

# Clean Alternative Fuel Vehicle and Engine Conversions Final Rule:

# Webinar for Conversion Manufacturers

**April 27, 2011** 



## **Topics**

- Introduction
- Overview of updated program (~10 min)
- Tour of 40 CFR Part 85 subpart F(~10 min)
- Intermediate Age and Outside Useful Life Notification Process (~30 min)
- Questions



### Introduction

- This presentation is intended to
  - Introduce you to the new regulations
  - Show you how to find documents that pertain to the regulations
  - Describe in detail how to submit your notification package for intermediate age lightduty vehicles and outside useful life light-duty vehicles and heavy duty engines
    - Submission forms for intermediate age heavyduty engine notification are under development



### Introduction

### Important considerations

- It is difficult to reconfigure integrated and sophisticated modern automotive systems without negatively affecting their durability or emissions performance
- Converted vehicle/engines must meet applicable standards within useful life, and must not degrade emission levels for outside useful life vehicles/engines
- Converters must use the test procedures associated with emission standards to demonstrate compliance with standards
- Certification consultants can be helpful for those unfamiliar with EPA test procedures



### History of Fuel Conversions Regulations

 Clean Air Act prohibits tampering with a certified vehicle or engine

(CAA section 203(a)(3))

- 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
- Final rule published on April 8, 2011 and is now effective

## 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
  - (Age-based program details presented on following slides)
- Maintains some fundamental features of historical program
  - Test group 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
- Includes technical amendments that simplify gaseous fuel test requirements for both converters and OEMs
- 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



## Summary of Age-Based Program

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



# New Vehicles and Engines 40 CFR 85.510

- Retains current certification requirements for new vehicles and engines (less than ~2 years old: MY >= current calendar year -1) 40 CFR 85.505(b)(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 40 CFR 85.510(b)(1) and (2)
  - Scaled deterioration factors for vehicles with >10,000 miles 40 CFR 85.510(b)(1)(B) and (b)(2)(B)
  - Tampering exemption continues after certificate expires— annual recertification and fees no longer required 40 CFR 85.510(b)(12)



# Intermediate Age Vehicles and Engines40 CFR 85.515

- New demonstration/notification option for intermediate-age vehicles/engines (>~2 years <useful life) 40 CFR 85.505(b)(2)</li>
  - 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 85.515(b)(9)
- Significantly reduces burden compared to certification requirement
  - Replaces certification OBD testing with OBD scan tool procedure option 40 CFR 85.515(b)(9)(ii)
  - Further flexibilities for expanded test groups 40 CFR 85.515(b)(1) and (2)
  - Scaled deterioration factors for vehicles with >10,000 miles 40 CFR 85.515(b)(4)
  - Data submission via simple EPA template 40 CFR 85.515(b)(10)
  - Eliminates need for annual recertification 40 CFR 85.515(b)(12)
- No certificate of conformity issued 40 CFR 85.535(c)
  - System becomes compliant when EPA receives complete notification package
  - EPA will maintain a publicly available list (e.g., via web site) of systems that have satisfied demonstration and notification requirements
- Intermediate-age converters may still choose certification 85.515(a)



## Outside Useful Life Vehicles and Engines 40 CFR 85.520

- 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 40 CFR 85.520(b)(6)(i)
  - Converters may use FTP test data to support technical description
  - Must attest and submit OBD scan tool report showing system functions properly 40 CFR 85.520(b)(4)
- Significantly reduces burden compared to certification requirement
  - Replaces certification OBD testing with OBD scan tool procedure option 40 CFR 85.520(b)(4)(ii)
  - Same test group flexibility as Intermediate Age Program 40 CFR 85.520(b)(2)
  - Data submission via simple EPA template 40 CFR 85.520(b)(6)
  - Eliminates need for annual recertification
- No certificate of conformity issued 40 CFR 85.535(c)
  - System becomes compliant when EPA receives complete notification package
  - EPA will maintain a 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



# 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 40 CFR 86.1810-01(p)
- Allows use of a compliance statement in lieu of data for formaldehyde 40 CFR 86.1829-01(b)(1)(iii)(E) and (F)
  - 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 86.1829-01(b)(2)(i)
  - Previously allowed only for CNG and LPG



