

# Impacts of the Paris low-emission zone on NO<sub>x</sub> emissions and the vehicle fleet

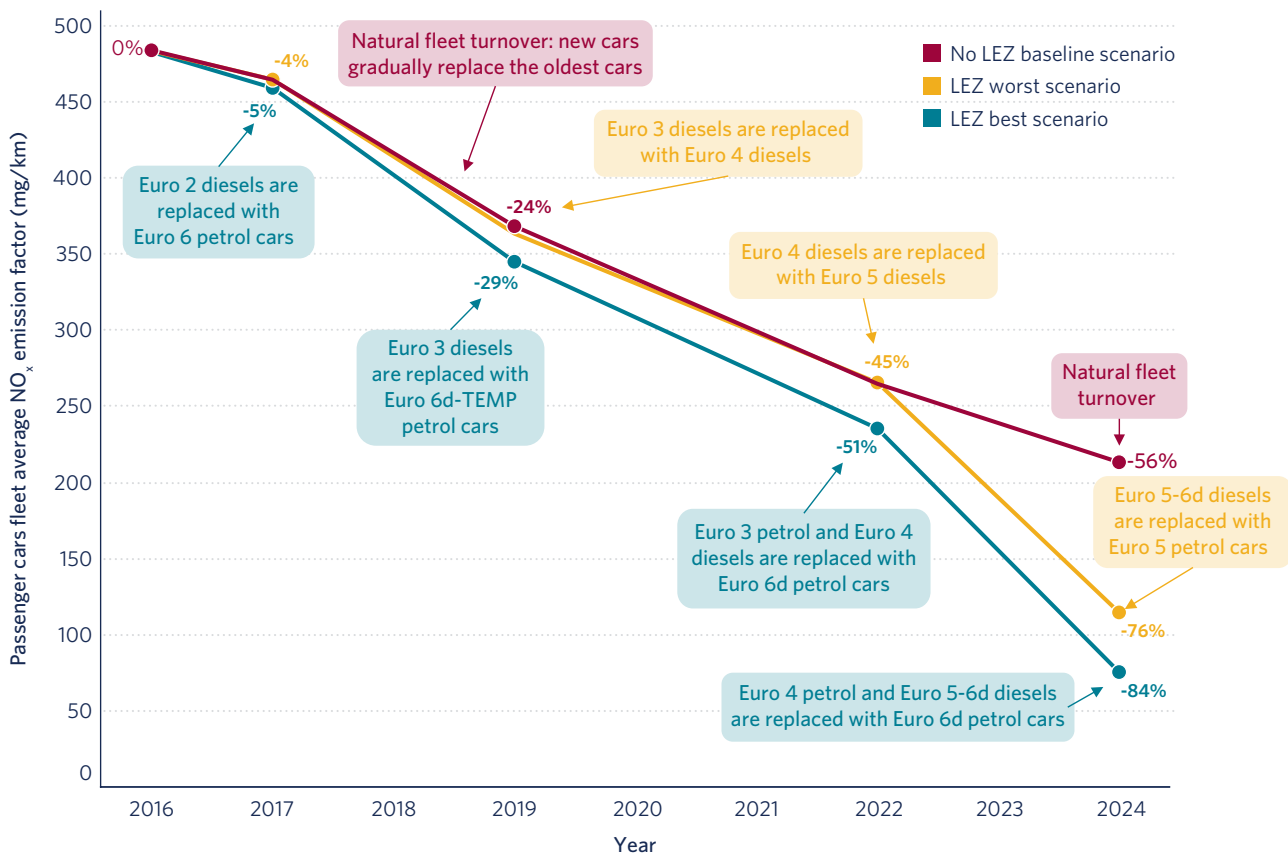
Paris established a low-emission zone (LEZ) in 2016 as one measure to reduce air pollution from transport. The Paris LEZ, which restricts access to vehicles based on their emissions certification level, will become increasingly stringent over the next decade. A new report from the TRUE initiative estimates the impact it can have on air quality in the city by reducing emissions of nitrogen oxide (NO<sub>x</sub>).

## IMPACTS WITH THE CURRENT LEZ IMPLEMENTATION SCHEDULE

- Beginning in 2024 (Phase 5), petrol cars not certified to at least Euro 5 and all diesel cars (except plug-in hybrid-electric) will be excluded from the zone. In 2024,

passenger car NO<sub>x</sub> emission factors are projected to be 76%–87% below 2016 levels. Achieving a similar level of emission reduction without the LEZ and without rapid electrification would take another 7 to 10 years. Without the LEZ, average passenger car NO<sub>x</sub> emission factors in 2024 are projected to be 47%–62% below 2016 levels.

- Earlier implementation of Phase 5, in which Euro 4 petrol cars and Euro 5/6 diesels are replaced by Euro 5 or Euro 6 petrol cars, would achieve air quality benefits from NO<sub>x</sub> reduction sooner. Compared with the draft implementation schedule, accelerating the implementation of Phase 5 from 2024 to 2020 would yield a 72%–77% total reduction in passenger car NO<sub>x</sub> emissions. Implementing Phase 5 in 2022 would yield a 66%–71% reduction.



Effects of the Paris LEZ on passenger car fleet-average NO<sub>x</sub> emission factors. Reflects a summer emission factor and an optimistic registration assumption that vehicles registered at the end of the year and certified to the newest possible emission standard. "Worst scenario" assumes noncompliant vehicles are replaced by vehicles that meet the bare minimum requirements of the LEZ. "Best scenario" assumes noncompliant vehicles are replaced by new petrol vehicles.

- Other changes in addition to early implementation could also accelerate  $\text{NO}_x$  reduction in the Paris LEZ:
  - » *Incentivize replacement of excluded vehicles by zero-emission vehicles.* With the substantial vehicle replacement incentives available in France, the Paris LEZ restrictions could be tightened at an accelerated rate without unduly penalizing owners of older vehicles. If excluded vehicles are replaced by ZEVs,  $\text{NO}_x$  reduction rises to 91% compared to without the LEZ.
  - » *Automate enforcement.* Enforcement of the LEZ in Paris currently relies on visual inspections by police. Automating enforcement using technologies such as license plate recognition could more effectively restrict access by high-emitting vehicles.
- Permitting only zero-emission vehicles to enter the zone beginning in 2030 will necessitate a transition from conventional vehicles to a combination of electric-drive vehicles, rail, and non-motorized transport modes, which can be expected to produce a significant improvement in air quality.



Passenger car fleet-average  $\text{NO}_x$  emission factor in 2020 and 2022 without the LEZ, with the proposed LEZ, and with earlier implementation of Phase 5.



#### TO FIND OUT MORE

For questions on the Paris low-emission zone study, contact Yoann Bernard, [y.bernard@theicct.org](mailto:y.bernard@theicct.org). For more information on TRUE, visit [www.trueinitiative.org](http://www.trueinitiative.org).

#### DOWNLOAD THE PAPER

“Impacts of the Paris low-emission zone and implications for other cities”  
[www.theicct.org/publications/true-paris-low-emission-zone](http://www.theicct.org/publications/true-paris-low-emission-zone)