

Light-weighting in the context of the EU CO₂ regulation for cars and vans

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January 24, 2018

European Parliament, Brussels

Clean road mobility: What role for light-weighting technologies?



Two recent ICCT papers summarize our findings on 2025/2030 CO₂ standards for cars and vans

November 2017

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BRIEFING

OCTOBER 2017

2020-2030 CO₂ standards for new cars and light-commercial vehicles in the European Union

New passenger cars and light-commercial vehicles (vans) in the European Union (EU) are subject to mandatory carbon dioxide (CO₂) standards up to the year 2020-2021. The European Commission, European Parliament and EU member states are preparing to extend the light-duty vehicles' CO₂ regulation to the 2025-2030 timeframe. As part of this briefing paper we summarize the key findings of previous ICCT studies, including aspects such as technology potential and associated compliance cost, the role of electrified vehicles, and the switch to a new emissions testing procedure.

EU LIGHT-DUTY VEHICLE CO₂ REGULATION BETWEEN 1995 AND 2020

As part of a voluntary self commitment, in 1998 the European car manufacturers agreed to reduce the average CO₂ emissions of their new cars from 186 g/km in 1995 to a level of 140 g/km by 2008, a reduction rate of 2.1% a year¹ (Figure 1). However, CO₂ emissions decreased more slowly than expected. In 2007 the European Commission said it would replace the manufacturers' voluntary agreement with a mandatory regulation. In 2009, the EU's first CO₂ regulation for cars was adopted, setting a mandatory average target of 130 g/km by 2015². The annual CO₂ reduction rate was lower than under the previous voluntary agreement: 1.7% a year, based on the original 1995 baseline. In 2013, EU policy makers added a second regulation. The new CO₂ target was defined as 95 g/km by 2020

1 Communication COM (1998) 495 final from the Commission to the Council and the European Parliament of 29 July 1998 implementing the community strategy to reduce CO₂ emissions from cars: An environmental agreement with the European automobile industry. Retrieved from <https://eur-lex.europa.eu/eli/comm/inf/1998/04/01>

2 Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles. Retrieved from <http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32009R0443>

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January 2018

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BRIEFING

JANUARY 2018

The European Commission regulatory proposal for post-2020 CO₂ targets for cars and vans: A summary and evaluation

BACKGROUND

On November 8, 2017, the European Commission (EC) published its regulatory proposal for post-2020 carbon dioxide (CO₂) targets for new passenger cars and light-commercial vehicles (vans). The proposed regulation would be the third set of mandatory vehicle CO₂ performance standards in the European Union (EU).

The first set of regulations, implemented in 2009 after a voluntary commitment by the auto industry to reduce average vehicle CO₂ emissions had failed to produce adequate results, established average targets of 130 grams per kilometer (g/km) for new passenger cars in 2015 and 175 g/km for vans in 2017. Vehicle manufacturers met both targets several years in advance. A second set of regulations, passed in 2014, required average CO₂ emissions of new cars to fall to 95 g/km by 2021. For new vans, the target value is 147 g/km by 2020. This second regulation also required the EC to review CO₂ emission targets and prepare a regulatory proposal for the post-2020 period. This review was to have been completed by the end of 2015.

This briefing summarizes and evaluates the key elements of the recent EC proposal before it enters the political negotiation process between the European Parliament and the European Council.

SUMMARY OF KEY ELEMENTS OF THE PROPOSAL

In contrast to previous vehicle CO₂ regulations, the new EC proposal does not specify CO₂ targets in absolute g/km terms but instead defines CO₂ reduction requirements in percentage terms. Because of the ongoing transition to a new vehicle emissions' test

