

Updates to DEFRA Emission Factor Toolkit (v7.0)

Summary of changes to EFT

An updated version of the Emission Factors Toolkit EFT (v7.0) is now available.

The EFT allows users to calculate road vehicle pollutant emission rates for NO_x, PM₁₀, PM_{2.5} and CO₂ for a specified year, road type, vehicle speed and vehicle fleet composition. The LEP has used it extensively for emission assessment of development sites¹.

Version 7.0 of the tool incorporates the following (LAQM Helpdesk Email 26/08/16):

- Updated NO_x and PM speed emission coefficient equations for Euro 5 and 6 vehicles, taken from the European Environment Agency (EEA) COPERT 4v11 emission calculation tool, reflecting more recent evidence on the real-world emission performance of these vehicles;
- Streamlining of pollutants – removal of Hydrocarbons as an option in the EFT;
- CO₂ tailpipe emissions associated with alternative fuelled vehicles are included in emissions calculations, in addition to those from petrol and diesel vehicles. The applied CO₂ scaling factors for alternative technology vehicles are consistent with those applied in the London Atmospheric Emissions Inventory (LAEI). The ability to output CO₂ when Alternative Technologies advanced user input option is selected has also been added;
- Updated fleet composition data, accounting for updates to traffic and fleet projections in London, based on information from Transport for London (TfL). This includes varying fleet data specific to the Central, Inner, Outer and Motorway areas of London;
- The ability to user define euro compositions individually for the Central, Inner, Outer and Motorway areas of London;
- The ability to enter up to at least 25,000 rows of input data, or up to 200,000 rows of input data, dependent upon selected output options;
- Bug fixes and cosmetic improvements based upon user feedback on previous version 6.0.2, including:
 - Cosmetic changes to improve user experience, including the addition of a status bar when running the EFT, indicating EFT calculation progress;;
 - User defined London Taxi euro proportions previously being incorrectly processed in emissions calculations; and
 - CO₂ emissions for buses/coaches in London previously reported as zero.

This update replaces all previous versions, which should no longer be used. Further information, including the EFT User Guide is available from Defra's website².

¹ http://www.lowemissionstrategies.org/les_planning_guidance.html

² <http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

Impact of changes on LEP calculations

Green Sphere has run a sensitivity test to review the outputs from the new EFT (v7.0) and the previous version used for LEP projects to date (v6.0.2). The three detailed case studies from the Site Appraisal Pilot work were used as examples. Findings are summarised below.

- **Decreases in NOX emissions** for all vehicles (approx. -5% for cars, -20% for LGVs, -0.5% for HGVs).
 - Very slight differences between Urban (Not London) and Rural (Not London) (% differences slightly smaller for Rural)
- **Slight changes in PM10 emissions** for all vehicles (0.7% increase for cars, -0.5% decrease for LGVs, 2% increase for HGVs)
 - Slight differences between Urban (Not London) and Rural (Not London) (% diff slightly smaller for Urban)
 - **No change to non-exhaust PM emissions**, which remain dominant (although proportion of non-exhaust has reduced very slightly for HGVs, reflecting slight increase in exhaust emissions)

Fleet	Road type	% Diff from v6.0.2 to v7.0		
		NOX	PM10	PM10x
Car	Urban (not London)	-5.4%	0.6%	4.8%
Car	Rural (not London)	-5.3%	0.8%	4.8%
LGV	Urban (not London)	-20.5%	-0.4%	-2.6%
LGV	Rural (not London)	-20.5%	-0.5%	-2.6%
HGV	Urban (not London)	-0.5%	1.8%	10.5%
HGV	Rural (not London)	-0.5%	2.2%	11.0%

Fleet	Road type	Non-Exh as % of total PM	
		EFT v6.0.2	EFT v7.0
Car	Urban (not London)	87.5%	87.0%
Car	Rural (not London)	82.5%	81.8%
LGV	Urban (not London)	86%	86%
LGV	Rural (not London)	80%	81%
HGV	Urban (not London)	83%	82%
HGV	Rural (not London)	80%	78%

Damage costs are directly proportional to emissions. The impacts of the EFT changes to overall site damage costs will depend on the relative proportions of different vehicles for each site.

- Sites dominated by car journeys will have a 5% decrease in NO_x car emissions, therefore a 5% reduction in NO_x damage costs.
- Sites where LGVs are important could have up to a 20% decrease in NO_x emissions, and subsequent NO_x damage costs.
- HGV changes are less significant.