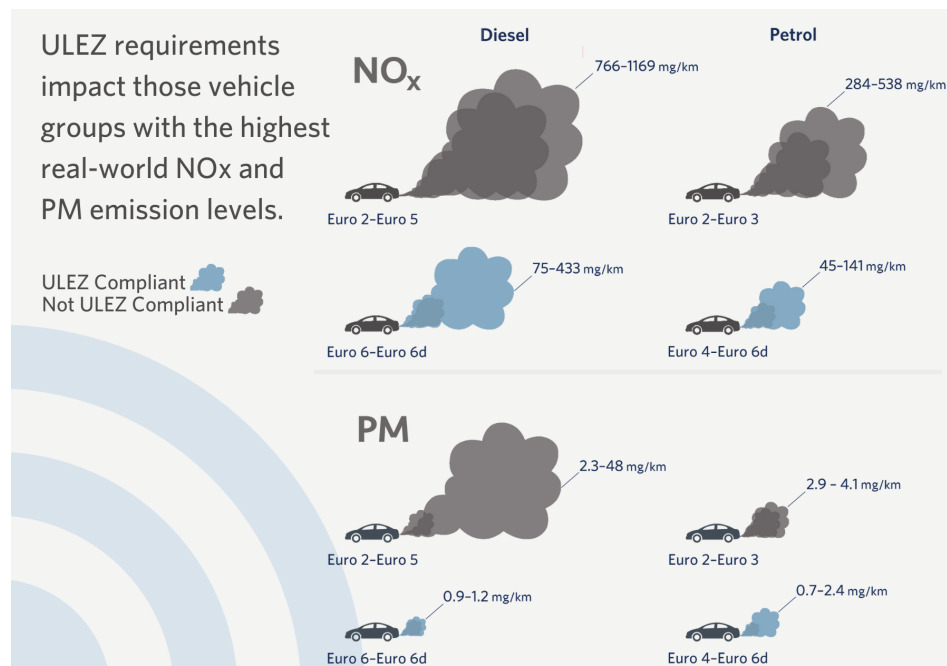
28 July 2022

Air pollution from on-road transport is a major cause of respiratory, cardiovascular, and other health issues, including premature death. London has responded to this pressing public health issue by implementing strong policies to reduce vehicle pollutants, including establishing the Low Emission Zone (LEZ) and Ultra-Low Emission Zone (ULEZ). With the recently proposed ULEZ expansion, London solidifies its commitment to improving air quality and health of residents across Greater London. The TRUE initiative strongly supports the ULEZ expansion as an effective policy measure to reduce nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) emissions and to protect public health.

In October 2021, TRUE released a technical note analyzing real-world emissions of cars impacted by the first ULEZ expansion, illustrating the impact of transitioning away from the oldest, highest-emitting vehicles.<sup>1</sup> The analysis, which used the TRUE database of vehicle emissions measurements collected in London and other European cities, showed that the ULEZ effectively targets passenger cars with the highest real-world emissions (Figure 1). In particular, the restrictions are very effective in reducing direct tailpipe PM emissions. TRUE data show that older Euro 2 to Euro 4 diesel cars emit 17–41 times more than ULEZ-compliant Euro 6 diesel cars.

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<sup>1</sup> TRUE Initiative, *Real-world emissions of passenger cars impacted by the London Ultra Low Emission Zone expansion*, (October 2021), <https://www.trueinitiative.org/blog/2021/october/london-ulez-expansion-could-cut-emissions-from-worst-polluting-vehicles-by-up-to-98-says-new-analysis>.



**Figure 1.** Real-world NO<sub>x</sub> and PM emissions of passenger cars compliant with ULEZ standards compared to passenger cars that are not ULEZ compliant (source: TRUE technical note, October 2021)

Under the proposed ULEZ expansion, no changes are made to existing vehicle emissions standard requirements: all Euro 4 and newer petrol vehicles and Euro 6 diesel vehicles are compliant. This helps address the highest-emitting vehicles; however, there is strong evidence that more significant emission reductions and related health benefits can be achieved by strengthening these requirements. Therefore, we recommend London modifies ULEZ compliance standards to phase out vehicles with demonstrated excess real-world NO<sub>x</sub> emissions.