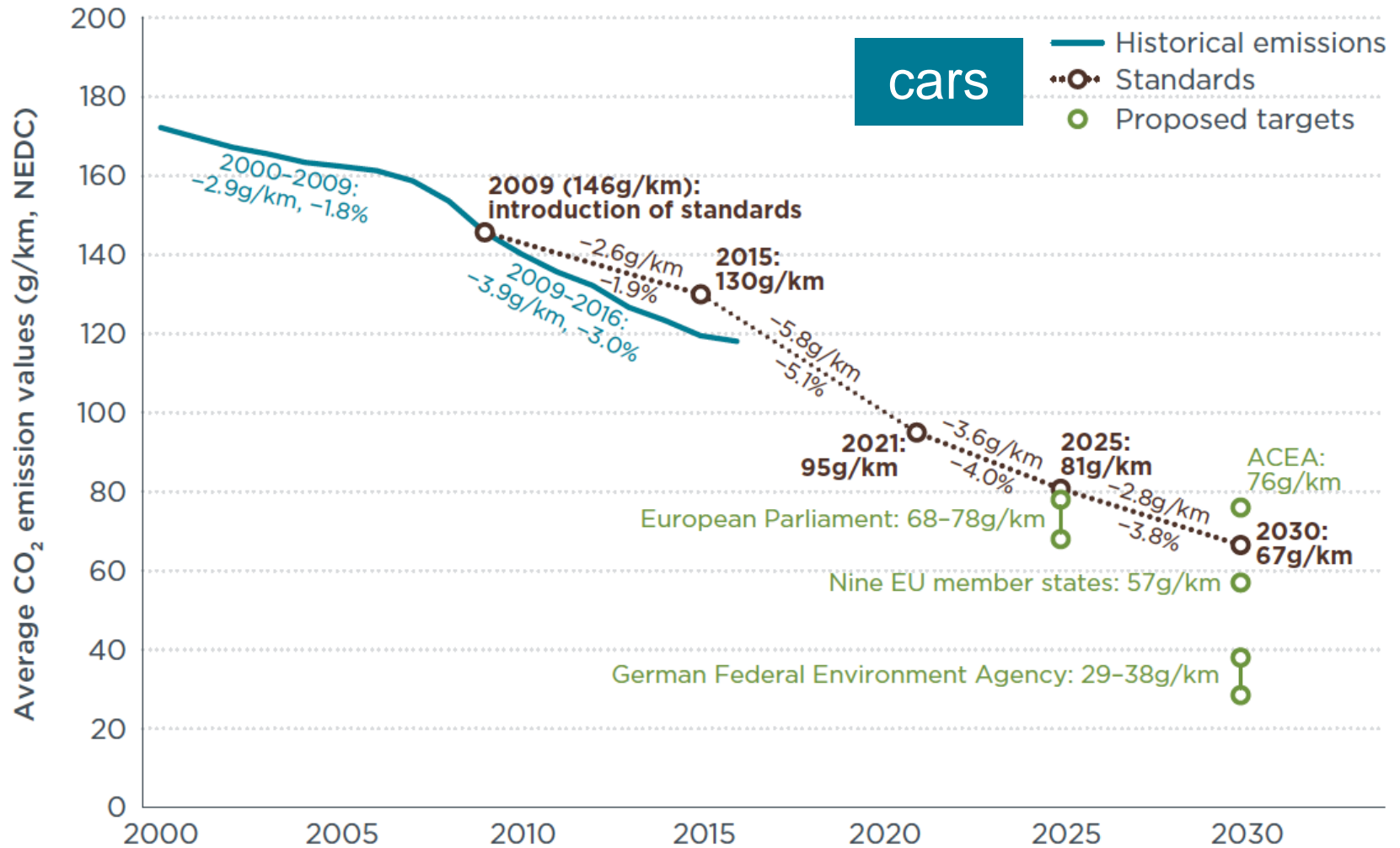
Prepared by: Jan Dormott, Joshua Miller, Peter Mock, and Uwe Tietge

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<http://www.theicct.org/publications/2020-2030-co2-standards-eu-cars-lcvs-20171026>

<https://www.theicct.org/publications/ec-proposal-post-2020-co2-targets-briefing-20180109>

The proposed annual CO₂ reduction rate is below current regulation and Parliament recommendation



