

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

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Discussion Topics

- 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



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 provides 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. (Must meet SVM criteria and > 10K miles)



Summary of Age-Based Program

Age Category	Demonstration Requirement	Exhaust	Evap	OBD
New < 2 years old	Certification	FTP data	Evap + refueling data	OBD data
Intermediate > 2 years old but inside UL	Meet standards Technical description	FTP data	Evap + refueling data	Attestation + OBD scan
Outside Useful Life	Technical description	Technical description	Technical description	Attestation + OBD scan



New Vehicles and Engines

- Retains current certification requirements for new vehicles and engines (less than ~2 years old: MY \geq 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



Highlights of the Notification Process

- Web based submission uses EPA Verify Document Module to upload documents
- Uses Excel worksheets to enter data/standards and provide descriptive information
 - Worksheets are displayed as a function of the conversion fuel type and full useful life mileage
- Supporting documentation (e.g. lab test reports, technical description, OBD scan tool report) embedded in Excel worksheets
- Converters must attest to program and fuel specific statements of compliance and sign electronically
- Converters enter the OEM exhaust/evap test group combinations covered under their conversion test group

1	2	3	4	5	6	7	8	9	10	11	12	
Light-Duty and Heavy-Duty Chassis Certified Clean Alternative Fuel Conversions												
Converted to Operate On	Original Fuel	Conversion Manufacturer	Original Vehicle Information					Conversion Information				
			Original Model Year	Original Manufacturer	OEM Test Group	OEM Evap Families	Eng Di	Conversion Certificate Number	Conversion Evap Famil	Conversion Test Group	Conversion Models Covered	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXV02.5VEF	AFMXR0155GAV	2.5	BAECV02.5VEA-001	BAECR0155GA1	BAECV02.5VEA	Altech-Eco Corporation: Fusion, Milan	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXD05.46VR	AFMXF0250NBS	5.4	BAECT05.46VB-013	BAECF0250NB1	BAECT05.46VB	Altech-Eco Corporation: F250 2WD BED DELETE, F250 4WD BED DELETE, F350 2WD BED DELETE, F350 4WD BED DELETE	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXD05.46VR	AFMXR0250NBS	5.4	BAECT05.46VB-014	BAECR0250NB1	BAECT05.46VB	Altech-Eco Corporation: F250 PICKUP 2WD, F250 PICKUP 4WD, F350 2WD, F350 4WD	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXT04.64D3; AFMXT04.63DF; AFMXT04.63D2	AFMXR0265NBC	4.6	BAECT04.64DB-017	BAECR0265NB2	BAECT04.64DB	Altech-Eco Corporation: F150 Pickup 2WD, F150 Pickup 4WD, F150 SFE 2WD	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXD05.47V8	AFMXF0120GAS	5.4	BAECD05.46VA-003	BAECF0120GA1	BAECD05.46VA	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXD05.46VX; AFMXD05.47V8; AFMXD05.47VT	AFMXF0250NBS	5.4	BAECD05.46VA-004	BAECF0250NB1	BAECD05.46VA	Altech-Eco Corporation: F250 2WD BED DELETE, F250 4WD BED DELETE, F350 2WD, F350 2WD BED DELETE, F350 4WD, F350 4WD BED DELETE	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXD05.46VX; AFMXD05.47V8; AFMXD05.47VT	AFMXF0260GAS	5.4	BAECD05.46VA-005	BAECF0260GA1	BAECD05.46VA	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	
CNG	Gasoline	Altech-Eco Corporation	2010	Ford Motor Company	AFMXD05.46VX	AFMXR0250NBS	5.4	BAECD05.46VA-006	BAECR0250NB1	BAECD05.46VA	Altech-Eco Corporation: F250 PICKUP 2WD, F250 PICKUP 4WD, F350 2WD, F350 4WD	
CNG	Gasoline	BAF Technologies	2011	Ford Motor Company	BFMXT06.27HL	BFMXR0250NBS; BFMXF0250NBS; BFMXF0265GAS	6.2	BBAFT06.27HL-005	BBAFR0000001	BBAFT06.27HL	BAF Technologies: Ford F250/350	
CNG	Gasoline	BAF Technologies	2011	Ford Motor Company	BFMXT02.01DV	BFMXR0125NBB	2.0	BBAFT02.01DV-003	BBAFR0000001	BBAFT02.01DV	BAF Technologies: Ford Transit Connect	



Process for Fuel Converters Using the New Regulations

- Become familiar with applicable regulations, or hire a consultant
- Meet with EPA to discuss your compliance plans
- Follow regulations to select worst-case emission data vehicle/engine to represent your conversion test group/engine family and evaporative/refueling family
- Conduct all necessary testing, following all federal test procedure regulations
- Submit all required information to EPA (notification process)
 - Submit your notification package through Verify Data System
 - Manufacturers seeking certification of new heavy-duty engine conversion systems submit via Filemaker Pro
- Vehicle/engine may be selected for confirmatory testing at EPA



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>
 - 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:
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- Heavy-Duty Engines:
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