

Heavy-Duty Warranty Reporting 2015 Q4 EWIR Data

- 1303 components reported by HD mfrs
- 181 components with warranty claims rates >20%
- Warranty claims may have increased with partial implementation of HD OBD, while some warranty claims may have decreased due to improved design and durability
- Some manufacturers not submitting FIRs/EIRs
- EIRs continue to lack emissions data
- Manufacturer responses delayed and/or incomplete

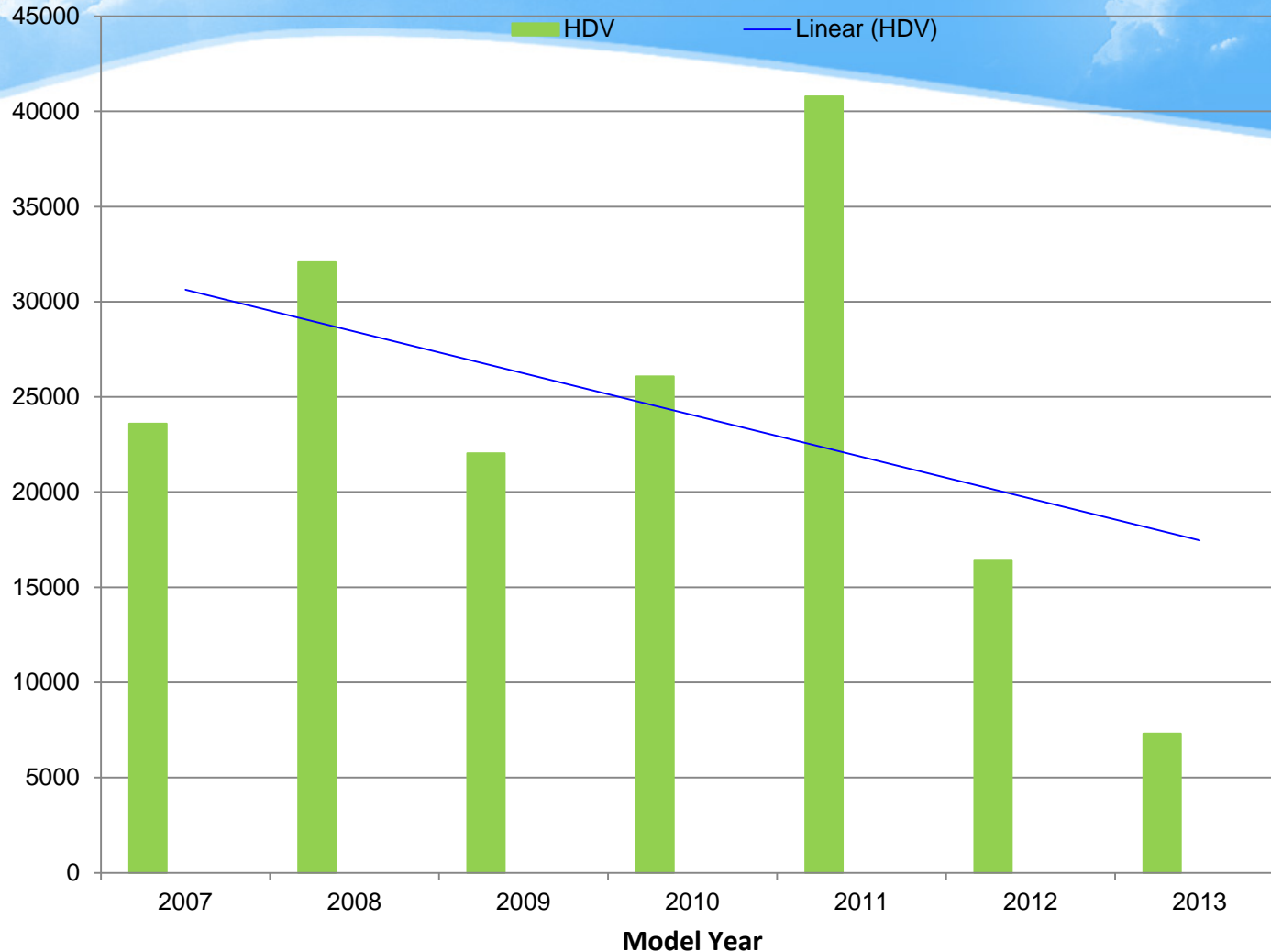
2010-2014 MY Average HD EWIR Cumulative Claims Rate Based on 2014Q4 Data

