Collusion to weaken fuel economy regulations

Introduction of WLTP test to weaken CO_2 targets

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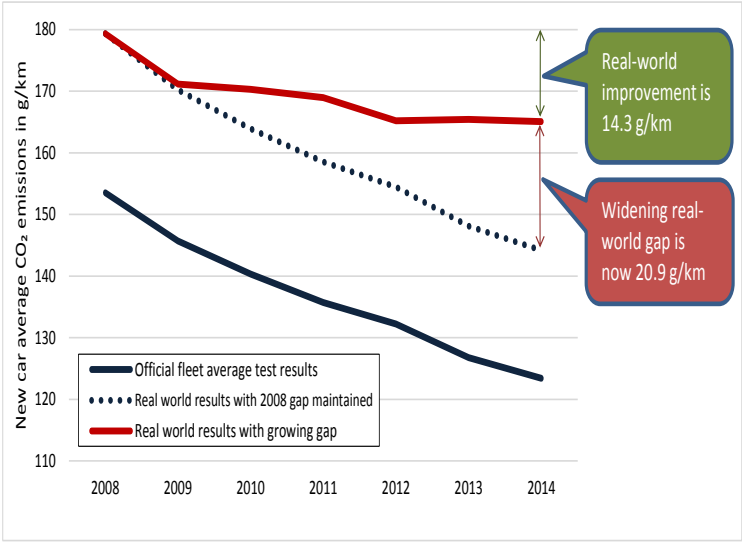
Summary

The current system for testing car CO2 emissions and fuel economy, the NEDC, is obsolete. Thankfully, a new test, the WLTP, is scheduled to replace the NEDC in 2017. To do this, the average CO_2 emissions target for cars (95 g/km for 2020/1) needs to be revised in a way that maintains "equivalent stringency" between the tests.

The European Commission is developing a simulation tool, in the form of a computer model, for the WLTP. However, major carmakers and the countries that house them are trying to ensure this new tool contains the same loopholes and manipulations that made the NEDC such a flawed test. This will ultimately weaken the 95 g/km target, effectively increasing it to 110 g/km, and thus forcing the average EU driver to pay an additional €140 a year in fuel. The Commission is meeting Member States and key stakeholders on the 9 July. This briefing is designed to alert stakeholders, citizens, and the media to the nature of these "behind closed doors" discussions.

1. Context

Regulations to improve car fuel economy and lower CO_2 emissions are being severely undermined by carmakers' manipulations of the current CO2 emissions test (known as the New European Driving Cycle, or NEDC). When the car CO_2 regulation was introduced in 2008, the average gap between cars' test performance and real-world performance was 15%.[1] This gap has more than doubled in the years since, largely as a result of exploited test flexibilities. Numerous studies, including one by consultants of the European Commission itself,[1] have documented how the NEDC test results are distorted.[2] Consequently, half of the improvement measured in emissions since 2008 has not actually been achieved on the road. The gap between test performance and real-world performance has increased by 21 g/km since 2008[3] as a result of carmakers' actions, such as:



1. Exploiting loopholes in the testing procedure,
2. Deploying technologies in cars that display benefits in the test but not on the road,
3. Abusing "cycle beating" techniques to reduce emissions during a test, and
4. Putting increasing amounts of equipment on cars that are switched off during the test but are generally switched on during real-world driving, such as air conditioning.

[1] http://ec.europa.eu/clima/policies/transport/vehicles/cars/docs/report_2012_en.pdf
[2] http://www.transportenvironment.org/sites/te/files/publications/Real%20World%20Fuel%20Consumption%20v15_final.pdf
[3] http://www.transportenvironment.org/publications/2025-co2-regulation-next-step-tackling-transport-emissions

To address the failings of the current test, a new global testing system has been developed. Known as the Worldwide harmonized Light vehicles Test Procedures, or WLTP, this new test is scheduled to be introduced in 2017. Legitimate differences in the test procedures and test cycle between the NEDC and WLTP tests mean that the WLTP will produce measurements about 10% higher than those from the NEDC test. The Commission has therefore initiated a correlation exercise to revise company CO_2 targets for 2020/1 in such a way that a target measured using the WLTP test have "equivalent stringency" to those agreed based on the NEDC system. Whilst the correlation exercise should provide an equivalent level of stringency using the WLTP test, it should also prevent manufacturers' benefiting from using illegitimate flexibilities in the NEDC procedure, a key reason for the growing gap between test and real-world performance and the subsequent introduction of the WLTP.