## Where Are the Regulations?

- Clean alternative fuel vehicle and engine conversion regulations are located in 40 CFR part 85 subpart F
  - Can be found at end of the final rule
     <a href="http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm">http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm</a>
     or in electronic code of federal regulations <a href="http://ecfr.gpoaccess.gov/">http://ecfr.gpoaccess.gov/</a>
- Testing and emission standard regulations are specific to vehicle/engine class
  - 40 CFR part 86, subpart S and subpart B (light-duty and heavy-duty chassis)
  - 40 CFR part 86, subpart A and part 1065 (heavy-duty engines)
- Regulations are legal requirements. You must follow them carefully and completely
  - Neither this presentation nor the submission forms are substitutes for reviewing and satisfying the applicable regulations

### 40 CFR Part 85, Subpart F Highlights

- 85.502 definitions
- 85.505 overview (important details about small volume manufacturers, previously-issued certificates and confirmatory testing)
- 85.510 new and relatively new vehicles/engines
- 85.515 intermediate age vehicles/engines
- 85.520 outside useful life vehicles/engines

## 40 CFR Part 85, Subpart F Highlights

- 85.525 applicable standards
  - Standards are those which applied to OEM vehicle/engine, including FEL, or most stringent standard in any allowable grouping.
  - Chassis option available for engines if OEM had option to chassis-certify (<14,000 pounds GVWR)</li>
  - No fleet average standards
  - Light-duty greenhouse gas details
- 85.530 labeling
  - You must submit an example label with your notification
- 85.535 liability, recordkeeping and end of year reporting
  - Submit end of year sales report by Jan 31 of following year



## Clean Alternative Fuel Conversion Vehicle and Engine Compliance Process

- Familiarize your self with all applicable regulations
- EPA recommends setting up a meeting 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)
  - Submit your notification package through Verify\*
  - \*Manufacturers seeking certification of new heavy-duty engine conversion systems submit via Filemaker Pro
- Vehicle/engine may be selected for confirmatory testing at EPA
- EPA will periodically update publicly available lists of conversion systems on our website
  - http://www.epa.gov/otaq/consumer/fuels/altfuels.htm
  - To request the addition of previously issued conversion certifications, email complianceinfo@epa.gov



## Submitting Notification to EPA

 Instructions for Submitting Clean Alternative Fuels Conversion Demonstration Information to EPA

http://www.epa.gov/otaq/consumer/fuels/altfuels/420b11017.pdf

- 1. Converters submitting data must have a manufacturer's code established with Verify
- 2. First time Verify users need to follow the Verify setup instructions
  After obtaining a Verify manufacturer code, data submitters will need to set up user
  account(s) by following the instructions at <a href="http://www.epa.gov/OMS/verify/setup.htm">http://www.epa.gov/OMS/verify/setup.htm</a>.
  A user account is mandatory in order to submit data or documents. Any problems
  with setting up a user account should be directed to the Verify Help Desk at 1-888890-1995 or verifyhelp@csc.com.

## Submitting Notification to EPA

3. Select demonstration category and corresponding process

Demonstration Category	Light Duty	Heavy Duty		
Certification [1]	http://www.epa.gov/otaq/cert.htm	http://www.epa.gov/otaq/certdat2.htm#cert		
Intermediate Age [2]	http://www.epa.gov/otaq/consumer/fuels/altfuels/draft-cafc-form-ld-iav.xls	Contact Steven DeBord at debord.steven@epa.gov		
Outside Useful Life [3]	http://www.epa.gov/otaq/consumer/fuels/altfuels/draft-cafc-form-ld-oul.xls	http://www.epa.gov/otaq/consumer/fuels/altfuels/draft-cafc-form-hd-oul.xls		
Any Large Volume Converter [4]	Contact Martin Reineman at reineman.martin@epa.gov	Contact Steven DeBord at debord.steven@epa.gov		

• Either complete the typical certification process, contact the appropriate representative, or download the appropriate form

