CAFE Standards for MY 2017-2025 – the new National Program

Presentation for National Conference of State Legislatures
December 6, 2012
What are we talking about today?

• What is CAFE?
• What steps has the Obama Administration taken to raise CAFE standards?
• What are the effects of the Administration’s actions?
• What happens next?
What is CAFE?

• **Corporate Average Fuel Economy**
  – Standards for passenger cars and light trucks
  – Require vehicles to go further on a gallon of gas to reduce energy consumption and our dependence on imported oil

• Standards “maximum feasible” for each fleet, each year since the late 1970s
  – Balancing statutory factors and safety

• Since 2007, additional statutory requirements
  – Attribute-based
  – 35 by 2020
  – Increase ratably
  – Minimum standard for domestic passenger cars
How have CAFE standards changed over time?

Periods of stasis*, periods of rapid increase:

Structural changes over time:

• EPCA (1975):
  – Flat standards, cars = 27.5 mpg

• NHTSA light truck rulemaking (2006):
  – Attribute (footprint)-based for MYs 2008-2011 trucks, result of recommendation from NAS

• EISA (2007):
  – Codified attribute-based approach for both fleets
  – Expansion of existing compliance flexibilities

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CAFE program under Obama

President Obama memorandum directing DOT to complete standards for MY 2011 and to coordinate with EPA on CAFE standards for MYs 2012-2016, and directing EPA to reconsider prior EPA decision to deny waiver allowing California to enforce CO2 standards

2008

EPA and NHTSA issue Notice of intent to propose light vehicle GHG and CAFE standards, previewing 250 g/mi CO2eq by 2016

2009

NHTSA issues footprint-based passenger car and light truck standards increasing estimated average stringency to 27.3 mpg by 2011

2010

President Obama memorandum requesting DOT and EPA to collaborate with CARB on a technical assessment, and to then develop a coordinated national program for 2017-2025

2011

EPA, NHTSA, and CARB "Interim Technical Assessment Report" evaluating potential "technology pathways" to reduce new vehicle CO2 emissions annually by 3-6% through 2025

CARB amends light vehicle CO2 standards to allow compliance through compliance with federal CO2 standards

NHTSA proposes standards increasing average stringency to 40.9 mpg by 2021 and 49.7 mpg by 2025; EPA proposes GHG standards reaching average stringency of 163 g/mi CO2eq (54.5 mpg equivalent) by 2025

2012

NHTSA issues final standards increasing estimated average stringency to 40.3-41.0 mpg by 2021 and augural standards that, if finalized, would increase estimated average stringency to 48.7-49.7 mpg by 2025; EPA issues GHG standards reaching estimated average stringency of 163 g/mi CO2eq (54.5 mpg equivalent) by 2025; CARB determines to accept compliance with federal standards as compliance with CARB standards

President Obama announces agreement with major automakers on National Program for 2017-2025.
Overview of National Program for
MY 2017-2025

• Builds on success of MYs 2012-2016 National Program
  – Combined with CAFE standards issued earlier under
    Obama Administration, increases fuel economy by about
    60% and reduces GHG emissions by about 35% compared
    to MY 2010 vehicles

• Helps automakers continue to manufacture a single
  fleet to meet both federal and state-level regulations –
  avoids “patchwork”

• Attribute-based approach ensures consumers will
  continue to have a full range of vehicle choices, with
  performance, utility, and safety that meets their needs
Public participation – a new approach

• Extensive public input and in-depth research/technical evaluation throughout development of the 2017-2025 standards:
  – May 21, 2010: Obama memorandum directing NHTSA and EPA to develop new National Program for 2017-2025 and to work with CARB on a technical assessment to inform that effort
    • Agencies and CARB met extensively with stakeholders (OEMs, suppliers, etc.) to gather input for TAR
  – Sept. 2010: Interim TAR and Notice of Intent issued, agencies seek comment
    • OEMs and other stakeholders comment; agencies spend next couple of months gathering information
  – Nov/Dec 2010: Agencies review public input and describe plans for continued technical assessment of new standards in a second NOI

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Public participation, continued

• Extensive stakeholder engagement between Dec. 2010 and July 29, 2011:
  – Dec. 2010-June 20, 2011: further discussions with industry on wide range of topics
  – June 21, 2011-July 14, 2011: meetings with OEMs to share initial footprint curves and flexibility mechanisms
  – July 15, 2011-July 28, 2011: continued meetings with OEMs to refine footprint curves, compliance flexibilities, other aspects of proposal
• President announces plans for MY 2017-2025 program in July 2011 with support from 13 automakers representing 90% of U.S. market, UAW, California, environmental and consumer groups; agencies concurrently issue third NOI describing upcoming proposed standards
• Nov. 2011: NPRM
  – In response, nearly 400 testifiers across 3 public hearings, and 300,000 written comments including about 140 organizations; continued meetings with OEMs to discuss compliance flexibilities
• Benefits to stakeholder engagement: more support, fewer unexpected comments
What does the final rule establish?