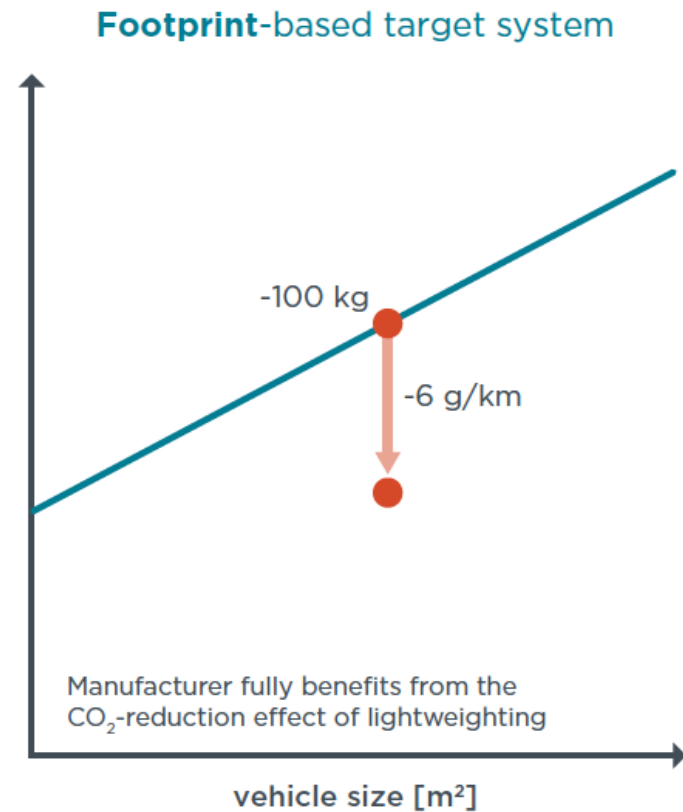
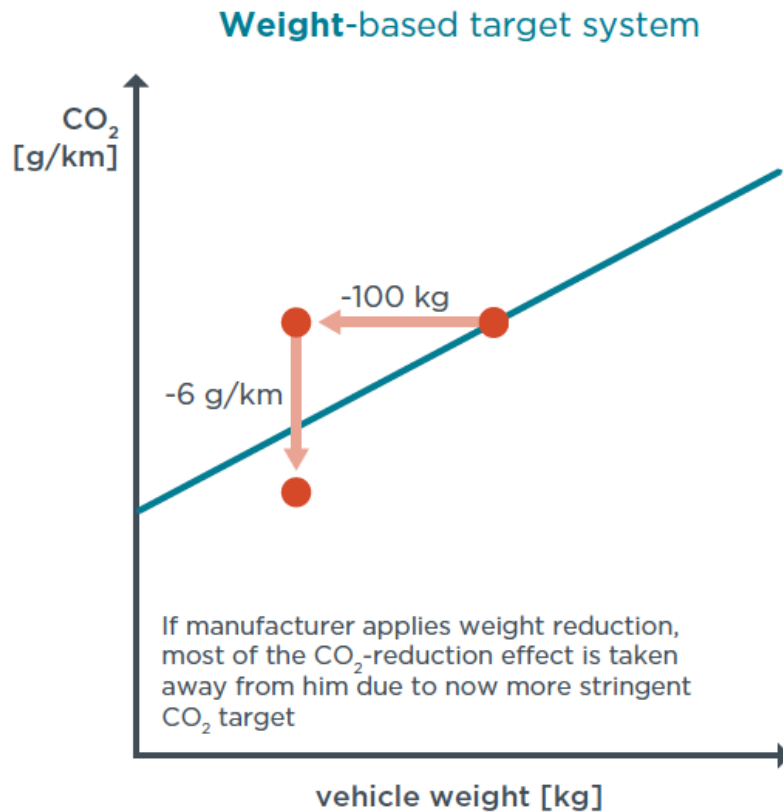
Commission assigns higher cost to light-weighting measures than its consultants, and than ICCT

- The technology cost curves used for the impact assessment are more pessimistic than our ICCT findings, and also than original consultants' study.
- The light-weighting CO₂ reduction potential was reduced and costs increased (~doubled), by the Commission, compared to the original consultants' study.
- Using ICCT's cost curves, 2021-2030 CO₂ reduction requirements of ~70% result in higher net benefit than the 30% proposed by the Commission.