Regrettably, the car industry and sympathetic Member States are seeking to distort the correlation exercise. They want to include unfair flexibilities that would effectively weaken the CO2 regulation through the backdoor. The impact of this foul play would be reduced efficiency for cars on the road in 2020/1, costing drivers more money to fuel their vehicles even though their cars meet regulatory targets. Distortions in the correlation exercise would also mean that the car CO_2 regulation would be less effective in reducing emissions. Ultimately, the distortions would reduce the overall stringency of the CO2 regulation, and the less stringent the regulation is, the smaller the carmakers' compliance costs are.

2. The correlation exercise

The approach proposed by the Commission to correlate between the NEDC and WLTP tests is to use a computer simulation tool.[4] The proposal is that, from 2017 onwards, measurements will be conducted using the WLTP test. In addition, the simulation tool will derive an NEDC-equivalent CO_2 value for each car sold. In 2020, all new cars registered will have both a WLTP-measured CO2 value and a simulated NEDC equivalent CO2 value. From this it will be possible to calculate the average CO_2 emissions for each manufacturer based on both measured and simulated values. The simulated values will be compared to the present company targets to assess compliance with regulation. It will also be possible to derive a WLTP-equivalent target for use after 2020 (based upon the measured WLTP value and ratio of the NEDC-simulated average CO_2 value to the company NEDC target).

How the simulation tool operates is therefore of fundamental importance in both assessing compliance with regulations and setting equivalent WLTP-based targets. Which flexibilities in the NEDC procedure are allowed for by the simulation tool will therefore significantly influence the stringency of the regulation and whether the principle of "equivalent stringency" is adhered to or not. Analysis by the ICCT[5] indicates that differences in the NEDC and WLTP test *cycles* and test *vehicle masses* lead to an average WLTP test result that is 5 g/km higher than that of the NEDC test. T&E estimates that legitimate differences between the NEDC and WLTP test *procedures* contribute another 5 g/km to this difference. The simulation tool should therefore, on average, calculate a difference between NEDC and WLTP values of about 10g/km, given that it only considers legitimate flexibilities for equivalent stringency. However, carmakers and some Member States wish to include a number of manipulations to the NEDC procedure within the simulation tool that are unfair and outside the spirit of the regulation.

2.1. Unfair flexibilities

Four key flexibilities in the NEDC test that are presently abused by carmakers are proposed to be included in the simulation tool in an attempt to weaken the regulation through the backdoor.

[4] European Commission, 2015, DISCUSSION PAPER – NEDC/WLTP CORRELATION METHODOLOGY; Expert Group on CO2 emissions from light duty vehicles, meeting May 2015.
[5] http://www.theicct.org/wltp-how-new-test-procedure-cars-will-affect-fuel-consumption-values-eu

Incorrectly setting the rolling road (using inertia classes).
Modern chassis dynamometers (rolling roads) are computer-controlled and programmed with the inertia of the vehicle. Traditionally, "dynos", as dynamometers are often called, were mechanical devices and relied upon the addition of physical weights to form inertia classes. The system of inertia classes became obsolete when mechanical dynos were replaced, but carmakers continue to use the inertia class approach in order to artificially lower the inertias in the test, producing test emissions results that are about 4% lower that they should be.

Externally charging the battery
The NEDC test has no specific rules about charging the starter battery. Manufacturers exploit this loophole by fully recharging the battery prior to every NEDC test. This gaming reduces CO2 emissions measured during the test by negating the need to use the engine and alternator to maintain the battery charge. This lowers the test result by about 2%.

Deducting 4% from measured results
Bizarrely, the NEDC procedure allows carmakers to actually declare (use) a test value that is 4% lower than the one actually measured. This provision is designed to minimize the testing burden but is being abused by carmakers to declare lower test results.