- NHTSA CAFE standards -- final for MYs 2017-2021, “augural” for MYs 2022-2025; EPA standards final for all 9 model years
  - “Mid-term evaluation” a central concept for gaining OEM support

- Footprint-based standards, same as MY 2011-2016 standards

- Variety of compliance flexibilities
Final rule rates of stringency increase
and estimated fleet performance

<table>
<thead>
<tr>
<th>Standards</th>
<th>MYs 2017-2021</th>
<th>MYs 2022-2025</th>
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<tbody>
<tr>
<td><strong>Passenger car</strong></td>
<td></td>
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<tr>
<td>CAFE</td>
<td>3.8%-3.9%</td>
<td>4.7%</td>
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<tr>
<td>GHG</td>
<td>5.0%</td>
<td>5.0%</td>
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<tr>
<td><strong>Light truck</strong></td>
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<tr>
<td>CAFE</td>
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<td>3.5%</td>
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<tr>
<th>Est. fleet performance</th>
<th>Passenger cars</th>
<th>Light trucks</th>
<th>Combined</th>
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<tbody>
<tr>
<td><strong>MY 2021</strong></td>
<td></td>
<td></td>
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<tr>
<td>CAFE mpg</td>
<td>46.1-46.8</td>
<td>32.6-33.3</td>
<td>40.3-41.0</td>
</tr>
<tr>
<td>GHG g/mi CO₂</td>
<td>172</td>
<td>249</td>
<td>199</td>
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<tr>
<td><strong>MY 2025</strong></td>
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<tr>
<td>CAFE mpg</td>
<td>55.3-56.2</td>
<td>39.3-40.3</td>
<td>48.7-49.7</td>
</tr>
<tr>
<td>GHG g/mi CO₂</td>
<td>143</td>
<td>203</td>
<td>163</td>
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Footprint-based standards

- Footprint curves assign a specific MPG or CO$_2$ target for each vehicle based on its footprint (roughly the area between the tires)
- Each manufacturer has a unique car fleet standard and unique truck fleet standard, based on the sales-weighted distribution of vehicles it produced and derived from the footprint curves applicable to all manufacturers

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Example Models</th>
<th>Example Model Footprint (sq. ft.)</th>
<th>EPA CO$_2$ Emissions Target (g/mi)*</th>
<th>NHTSA Fuel Economy Target (mpg)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example Passenger Cars</strong></td>
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<tr>
<td>Compact car</td>
<td>Honda Fit</td>
<td>40</td>
<td>131</td>
<td>61.1</td>
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<tr>
<td>Mid-size car</td>
<td>Ford Fusion</td>
<td>46</td>
<td>147</td>
<td>54.9</td>
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<tr>
<td>Full-size car</td>
<td>Chrysler 300</td>
<td>53</td>
<td>170</td>
<td>48.0</td>
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<td><strong>Example Light-duty Trucks</strong></td>
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<tr>
<td>Small SUV</td>
<td>4WD Ford Escape</td>
<td>43</td>
<td>170</td>
<td>47.5</td>
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<tr>
<td>Midsize crossover</td>
<td>Nissan Murano</td>
<td>49</td>
<td>188</td>
<td>43.4</td>
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<tr>
<td>Minivan</td>
<td>Toyota Sienna</td>
<td>56</td>
<td>209</td>
<td>39.2</td>
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<tr>
<td>Large pickup truck</td>
<td>Chevy Silverado (extended cab, 6.5 foot box)</td>
<td>67</td>
<td>252</td>
<td>33.0</td>
</tr>
</tbody>
</table>

* In real-world, typically CO$_2$ is 25% higher and fuel economy is 20% lower than the values here
CAFE Target Curves for Passenger Cars

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CAFE Target Curves for Light Trucks

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Vehicle Technologies

• A wide range of technologies is available for automakers to meet the new standards
  – Advanced gasoline engines and transmissions, vehicle mass reduction, improved aerodynamics, lower rolling resistance tires, diesel engines, more efficient accessories, improvements in air conditioning systems

• Our analysis projected that automakers will increase electric technologies, such as start-stop systems, mild and strong hybrids, plug-in hybrids (PHEVs), and all electric vehicles (EVs)

• However, we also projected that automakers will meet the standards largely through advancements in internal combustion engines
  – Rulemaking analysis found that automakers would only need to produce about 1-3% of the 2025 new vehicle fleet as EVs/PHEVs to meet the 2025 standards
Compliance flexibilities

• Credit carry-forward/carry-back
• A/C efficiency
• “Off-cycle”
• Incentives for full-size pickup trucks
• Alternative fuel
• A/C leakage
Effects of the standards: benefits and costs

• Over lifetime of MY 2011-2025 vehicles, DOT estimates:
  – 10-13 billion fewer barrels of oil consumed/5-6 billion fewer metric tons of GHGs
  – Industry costs of $250 to $360 billion
  – Net benefits of $326 to $451 billion

• Estimated MY 2025 vehicle cost increase of $1,900-$2,100
• Present value of cumulative net benefits is $1.3-1.6 trillion
• Benefits and costs are on top of pre-MY 2011 standards

[Note: all ranges based on 3% discount rate]
Benefits to Consumers

• Significant per-vehicle savings estimated for consumers at the pump:
  – Lifetime fuel savings of $5,700 to $7,400
  – Net lifetime savings of $3,400 to $5,000
  – Assuming $3.87 gas price in 2025

• Payback estimated at less than 3.5 years for a MY 2025 vehicle

• Consumers buying new vehicle on loan estimated to save $12 per month, or $140 per year, over loan period (since monthly fuel savings more than offset higher loan payment due to increased vehicle cost)
What comes next?

• National Academies of Science updating its report on light-duty vehicle fuel economy-improving technologies, estimated delivery in 2015
• Continuing technical and economic work by NHTSA and EPA
• New rulemaking for MY 2022-2025 CAFE standards planned for the 2016-2018 timeframe and “mid-term evaluation”
For more information

http://www.nhtsa.gov/fuel-economy