

Proposed Rulemaking to Establish 2012-2016 Light-Duty Vehicle CAFE and GHG Standards

Briefing for Clean Air Act Advisory Committee

October 7, 2009



Agenda

- Overview
- EPA CO2 Standards
- Key Elements of Proposed Joint National Program
- Estimated Costs and Impacts
- Next Steps

Overview

- On September 15 EPA Administrator Jackson and DOT Secretary LaHood signed a joint NPRM proposing closely-related standards that together comprise a National Program for reducing GHG emissions and improving fuel economy of light-duty vehicles
- The National Program proposes strong and coordinated federal GHG and CAFE standards for Model Year 2012-2016 vehicles
 - Consistent with the May 19, 2009 Joint Notice of Intent
 - Coordinated national standards can provide regulatory certainty and consistency for the auto industry
 - Would avoid separate NHTSA, EPA, and state regulations
 - Automakers could meet NHTSA, EPA, and California requirements with a single national fleet
- National Program will achieve substantial reductions in fuel consumption and GHG emissions
- To a large extent, the joint proposal relies on joint technical and economic analyses and uses similar program design elements and compliance provisions

EPA CO₂ Standards

- EPA's proposed standards estimated to achieve a fleet-wide level of 250 grams/mile of CO₂ in model year 2016
 - Standards would phase in beginning in model year 2012
- Fleetwide CO₂ standard could be met partially through credits from improved air conditioner (A/C) operation
 - A/C credits include CO₂ & hydrofluorocarbon (HFC) refrigerant reductions
 - HFC refrigerant is a powerful GHG
- The 250 gram/mile CO₂ standard corresponds to 35.5 mpg "equivalent" if all reductions resulted from fuel economy improvements
- NHTSA also proposed new CAFE standards which would lead to an estimated fleet average level of 34.1 mpg in 2016
 - The difference between the EPA and NHTSA standards lies mostly in the air conditioning technologies manufacturers are projected to use

Robust Technical Analysis and Transparency are Key Underpinnings of the Proposal

- EPA GHG proposed standards are based on significant new technical work undertaken between 2007 and 2009
 - New peer-reviewed estimates for indirect and direct manufacturing **costs** for GHG reducing vehicle technology
 - New CO2 reducing **technology effectiveness** analysis based on vehicle simulation modeling and EPA vehicle certification test data
 - New estimates of **air conditioning** system technology costs and effectiveness for reducing CO2 and HFC emissions
 - New peer-reviewed technology and cost **model**
 - EPA's Optimization Model for Emissions of Greenhouse gases from Automobiles (OMEGA)
 - Used to develop EPA's cost and technology penetration estimates for each manufacturing and the industry

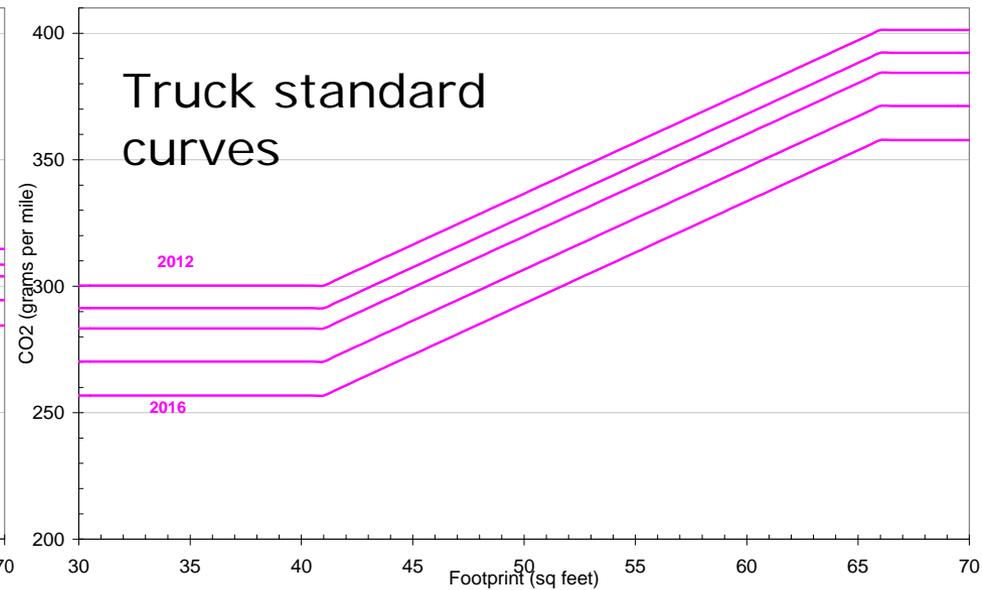
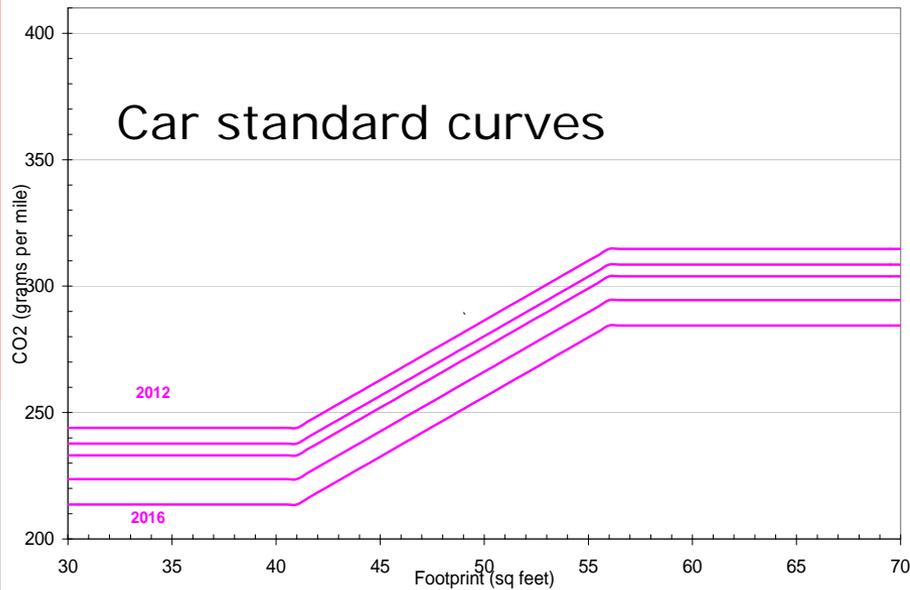
- Transparency is an important element of the joint proposal
 - Baseline and future reference vehicle fleet projection based on publically reviewable data
 - All OMEGA model inputs and outputs available for review
 - Commenters can use data to perform their own alternative or updated analysis