<sup>11</sup> See 40 CFR section 85.510

<sup>&</sup>lt;sup>2</sup> See 40 CFR section 85.515

<sup>3</sup> See 40 CFR section 85.520

Intermediate Age and Outside Useful
Life Notification Process



## Intermediate Age Vehicle and Outside Useful Life Vehicle and Engine Notification Process

- More details about the Notification templates will be provided on slides 20 through 32
  - 4. Embed related documents required by regulations
    - Please refer to regulations pertaining to alternative fuel conversions (40 CFR Part 85 subpart F) to determine which supporting documents you must attach to the data submission form. Note that EPA will consider any forms submitted without the proper supporting documents to be incomplete. Instructions on how to embed documents in the data submission form are included within the form itself.
    - Note: Converters who consider any of the information on the forms and/or any of the supporting documentation to be confidential business information (CBI) must prepare and submit both a CBI version and a non-CBI version of the Verify submission. Converters should direct questions regarding what EPA considers to be CBI to the appropriate contact listed in the table above before entering submissions into Verify.
  - 5. Login to Verify and submit the completed data submission form to the Verify Document Module
    - Screen shot contained in Instructions document
    - http://www.epa.gov/otaq/consumer/fuels/altfuels/420b11017.pdf



## Intermediate Age Vehicle and Outside Useful Life Vehicle and Engine Notification Process

#### Completing the Notification Process

- After submission, you will receive an email confirming that your submission was successfully uploaded to Verify
- EPA may select a test vehicle or engine for confirmatory testing
- EPA will periodically process complete submissions
- Incomplete submissions will take longer to process
- EPA will periodically update its lists of conversion systems that are appropriate for installation on intermediate age and outside useful life vehicle test groups/engine families and evaporative/refueling families
- The lists can be found at: <a href="http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm">http://www.epa.gov/otaq/consumer/fuels/altfuels.htm</a>
- The exemption from the tampering prohibition may be void ab initio if the
  conversion manufacturer fails to meet all of the requirements for the program.
  This is the case even if a submission has been made and the conversion system
  has been publicly posted.



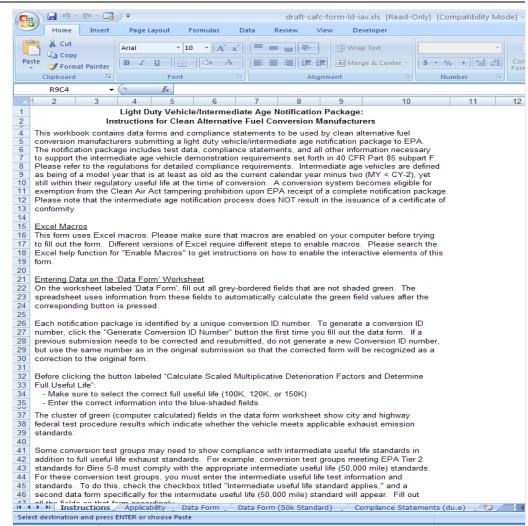
## Intermediate Age Vehicle (IAV) Notification Package: Instruction Worksheet

## Read All Instructions!!

- Excel Macros
- Entering Information
- Embedding Documents

#### **Tabs at Bottom**

- Instructions
- Applicability
- Data Form
- Data Form 50K Std
- Compliance Statements





# IAV Notification Package: Applicability Worksheet

# Conversion Test Group and Conversion Evap Family Names

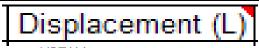
- Same naming convention as certification
- When you select a cell, a help notice pops up

## OEMTest Group Combinations, Evap Families

•Read regs! 40 CFR 85.515 (b)(1)–(3)