COMPONENT	CUMULATIVE CLAIMS
Catalytic Converter	6%
EGR	14%
EGR Cooler	16%
Turbo	10%
Exhaust Manifold	10%
Injectors	12%
DPF	11%
SCR	6%
Other	6%

Examples of High EWIR Submissions

COMPONENT	CUMULATIVE CLAIMS
UEGO	>100%
TURBO	>100%
EXHAUST MANIFOLD	>50%
INJECTOR	>50%
EGR COOLER	>50%
DPF	>40%
FUEL SOLENOID	>20%
CATALYTIC CONVERTER	>10%

Downward Trend Seen for the Total Number of HDV Warranty Claims



Process for Corrective Action

- There is an expectation that manufacturers improve parts or calibrations, work with ARB to implement corrective action in the form of extended warranty and/or recall, and contact their customers so they are aware of the service campaign.

Warranty Reporting Contact Information

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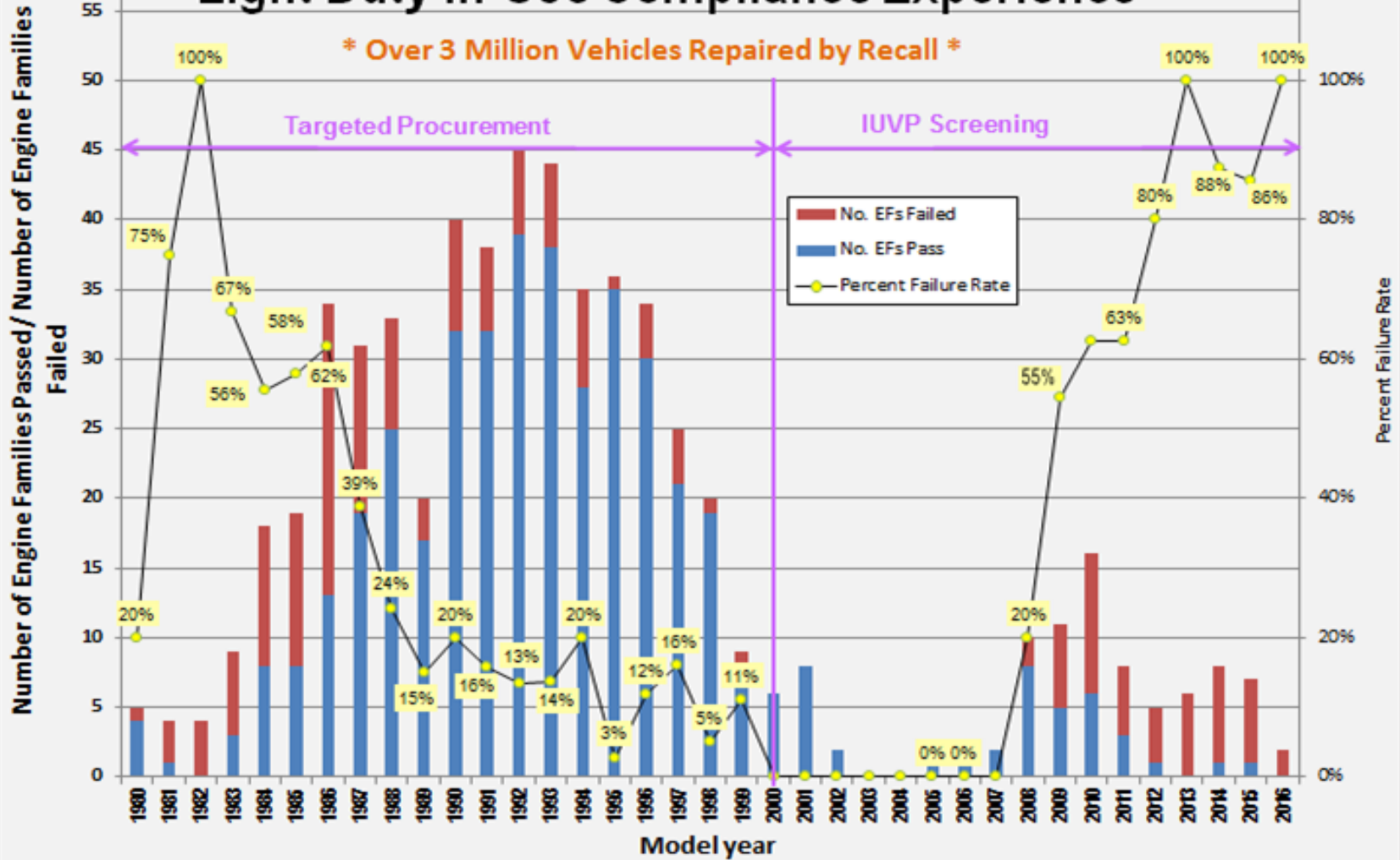
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In-Use Compliance Program

