New EPA Policies for Vehicle/Engine Conversions to Clean Alternative Fuels

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Discussion Topics

• Alternative fuel conversions: Things to consider

• Brief history of EPA fuel conversion regulations
  – Why new regulations?

• Overview of new regulations
  – New processes
  – Accomplishments
  – Where to find compliant systems

• Misunderstandings still exist
Alt Fuel Conversions: Things to Consider

- Environmental Impact and Benefits
- Cost and Range
- Fuel Availability
- Warranty
History of Fuel Conversions Regulations

- Clean Air Act prohibits tampering with a certified vehicle or engine

- Regulations were originally promulgated in 1994 in 40 CFR part 85, subpart F
  - Required certification to achieve the regulatory tampering exemption
  - Adopted certification process designed for original vehicle/engine manufacturers

- EPA proposed updated regulations in May 2010 seeking to reduce burden where appropriate while maintaining environmental safeguards

- Final rule published in CFR Part 85 Subpart F on April 8, 2011 and became effective immediately
Key Features of New Regulation

• Scope
  – Fuel neutral – covers all fuels (gaseous, alcohol, electricity, etc)
  – Light-duty vehicles, heavy-duty highway vehicles and engines

• Age-based compliance categories
  – New compliance options for older vehicle and engine conversions
  – Certification only required for “new” vehicles and engines

• All converters must submit technical info for EPA evaluation, but specific demonstration requirement depends on vehicle/engine age

• Maintains some fundamental features of historical program
  – Test group/engine family as unit of compliance (but more flexible grouping criteria)
  – Small volume manufacturer flexibilities
  – Warranty and vehicle/packaging labeling requirements
  – Broad EPA authority for compliance oversight, including testing

• EPA can request additional data to support converter’s demonstration and may conduct confirmatory and in-use compliance testing

• Exemption void if conditions are not satisfied or if system is misapplied

• Includes technical amendments that simplify gaseous fuel test requirements for both converters and OEMs
Changes from 1994 Rule to 2011 Rule

- New age based program provides compliance options for vehicles inside and outside EPA's defined useful life.

- New rules provide regulatory structure to create “conversion test groups/engine families.” Conversion test groups previously only defined in EPA guidance documents.

- New rules no longer require converters to renew certificates.

- New testing options for select heavy-duty vehicles (< 14K GVWR).

- New rule creates Intermediate Age and Outside Useful Life programs which require basic check on functionality of OBD system when operating on the alternative fuel in lieu of certification like OBD demo.

- New rules adjust test results from higher mileage vehicles using scaled deterioration factors.
## Summary of Age-Based Program

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Demonstration Requirement</th>
<th>Exhaust</th>
<th>Evap</th>
<th>OBD</th>
</tr>
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<tbody>
<tr>
<td><strong>New</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2 years old</td>
<td>Certification</td>
<td>FTP data</td>
<td>Evap + refueling data</td>
<td>OBD data</td>
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<td><strong>Intermediate</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>&gt; 2 years old but inside UL</td>
<td>Meet standards Technical description</td>
<td>FTP data</td>
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<td><strong>Outside Useful Life</strong></td>
<td>Technical description</td>
<td>Technical description</td>
<td>Technical description</td>
<td>Attestation + OBD scan</td>
</tr>
</tbody>
</table>
New Vehicles and Engines

- Retains current certification requirements for new vehicles and engines (less than ~2 years old: MY >= current calendar year -1)
  - Exhaust and evaporative emissions testing (FTP)
  - OBD testing
  - Certification application process
  - Must pay fee
  - Receive certificate

- Reduces manufacturer burden significantly
  - Allows small volume converters to combine OEM test groups/engine families
  - Scaled deterioration factors for vehicles with >10,000 miles
  - Tampering exemption continues after certificate expires—annual recertification and fees no longer required
Intermediate Age Vehicles and Engines

- New demonstration/notification option for intermediate-age vehicles/engines (>=2 years <useful life)
  - Must submit data from exhaust/evap (FTP) testing to demonstrate compliance with standards
  - Must attest and submit OBD scan tool report showing system functions properly

- Significantly reduces burden compared to certification requirement
  - Replaces certification OBD testing with OBD scan tool procedure option
  - Further flexibilities for expanded test groups
  - Scaled deterioration factors for vehicles with > 10,000 miles
  - Data submission via simple EPA template
  - Eliminates need for annual recertification

- No certificate of conformity issued
  - System becomes compliant when EPA receives complete notification package
  - EPA will maintain publicly available list (e.g. via web site) of systems that have completed demonstration and notification process