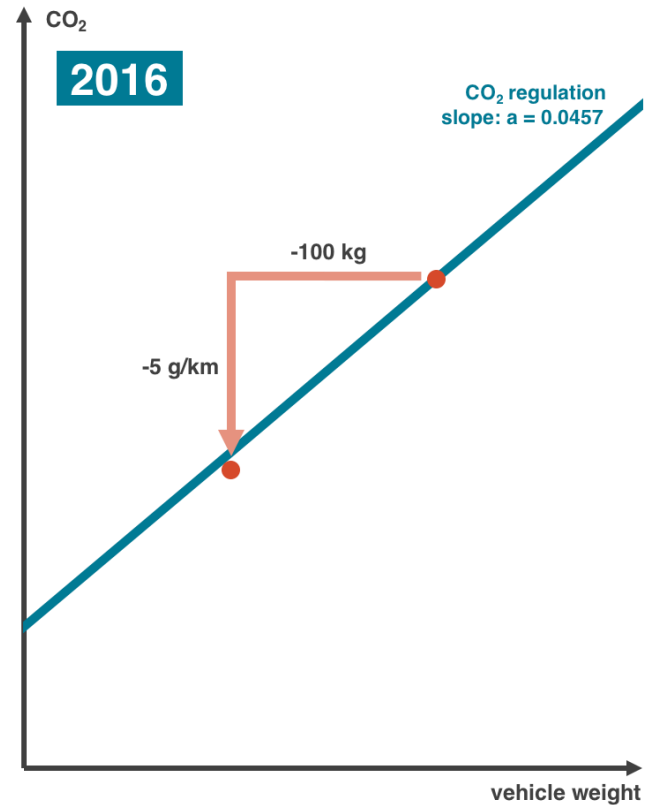
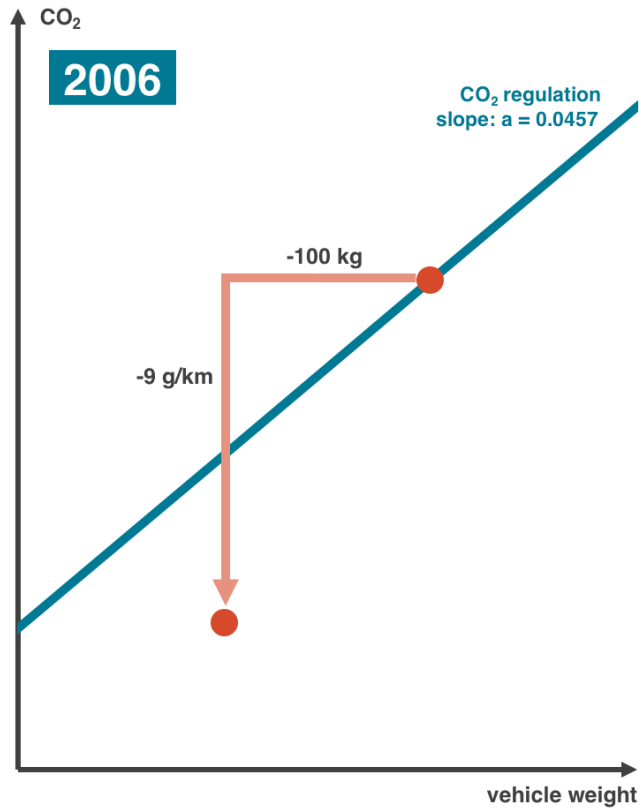
Decrease of CO ₂ target level (2021-2030)	EC Additional manufacturing costs in 2030 (EUR/car)	ICCT Additional manufacturing costs in 2030 (EUR/car)	Net operation & maintenance savings in 2030 (EUR/car)	Avoided CO ₂ cost in 2030 (EUR/car)	EC Net benefits in 2030 (EUR/car)	ICCT Net benefits in 2030 (EUR/car)
20%	419	264	1,221	303	1,105	1,260
30%	1,020	691	1,898	451	1,329	1,658
40%	1,812	927	2,377	593	1,158	2,043
50%	2,752	1,163	2,750	728	726	2,315
70%*		1,636	4,000	1,000		3,364

Commission proposal sticks to current weight-based CO₂ target system for new vehicles