#### **Red Triangle in Cell**

- Help text available
- Move pointer to cell



	_ 1	2	3	4	5	6	7	8	9	
	Light Duty Vehicle/Intermediate Age Notification Package: Clean Alternative Fuel Conversion Applicability								ersion Applicability	
	4	Conversion Test Group:			BXYZV03.5ABC	BXYZV03.5ABC Conversion Evaporative/Refueling Family:			BXYZR0155CDE	
	5 6 7	This conversion applies to the OEM test group and evaporative family combinations listed below								
	8	#	OEM Test Group	OEM Evap Family	OEM Manufacturer	OEM MY	OEM MY Displacement (L)		OEM Models	
	9	1	9FMXV03.5CEL	9FMXR0145GAA	Ford	2009	3.5	Gasoline	Ford Taurus, Ford Flex, Ford Fusion, Lincoln MKZ	
	10	2	9FMXV03.5CEL	9FMXR0155GAF	Ford	2009	3.7	Gasoline	Lincoln MKS, Lincoln MKT	
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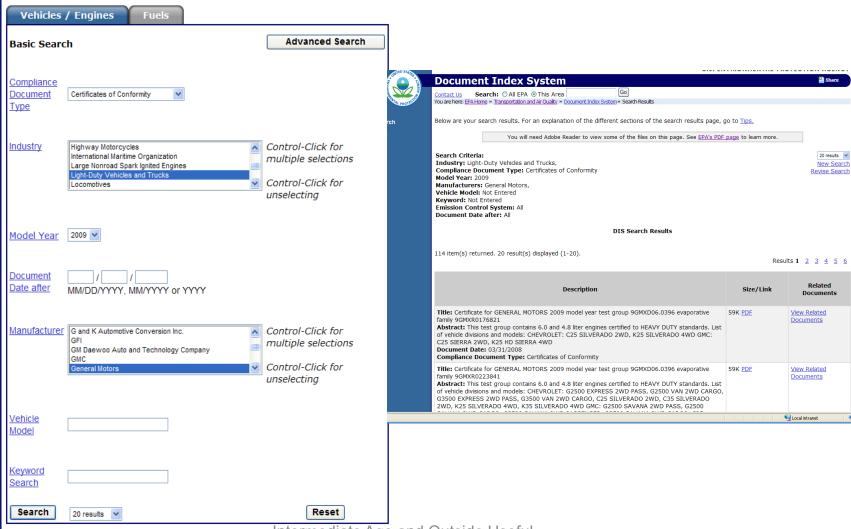


### Finding LD OEM Information

- Search Document Index System (DIS) <a href="http://iaspub.epa.gov/otaqpub/">http://iaspub.epa.gov/otaqpub/</a>
- or request a FOIA via Hurlin.David@epa.gov
- For each test group, search DIS for
  - Certificates of Conformity
  - Applications for Certification
  - Certificate Summary Information



### Document Index System





## IAV Notification Package: Data Form Worksheet: EDV section

	1 2 3	3 4 5	6	7 8	9	10	11	12 1	
1	Light Duty Vehicle/Inte						Conversion [	Data Form	
2	Emission Data Vehicle (EDV) Information								
4	Conversion Mfr. Name:	Manufacturer	Manufacturer XYZ		EDV OEM:		Ford		
6	EDV Model Name:	Taurus	Taurus EDV Model Year:		Year:	2009		<b>\rightarrow</b>	
8			ABC	EDV Evap Family: 9FMXR015			FMXR0155CE	DE	
10	Test Number(s): 2011-115		5	EDV Displacement: 3.5			3.5		
12	EDV Transmission:	A-6	A-6		Conversion ID #		406535533		
14	Odometer: 12,000			Generate Conve			e Conversion I	ID Number	
16	Useful Life: □ 100K • 120K □ 150K ☑ Intermediate useful life standard applies								
18	Conversion Type: C Dedicated C Dual Fuel C Mixed Fuel Original Fuel: Gasoline								
20	Converting to use:	Converting to use: ☐ E85   CNG   C LPG   C Other, please specify:							
21	Using aged components deterioration factors not applicable								