Standards are Footprint Attribute-based

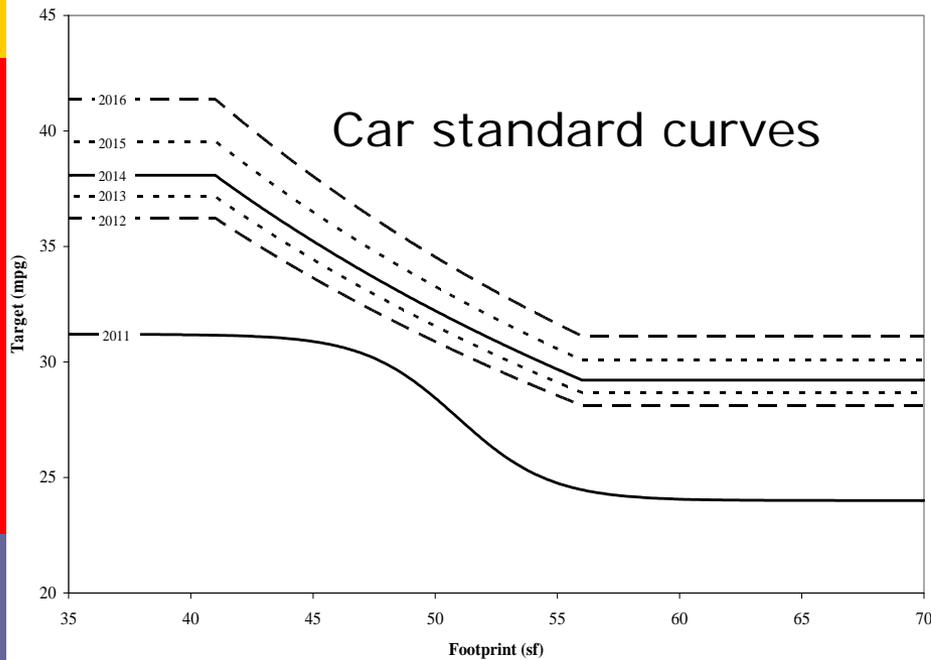
- Each manufacturer's standard based on the footprint of vehicles produced - actual standards are curves which equate a vehicle size to its specific CO₂ or MPG target
- Each companies "standard" are footprint curves

Vehicle Type	Example Models	Example Model Footprint (sq. ft.)	CO ₂ Emissions Target (g/mi)	Fuel Economy Target (mpg)
Example Passenger Cars				
Compact car	Honda Fit	40	214	41.4
Midsize car	Ford Fusion	46	237	37.3
Fullsize car	Chrysler 300	53	270	32.8
Example Light-duty Trucks				
Small SUV	4WD Ford Escape	44	269	32.8
Midsize crossover	Nissan Murano	49	289	30.6
Minivan	Toyota Sienna	55	313	28.2
Large pickup truck	Chevy Silverado	67	358	24.7

Proposed EPA CO2 Car and Truck Standard Curves:



Proposed NHTSA MPG Car and Truck Standard Curves:



EPA Projected Fleet-wide CO₂ Targets and Achieved Levels

- These values are the projected fleet-wide **targets** under the footprint-based approach and the projected **achieved levels**
- EPA projects that achieved levels for MY2012-2015 would be less stringent than the targets due to a number of flexibilities such as flexible fueled vehicle credits
- 250 grams/mi CO₂ = 35.5 mpg if all GHG reductions are achieved through fuel economy improvements