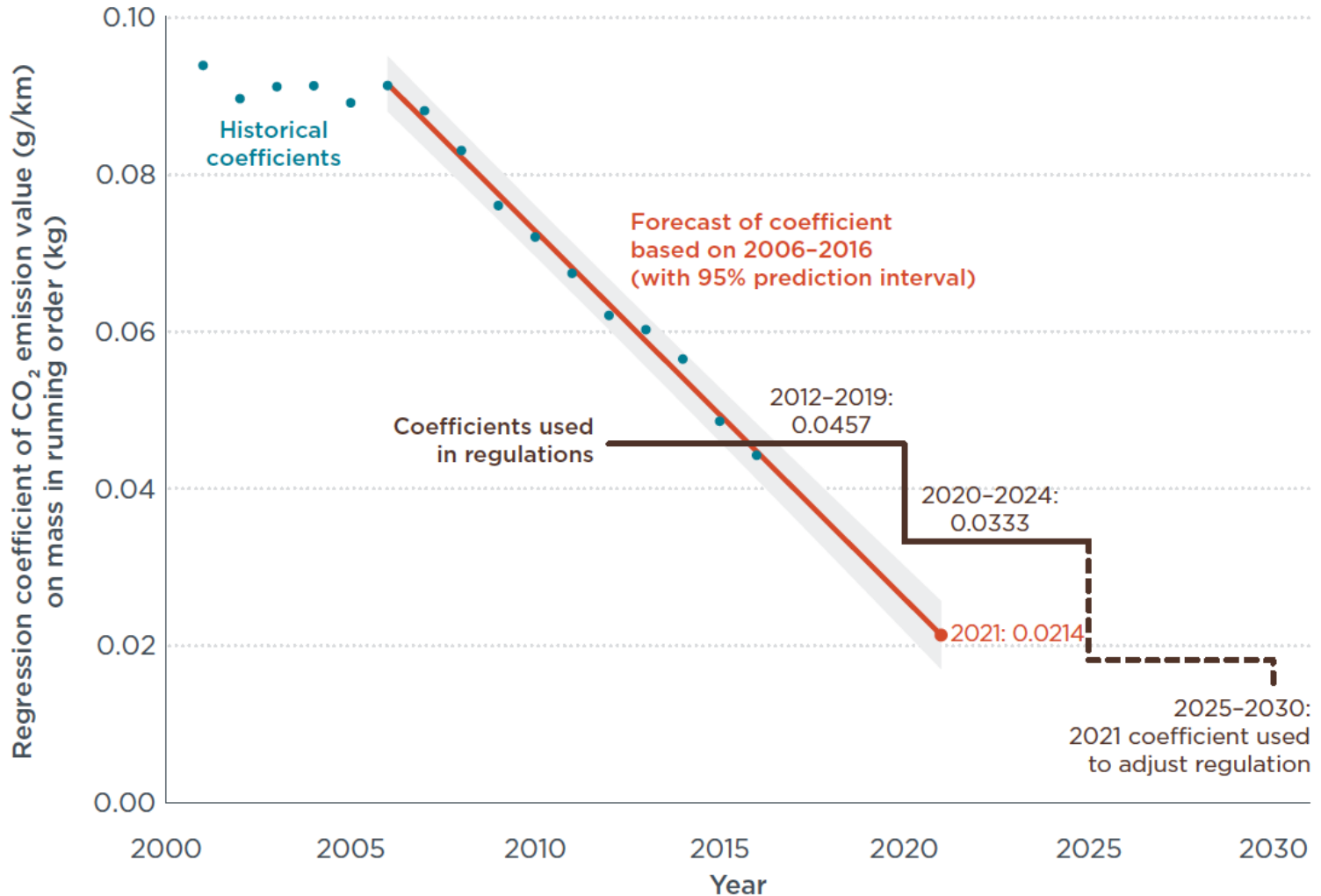
- A weight-based target system, like we currently have in the EU, will always reduce the incentive to apply light-weighting technologies for CO₂ reduction.



The incentive for manufacturers to reduce weight today is even lower than in previous years ...



... and light-weighting, with the current proposal, will become less attractive in future years



Summary

- Applying the potential-vs-cost estimates for light-weighting of the Commission's consultants, or of ICCT, higher 2021-30 reductions than 30% are most favorable.
- The proposed weight-based CO₂ targets will always dis-incentivize light-weighting, compared to a system that is based on vehicle size or that uses absolute targets.
- Without adapting the proposed slope value, each individual manufacturer has a strong incentive to actually increase vehicle weight.