#### **Emission Data Vehicle Info**

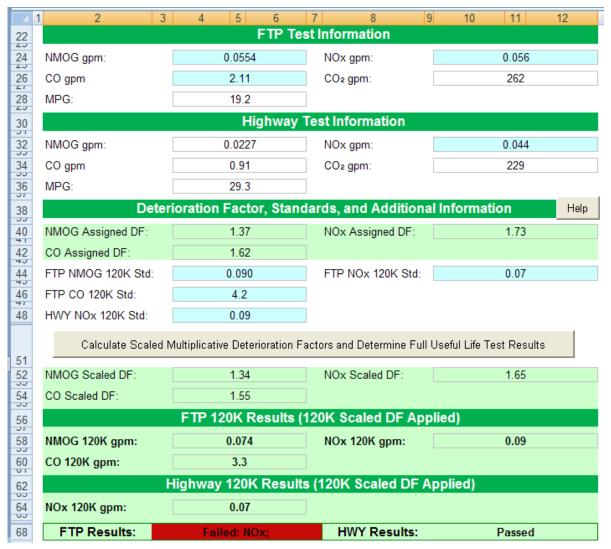
- Enter EDV info
- •Odometer reading in miles at time of test
- Generate Conversion ID #
- Applicable useful life (see OEM certificate of conformity)
- •Check box for intermediate useful life standards (Bins 5-8 = yes)
- •Read reg definitions for dedicated, dual fuel, etc 40 CFR 85.502
- Enter original fuel and new fuel
- •If using aged components, rather than assigned DFs, check box

#### Red Triangle in Cell

- Help text available
- Move pointer to cell



## IAV Notification Package: Data Form Worksheet: Exhaust data section



#### **Enter Test Results**

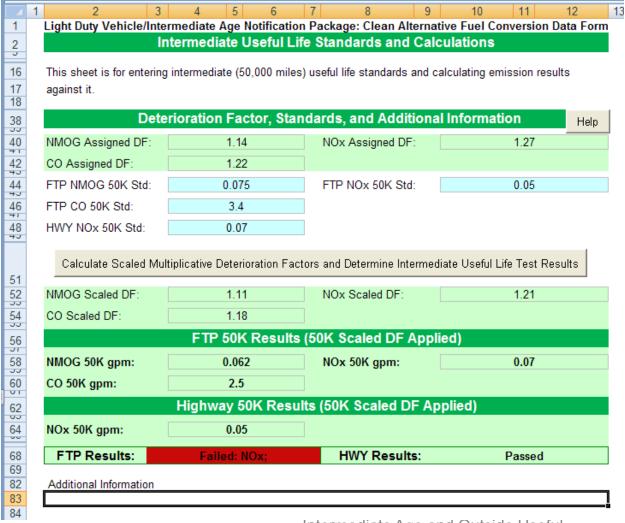
- Enter results and OEM standards in blueshaded cells
- OEM standards are found on OEM certificates of conformity – must be lowest standard in combined test groups
- White cells are optional- typically included in lab test reports
- Click calculate button

# IAV Notification Package: Data Form Worksheet: Evap data section

69 Evaporative/Refueling Data 70 72 Clean alternative fuel conversion manufacturers seeking exemption from the tampering prohibition under the 73 intermediate age vehicle program must submit data to demonstrate compliance with applicable evaporative 74 emissions standards and refueling standards. You must embed your evaporative/refueling emissions data in the 75 bottom of the instructions sheet. Please contact Martin Reineman at reineman.martin@epa.gov to discuss use 76 of assigned deterioration factors or issues specific to your evaporative and refueling data. 78 For conversions to CNG-, LPG-, and hydrogen-fueled vehicles with a closed fueling system, in lieu of test data, 79 you may be eligible to attest that your test group complies with evaporative emission standards based on the manufacturer's engineering evaluation or appropriate testing and/or design parameters [40 CFR 86.1829-01(b)(2)]. 80 81 82 Additional Information 83 84



## IAV Notification Package: Data Form Worksheet: 50K Exhaust data section



#### **Enter Test Results**

- Worksheet tab only shows up if you select cell on previous data form for "intermediate useful life standard applies
- Required for Tier 2
   Bins 5-8
- Enter OEM standards in blue-shaded cells
- Click calculate button