Targets [g/mi CO₂]	2012	2013	2014	2015	2016
Passenger Cars	261	253	246	235	224
Light Trucks	352	341	332	317	302
Combined Cars & Trucks	295	286	276	263	250

Achieved [g/mi CO₂]	2012	2013	2014	2015	2016
Passenger Cars	264	254	245	232	220
Light Trucks	365	355	346	332	311
Combined Cars & Trucks	302	291	281	267	250
Car & Trucks MPG-equivalent*	29.4	30.5	31.6	33.3	35.5

* Note: MPG-equivalent if all GHG reductions come from fuel-economy improvements

NHTSA Projected Fleet-wide MPG

Targets and Achieved Levels

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Targets [mpg]	2011 (base)	2012	2013	2014	2015	2016
Passenger Cars	30.2	33.6	34.4	35.2	36.4	38.0
Light Trucks	24.1	25.0	25.6	26.2	27.1	28.3
Combined Cars & Trucks	27.3	29.8	30.6	31.4	32.6	34.1

Achieved [mpg]	2012	2013	2014	2015	2016
Passenger Cars	32.5	33.4	34.3	35.3	36.5
Light Trucks	24.1	24.6	25.3	26.3	27.0
Combined Cars & Trucks	28.7	29.6	30.4	31.6	32.7

EPA Program Flexibilities

- Emission banking and trading elements
- Flex-fuel vehicle (FFV) credits
 - MY2012 – 2015 credits similar to CAFE,
MY2016+ credits based on actual E85 fuel use
- Air conditioning HFC and CO₂ reduction credits
- Early credit opportunities for doing better than California or CAFE
- Advance technology credits
- Innovative technology credits

EPA Program Flexibilities - Optional Temporary Lead-time Allowance Alternative Standards

- Manufacturers with limited product lines and/or have traditionally paid fines to NHTSA may be especially challenged technologically in the early years of the program
 - Under the Clean Air Act, manufacturers cannot pay fines in lieu of complying with motor vehicle emissions standards

- EPA is proposing an optional, temporary alternative standard, which is only slightly less stringent, and limited to the first four model years (2012–2015) of the National Program
 - An option for companies with 2009 US sales <400,000 vehicles
 - A portion of a company's fleet (for example 25,000 per year) could meet a less stringent standard equal to 1.25 times the primary standard. Allotment cannot exceed 100,000 over the four years
 - Intended to provide these manufacturers sufficient lead time to meet the tougher model year 2016 greenhouse gas standards
 - Would preserve consumer choice of vehicles during this limited period
 - Designed to discourage use of this flexibility by imposing several restrictions
 - Eligible companies include all of the traditional CAFE fine-paying firms

Summary of Costs and Benefits

- For lifetime of 2012-2016 vehicles:
 - 1.8 billion barrels of oil reduced
 - 950 million metric tons of CO₂ eq. reduced
 - 2016 per-vehicle costs of less than \$1,100
 - Compliance costs for the industry of <\$60 billion
 - Total benefits of \$250 billion & net benefits of \$190 billion (using \$20/ton CO₂ valuation and 3% discount rate)
- 21% reduction in light-duty vehicle GHGs by 2030
- Net present value of net benefits through 2050 with a 3% discount rate = \$1.9 trillion
- Also reductions of criteria pollutants, pre-cursors and air toxics, primarily from upstream-impacts

Proposed Standards do not require “next generation” technologies

- We estimate the proposed standards can be met with significant penetration of currently available technologies, e.g.
 - Gasoline direct injection fuel systems
 - Engine downsizing with turbocharging
 - 6-speed transmissions or dual-clutch transmissions
 - High efficiency, low-leak air conditioning systems
 - Engine start-stop systems

- Proposed standards can be met with little to no penetration of diesel engines, hybrid electric vehicles (HEV), plug-in hybrid electric vehicles (PHEV), or pure-battery electric vehicles (BEV)

- Enormous opportunity for future GHG reductions through large-scale introduction of advanced technologies like HEVs, PHEVs, and BEVs

Consumer Impacts

- Payback period for Model Year 2016 vehicle
 - Less than 3 years for buyers who pay cash
 - Fuel savings greater than loan payment increase by \$130 to \$160 each year for a typical 5-year loan

- Lifetime savings of more than \$3,000 (using a 3% discount rate)

Next Steps for Light-duty Joint Proposal

- NPRM published in Federal Register on Sept. 28
 - Comment period ends on Nov. 27

- Three joint public hearings
 - Oct. 21 in Detroit, Oct. 23 in New York, Oct. 27 in Los Angeles

- NHTSA also has issued an Environmental Impact Statement in support of the CAFE standards
 - 45 day comment period ends November 9
 - Separate public hearing October 30

- Goal for final rule is by end of March, 2010