Using sloping test tracks
Equally ridiculous is a rule that allows the coastdown test (used to calibrate the rolling road for the vehicle) to be conducted on a sloped test track. The current NEDC test does not correctly average the uphill and downhill runs, so test tracks can be biased as being more downhill or uphill. Carmakers want to be able to perpetuate this error, which lowers the test result by 4%.

Including these illegitimate differences in the test would increase the difference between the simulated NEDC and measured WLTP test by about 14 g/km. It thus effectively weakens the 95 g/km regulation and all of its benefits by around 15%. The 95g/km target measured on the NEDC test will rise to over 120g/km on WLTP, whereas a fair correlation would be a WLTP target of 105 g/km; backdoor weakening is therefore around 15 g/km.

3. Attitudes of member states

The European Commission has asked member states for their views about the acceptability of different flexibilities for inclusion in the simulation tool. The table below summarizes opinions obtained from written responses:[6]

Position of:	Inertia classes	Battery charging	Declared values	Sloping track
Germany	√	√	√	√
Netherlands	X	X	X	X
Italy	√	√	√	√
UK	√	√	-	-
Sweden	X	X	-	-
France	√	√	-	√
ACEA	√	√	√	√
T&E	X	X	X	X

√ Supports the inclusion of the flexibility in the simulation tool
X Opposes the inclusion of the flexibility in the simulation tool
- No view expressed

[6] Written responses by Members States following the the May 15th meeting of the Expert group on CO2 emissions from light duty vehicles – available on request from T&E

The table shows that the car manufacturing countries of Italy, Germany, France, and the UK largely support the inclusion of unfair flexibilities in the correlation exercise. In contrast, the Netherlands and Sweden are showing more progressive positions. Other countries have not expressed an opinion.

4. Conclusions

The cumulative effect of including unfair flexibilities in the simulation tool is to reduce the stringency of the 2020/1 regulation by around 14%. In effect, the 95 g/km target is being increased to 108g/km through the backdoor. Member States are fully aware of this but are prioritizing the interests of the car industry over drivers and the environment.

The WLTP test is being introduced specifically to address the failings in the current NEDC system, a system that is widely acknowledged as being obsolete and open to manipulation. Commencing testing using WLTP is an important milestone and needs to begin in 2017; however, by allowing current abuses of the NEDC test to be included in the simulation tool, Member States are delaying the benefit that should accrue from the introduction of the WLTP test. Using the previously mentioned loopholes and manipulations, carmakers would be able to work through the backdoor to set easier emissions targets for themselves, ensuring that less fuel efficient cars stay on Europe's roads. Consequently, the average car in 2021 would accrue €140 more a year in fuel costs. The other benefits that could be garnered from more fuel efficient cars would also be reduced. Oil import bills will be higher, fewer jobs will be created, and more CO_2 will be emitted into the air.

These consequences of allowing these flexibilities to persist in the WLTP would continue to be felt until a post-2020 CO_2 regulation for cars is introduced. Carmakers say that this cannot be implemented before 203o; T&E argues for 2025. If carmakers are successful in delaying post-2020 targets, the flexibilities that are being abused in the current NEDC test would effectively be taken into account in regulatory targets set until 2029 – for another 14 years!

These test abuses devastate the effectiveness of the regulation. On-the-road average emissions are likely to be 150 g/km, rather than 95 g/km as measured in the NEDC test. Had the gap between test and real-world emissions been maintained at the 2008 level, on-the-road emissions would have been around 110 g/km in 2020/1. Essentially, there will be a weakening of around 40 g/km compared to the value intended when the regulation was passed in 2008. Allowing the NEDC flexibilities into the simulation tool has the same effect on the stringency of the regulation as continuing with the obsolete NEDC system.

The issues raised in this briefing are undoubtedly complex but also illustrative of how weak tests and technical decisions can distort the intentions of regulations. They also expose how carmakers, with the help of compliant governments and a weak European Commission, collude to weaken agreed regulations through the backdoor, harming the interests of drivers and the environment. Unfortunately, this is a regrettably common occurrence in vehicle regulation and will continue to be so if these issues are not adequately addressed.

Further information

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