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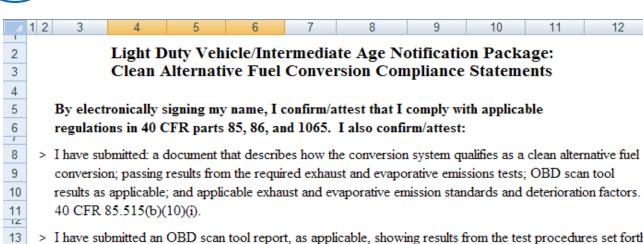
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## IAV Notification Package: Compliance Statements Worksheet



- > I have submitted an OBD scan tool report, as applicable, showing results from the test procedures set forth in 40 CFR 85. 515(b)(4)(ii). The results do not demonstrate a failed test. I have included the VIN number of the test vehicle on the report. 40 CFR 85.515(b)(9)(ii).
- > The test group converted to an alternative fuel has fully functional OBD systems (if the OEM vehicles are required to be OBD equipped) and therefore meets the OBD requirements in 40 CFR 86, subpart A when operating on the alternative fuel. The OBD system properly detects and identifies malfunctions in all monitored emission-related powertrain systems or components including any new monitoring capability necessary to identify potential emission problems associated with the new fuel. These include but are not limited to: fuel trim lean and rich monitors, catalyst deterioration monitors, engine misfire monitors, oxygen sensor deterioration monitors, EGR system monitors, if applicable, and vapor leak monitors, if applicable. No original OBD system monitor that is still applicable to the converted vehicle is aliased, removed, bypassed, or turned off. No MILs are illuminated after the conversion. Readiness flags are properly set for all monitors that identify any malfunction for all monitored components. 40 CFR 85.515(b)(9)(i) and (iii).
- > I attest that I have taken steps to ensure that fuel conversion systems will be properly installed and adjusted such that the vehicle operates consistent with the principles of good engineering judgment and in

#### **Electronically sign**

 At bottom of this worksheet

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- Statements will depend on conversion type and fuel type
- Read carefully
- Embed all supporting information

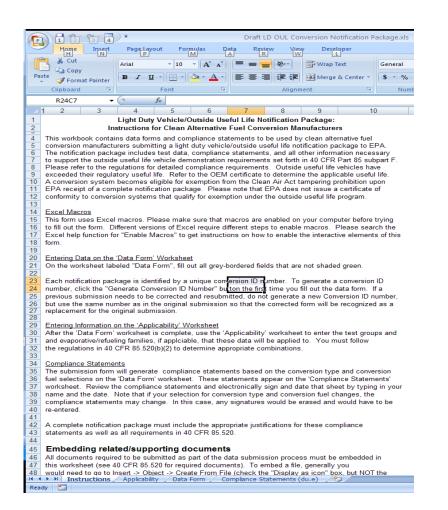


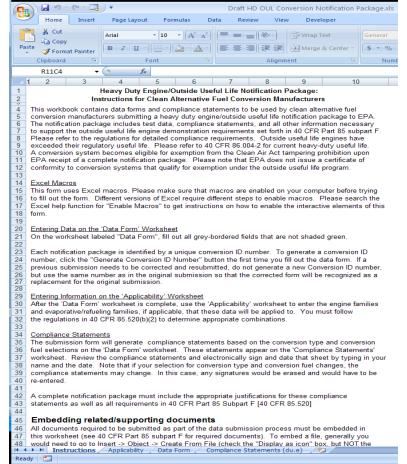
### IAV Notification Package: Important

- Filling out the data cells in this worksheet DOES NOT constitute a COMPLETE notification
- Embed all other required information on worksheet #1 (Instructions tab)
- You must satisfy all requirements in 40 CFR part 85 subpart F, including (but not limited to)
  - Submit an example vehicle label as set forth in 40 CFR 85.530
  - Comply with the liability, recordkeeping and reporting requirements in 40 CFR 85.535
  - If using assigned DFs, you must present detailed information to confirm the durability of all relevant new and existing components and explain why the conversion will not harm the emission control system (40 CFR 85.515(b)(5))
  - Supply details of durability process if you do not meet the criteria for small volume manufacturer or small volume test group (40 CFR 85.515(b)(6))
  - Submit an OBD scan tool test (40 CFR 85.515(b)(9)(ii))
  - Submit a description of how your conversion system qualifies as a clean alternative fuel conversion. You must also include a description of how the test vehicle qualifies as a worst-case vehicle (40 CFR 85.515(b)(10)(i))
  - Submit any other information that is necessary to demonstrate that this conversion is for the purpose of conversion to a clean alternative fuel and meets applicable emission standards (40 CFR 85.515(b)(10)(iv))
    - Include laboratory FTP and HWY test report

