NHTSA’S CAFE RULEMAKING FOR MY 2022 AND BEYOND

Jim Tamm, NHTSA
NHTSA Background

The National Highway Traffic Safety Administration (NHTSA)
  • Agency within the Department of Transportation
  • Responsible for on-road vehicle safety and fuel economy standards

Authority and direction for fuel economy standards from Congress to address energy independence and security
  • Energy Policy and Conservation Act (EPCA) of 1975
  • Energy Independence and Security Act (EISA) of 2007

Standards in NHTSA’s Portfolio
  • Corporate Average Fuel Economy standards for passenger cars, light trucks, and medium-duty passenger vehicles (since 1978)
  • Fuel Efficiency standards for medium- and heavy-duty on-road vehicles
  • Fuel economy and environment labels for new light-duty vehicles
  • Consumer information for alternative fuel vehicles
    • Badging
    • Fuel compartment labeling
    • Owner’s manual information on the capability and benefits of using alternative fuels.
Transportation Related Energy Use

- Light-Duty Vehicles: 60%
- Heavy-Duty Trucks and Buses: 20%
- Aircraft: 9%
- Ships and Boats: 6%
- Rail: 3%
- Other (Motorcycles, Pipelines, Lubricants): 2%

Source: Annual Energy Outlook 2014 (U.S. Energy Information Administration)
NHTSA CAFE: Significant Impact on Fuel Consumed by Passenger Cars and Light Trucks

- No Fuel Economy increases after 1977
- CAFE increases under 1978 - 2010 Stds
- CAFE increases under 2011 - 2016 Stds
- CAFE increases under 2017 - 2021 Stds

Annual Fuel Consumed (Billion Gallons)

NHTSA January 2017
NHTSA CAFE: Significant Savings on Fuel Costs

- No Fuel Economy increases after 1977
- CAFE increases under 1978 - 2010 Stds
- CAFE increases under 2011 - 2016 Stds
- CAFE increases under 2017 - 2021 Stds

Annual Fuel Cost (Billion Dollars) Constant 2014$


NHTSA January 2017
NHTSA CAFE Rulemaking Process for MY 2022 and Beyond

- Final Rule 2017 – 2025 CAFE Standards
  - 2017-2021 final
  - 2022-2025 not final

- Draft Technical Assessment Report (TAR) for public comment

- NPRM for public comment

- Final Rule
### NHTSA Draft TAR Analysis: Benefits and Costs of MYs 2022-2025 Augural CAFE Standards Over the Lifetimes of MYs 2016-2028 Vehicles

<table>
<thead>
<tr>
<th>Benefit Category</th>
<th>Augural 2022-2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel reductions (Billion Barrels)</td>
<td>1.6</td>
</tr>
<tr>
<td>GHG reductions (MMT CO₂eq)</td>
<td>748</td>
</tr>
<tr>
<td><strong>Billions of 2013$</strong></td>
<td></td>
</tr>
<tr>
<td>Fuel savings (pre-tax)</td>
<td>$122</td>
</tr>
<tr>
<td>Other benefits</td>
<td>$62</td>
</tr>
<tr>
<td>Vehicle, maintenance and other costs</td>
<td>-$99</td>
</tr>
<tr>
<td>Net benefits</td>
<td>$85</td>
</tr>
</tbody>
</table>

Values shown in this table are representative values for 3% discount rate.
Note: the values reported for CAFE primary analysis include civil penalties estimated to be incurred by some OEMs as provided by EPCA/EISA. Estimated technology costs (without civil penalties) average $1,111, $1,246, and $1,174, respectively for MY2028 passenger cars, light trucks, and the overall light-duty fleet.
### NHTSA Draft TAR Analysis: Selected Technology Penetrations to Meet the MY2025 Augural CAFE Standards

<table>
<thead>
<tr>
<th>Technology</th>
<th>Technology Penetration for MY 2028 ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbo/downsized engines</td>
<td>54%</td>
</tr>
<tr>
<td>High compression ratio, naturally aspirated engines (Atkinson2)</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>8 speed and other advanced transmissions²</td>
<td>70%</td>
</tr>
<tr>
<td>Mass reduction</td>
<td>6%</td>
</tr>
<tr>
<td>Stop-start</td>
<td>38%</td>
</tr>
<tr>
<td>Mild Hybrid</td>
<td>14%</td>
</tr>
<tr>
<td>Full Hybrid</td>
<td>14%</td>
</tr>
<tr>
<td>Plug-in hybrid electric vehicle</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Electric vehicle</td>
<td>&lt;2%</td>
</tr>
</tbody>
</table>

¹ Percentages shown are absolute rather than incremental.
² Including continuously variable transmissions (CVT)

NHTSA’s analysis projected that augural MY2022-2025 CAFE standards could be met largely through improvements in gasoline vehicle technologies, with moderate levels of strong hybridization and very little full electrification (EV/PHEV).
Ongoing Work

• Some examples of work:
  • MY 2016 baseline fleet
  • Mass reduction level in each MY 2016 vehicle model
  • Updates to effectiveness and/or cost for technologies
  • Fuel consumption maps for some engine technologies
  • Unique cost for additional mass reduction for each vehicle segment
  • VMT based on analysis of large scale vehicle odometer readings
  • Rerun large scale simulation modeling using Autonomie to determine technology effectiveness for combinations of technologies (ANL)
Input is Welcomed

• We are continuing to meet with stakeholders

• We welcome your inputs to inform our rulemaking moving forward