- Key air quality program to help guarantee emission reductions from mobile source regulations
- Ensures vehicles and engines meet applicable emissions standards throughout their useful lives, forcing durable emission control designs, and catching and fixing the problems early in the field
- The program applies to almost all on-road and off-road vehicles with the exception of the federally preempted (ocean-going vessels, locomotives and aircraft)
- ARB's Light-Duty IUC very successful program with over 3 millions vehicles being recalled and corrected to meet their applicable emissions standards
- Heavy-duty vehicles and engine manufacturers are required to comply with the Heavy-Duty Diesel In-Use Testing (HDIUT) Program utilizing the "Not to Exceed (NTE)" standards
- Currently testing advanced technologies for diesel light duty vehicles

Light Duty In-Use Compliance Experience

* Over 3 Million Vehicles Repaired by Recall *



Program Evolution Needed for Real World Emissions

- In-Use Compliance testing now includes screening for non-approved AECDs and defeat devices
 - Both light and heavy duty affected
- Integrating OBD compliance in-use
 - Data acquired/stored on vehicles for interrogation
- Special Test Cycles Deployment
 - Random and non-typical test cycles in the laboratory
- Expand Real-World/On the road testing
 - Remote Sensing Device Screening
 - Portable Emissions Measurement Systems (PEMS)

HDIUT Program Evaluation

- Develop and verify HDIUT program working as designed
- ARB developed HDIUT standard operating procedures
 - Vehicle procurement
 - Restorative maintenance
 - Test equipment operation (i.e, PEMS)
 - Data validation and analysis
 - NTE pass/fail determination
- The pilot program was used to develop what it would take to conduct an official compliance test program

HDIUC Pilot Program Test Vehicles and NOx NTE Results

	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4*
Model Year	2010	2013	2014	2013
Odometer (miles)	20,120	105,171	38,077	75,990
Aftertreatment Devices	DPF/SCR	DPF/SCR	DPF/SCR	DPF/SCR
NTE Threshold (g/bhp-hr)	0.77	0.45	0.45	0.45
Number of passed NTE Events	73	55	42	30
Number of failed NTE Events	1	7	1	0
NOx Pass Ratio	0.99	0.87*	0.96	1

* Vehicle 2 - Failed NTE ; Vehicle 4 – OBD failure identified

In-Use Compliance Contact Information

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