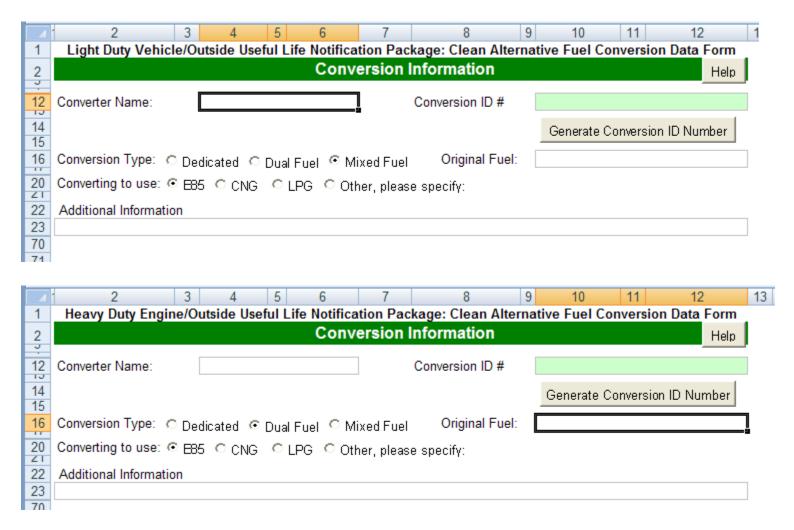


# Outside Useful Life Vehicle and Engine Notification Packages





## Outside Useful Life Vehicle and Engine Notification Packages: Data Form Worksheet



# Outside Useful Life Vehicle and Engine Notification Packages: Important

- Filling out the data cells in this worksheet DOES NOT constitute a COMPLETE notification
- Embed all other required information on worksheet #1 (Instructions tab)
- You must satisfy all requirements in 40 CFR part 85 subpart F, including (but not limited to)
  - Submit an example vehicle label as set forth in 40 CFR 85.530
  - Comply with the liability, recordkeeping and reporting requirements in 40 CFR 85.535
  - Submit an OBD scan tool test (40 CFR 85.520(b)(4)(ii))
  - Submit a description of how your conversion system complies with the good engineering judgment criteria in 40 CFR 85.520(b)(3) and/or other requirements such that the conversion system qualifies as a clean alternative fuel conversion (40 CFR 85.520(b)(6)(i))
    - Detail sufficient to confirm the conversion system's ability to maintain or improve upon emissions levels in a worst case vehicle/engine
    - Complete characterization of exhaust and evaporative emission control strategies, fuel system durability, and specs related to OBD functionality.
    - You must confirm durability of all relevant new and existing components and to explain why the conversion system will not harm to emission control system or degrade the emissions,
  - Submit any other information that is necessary to demonstrate that this conversion is for the purpose of conversion to a clean alternative fuel and meets applicable emission standards (40 CFR 85.520(b)(6)(iv))
    - Submit any test data. EPA may ask for more information (40 CFR 85.520(b)(8))



### **Bookmark This Website**

- http://www.epa.gov/otaq/consumer/fuels/altfuels.htm
  - Link to Enviroflash
  - Link to Document Index System (OEM Certificates, Applications, and Certificate Summary Information)
  - Instructions and Templates
  - Links to Lists of Certified Conversions, Intermediate Age Conversions, and Outside Useful Life Conversions
  - Guidance Letters
  - Other Information



### Questions

ComplianceInfo@epa.gov

 Light-Duty and Heavy-Duty Chassis Vehicles: <u>Reineman.Martin@epa.gov</u>

Heavy-Duty Engines:

DeBord.Steven@epa.gov