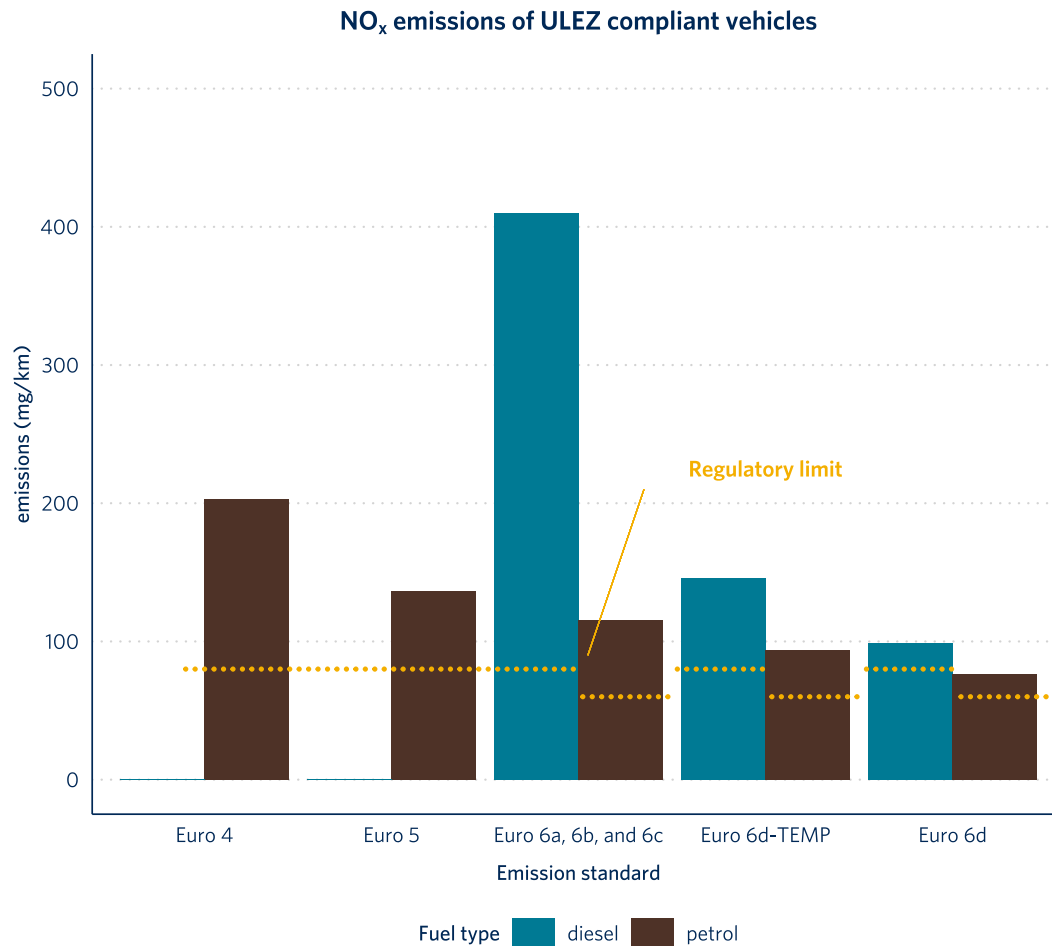
One such modification would distinguish between different standards within Euro 6 by phasing in exclusion of Euro 6a, 6b, and 6c diesel vehicles, which were certified before the Real Driving Emissions (RDE) testing requirement was introduced with the Euro 6d-TEMP standard. TRUE data show the average real-world NO<sub>x</sub> emissions of these pre-RDE Euro 6 vehicles are over five times the regulatory limit (Figure 2). This high average emissions rate is not due to a small subset of high emitters; rather, nearly the entire group of vehicles emits several times above the regulatory limit. 90% of Euro 6a, 6b, and 6c diesel vehicles have a ‘poor’ TRUE rating based on their emissions performance during urban on-road operating conditions.<sup>2</sup> Other cities, like Brussels, differentiate between the stages of Euro 6 in their LEZ implementation designs, with pre-RDE Euro 6 diesel cars subject to restrictions at an earlier date than Euro 6d vehicles.<sup>3</sup> London should follow suit.

We also recommend that further modifications to ULEZ requirements extend restrictions to Euro 4 petrol vehicles in light of increased risks of excess emissions due to deteriorating emissions

<sup>2</sup> “TRUE rating emissions update: Petrol vehicle deterioration and new diesel improvements fall short”, Yoann Bernard, June 2022, <https://www.trueinitiative.org/blog/2022/june/true-rating-emissions-update-petrol-vehicle-deterioration-and-new-diesel-improvements-fall-short>.