- Intermediate-age converters may still choose certification
Outside Useful Life Vehicles/Engines

- New demonstration/notification option for outside useful life vehicles/engines
  - Technical description of conversion system with sufficient detail to demonstrate that conversion will not degrade emissions
  - Converters may use FTP test data to support technical description
  - Must attest and submit OBD scan tool report showing system functions properly

- Significantly reduces burden compared to certification requirement
  - Replaces certification OBD testing with OBD scan tool procedure option
  - Same test group flexibility as intermediate age program
  - Data submission via simple EPA template
  - Eliminates need for annual recertification

- No certificate of conformity issued
  - System becomes compliant when EPA receives complete notification package
  - EPA will maintain publicly available list (e.g., via web site) of systems that have satisfied demonstration and notification requirements

- Certification is not available for outside useful life conversions
<table>
<thead>
<tr>
<th>Converted to Operation</th>
<th>Original Fuel</th>
<th>Conversion Manufacturer</th>
<th>Original Model Year</th>
<th>Original Manufacturer</th>
<th>OEM Test Group</th>
<th>OEM Evap Families</th>
<th>Engine DI</th>
<th>Conversion Certificate Number</th>
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Increased Interest in Alternative Fuels

• More certificates being issued each year
  – 2010: 42 LD certificates for 7 converters
  – 2011 (to date): > 100 LD certificates for 11 converters
  – 2010: 19 HD certificates
  – 2011 (to date): 24 HD certificates

• Significant interest in HD conversions due to fuel $ savings

• Increased OEM interest in alt fuels LD vehicles
  – GM partnering with Natural Drive to produce CNG vehicles
  – Ford selling CNG and LPG prepped engines
  – Chrysler planning to introduce FIAT dual fuel vehicles from Europe
In Summary, New Regulations:

- Create a three tiered, age-based program for tampering exemption that:
  - Requires certification for conversion on vehicles/engines < 2 yrs old
  - Offers a cost saving alternative program for vehicles/engines > 2 yrs but < FUL
  - Provides a workable pathway for vehicles/engines > FUL

- Allow EPA oversight to ensure environmental compliance

- Introduce a “scaled deterioration factor” concept that acknowledges the reality of testing older higher mileage vehicles

- Employ a web-based data submission process that simplifies the delivery of the necessary information
  - Uses Excel and Macros for IAV and OUL programs

- Provide lists of conversions that qualify for tampering exemptions for all three age-based programs

- Publish technical amendments that provide testing efficiencies for OEMs and fuel converters
Technical Amendments for Gaseous Fueled Vehicles

• Rule includes provisions to make testing requirements more consistent across gaseous alternative fuels
  – Changes apply to both OEMs and converters

• Exhaust
  – Allows adjustment factors to convert NMHC to NMOG
  – Allows use of a compliance statement in lieu of data for formaldehyde
    • Previously allowed only for gasoline and diesel testing

• Evap
  – Allows use of compliance statements for evap, running loss, and refueling loss for all gaseous fuels
    • Previously allowed only for CNG and LPG
Misconceptions Still Abound

- Converting modern low emitting gasoline fueled vehicles to a “clean” fuel such as CNG always results in lower emissions - No
- There are no requirements for converting old vehicles - No
- EPA certifies test laboratories doing emission testing - No
- There is no need for conducting EPA confirmatory testing - No
- Expired certificates must still be renewed - No
- There are no requirements for converting non-road engines to alternative fuels - No
- Conversions to full battery electric must demonstrate compliance with one of the new age based programs - No
Alternative Fuels Conversion Website

- [http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm](http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm)
  - Link to Enviroflash
  - Link to Document Index System (OEM Certificates, Applications, and Certificate Summary Information)
  - Instructions for Notification Process and Templates
  - Links to Lists of Certified Conversions, Intermediate Age Conversions, and Outside Useful Life Conversions
  - Guidance Letters
  - Other Information
    - CAFV April 8, 2011 Final rule, April 27, 2011 webinar, Consumer Information (e.g. warranty)
    - Links to: DOE fuel prices/alt fuel filling station locations, Clean Cities website, EPA LD/HD cert regs (stds), CARB alt fuels policy
Questions

- ComplianceInfo@epa.gov

- Light-Duty and Heavy-Duty Chassis Vehicles: Reineman.Martin@epa.gov

- Heavy-Duty Engines: DeBord.Steven@epa.gov

- EPA Region 5: Acevedo.Francisoc@epa.gov