<sup>3</sup> “In Practice: Everything You Need to Know about the LEZ in the Brussels Capital Region.” Bruxelles Mobilité, accessed July 2022, <https://www.lez.brussels/mytax/en/practical?tab=Agenda>.

control equipment. Evidence from recent TRUE remote sensing campaigns has shown increasing rates of NO<sub>x</sub> emissions among Euro 4 petrol cars, likely due to malfunctions and deterioration in emission control systems. Most of those vehicles are now expected to have mileage beyond their emission durability requirement of 80,000 km.<sup>4</sup> Average Euro 4 petrol vehicle NO<sub>x</sub> emissions are now well above the regulatory limit and will likely increase as vehicles continue to age (Figure 2). The number of petrol vehicles with a ‘poor’ TRUE rating has increased threefold in the past 3 years.<sup>5</sup>



**Figure 2.** Emission factors of passenger cars compliant with current ULEZ requirements by Euro standard and fuel type based on remote-sensing measurements collected across European cities from the TRUE database.

In addition to targeting air pollution, the ULEZ expansion helps bring London closer to their climate goal of net zero carbon emissions by 2030. ICCT has shown that a rapid transition from internal combustion engine vehicles to zero-emission vehicles is necessary to limit global

<sup>4</sup> Kaylin Lee et al., *Evaluation of Real-World Vehicle Emissions in Warsaw*, (TRUE Initiative: April 2022), <https://www.trueinitiative.org/data/publications/evaluation-of-real-world-vehicle-emissions-in-warsaw>.

<sup>5</sup> “TRUE rating emissions update: Petrol vehicle deterioration and new diesel improvements fall short”.

warming to 2°C or below.<sup>6</sup> Shifting to cleaner modes is also an essential component of reducing greenhouse gas emissions and will be supported by London's Green New Deal investments in walking and cycling.

As the ULEZ expansion encourages residents to retire their older combustion engines, it will be important for other policies to support an equitable transition to zero-emission transportation alternatives. Providing financial support through subsidies or rebates can help support residents in replacing their older, high emitting vehicles. Mayor Khan has proposed plans for £180 million to be put towards a scrappage scheme, and it will be important to allocate these funds with considerations for residents who may be most impacted by the ULEZ requirements financially and in terms of mobility.<sup>7</sup> This is supported by evidence that rebate structures offering higher amounts to participants based on income are both more equitable and more effective in supporting shifts to cleaner transportation options.<sup>8</sup> London can also continue to lead on the transition to zero-emission vehicles by implementing data-supported charging infrastructure network goals, streamlining permitting, providing incentives for building charging infrastructure, and helping to fill in charging gaps.<sup>9</sup>

The ULEZ expansion is an important step forward in committing to improving air quality for all residents of Greater London. The TRUE initiative is supportive of this expansion and recommends implementing plans to update vehicle requirements to Euro 5 and newer petrol vehicles and Euro 6d-TEMP and newer diesel vehicles to most effectively reduce NO<sub>x</sub> emissions. Additionally, increasing investments in alternate modes of transport, helping to fund residents' shift to cleaner transportation, and supporting a strong EV charging network will all be important to London's commitments to reducing air pollution and meeting climate goals.

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<sup>6</sup> "Emissions reduction benefits of a faster, global transition to zero-emission vehicles," Arijit Sen and Josh Miller, March 2022, <https://theicct.org/publication/zevs-global-transition-benefits-mar22/>.

<sup>7</sup> Ross Lydall, "Air pollution data justifies widening ULEZ to Greater London, says Sadiq Khan," *Inkl*, July 21, 2022, <https://www.inkl.com/news/air-pollution-data-justifies-widening-ulez-to-greater-london-says-sadiq-khan>.

<sup>8</sup> DeShazo, J. R., Tamara L. Sheldon, and Richard T. Carson. "Designing policy incentives for cleaner technologies: Lessons from California's plug-in electric vehicle rebate program." *Journal of Environmental Economics and Management* 84 (2017): 18-43.

<sup>9</sup> Dale Hall and Nic Lutsey, *Electric vehicle charging guide for cities*, (ICCT: February 2020), <https://theicct.org/publication/electric-vehicle-charging-guide-for-cities/>.