

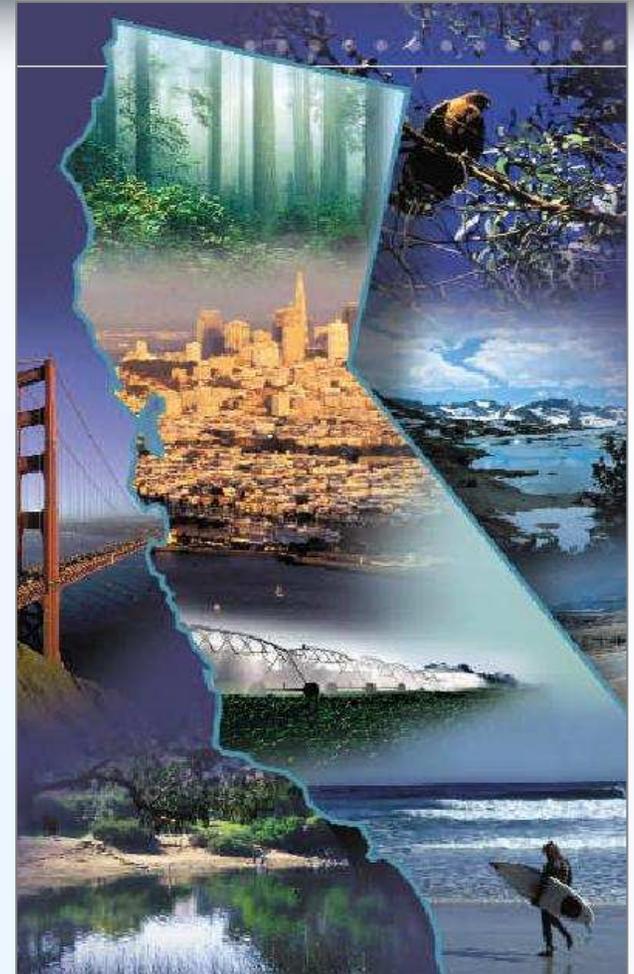
# Advanced Clean Cars Program

- Clean, efficient vehicles needed to meet California's health and climate change goals
- Commercialization of advanced vehicle technologies by 2025 required to achieve 2050 climate change goal
  - HEV, PHEV, BEV, FCV
- Modifications to the LEV and ZEV programs being proposed to meet those goals
  - Define the “pathway” to 2050
  - Long-term standards provide certainty to manufacturers
    - Criteria 2014-2022
    - GHG 2017-2025

# Advanced Clean Cars Workshop

## LEV III Criteria Emissions Element

El Monte, California  
November 16<sup>th</sup>, 2010



# Low-Emission Vehicle Program

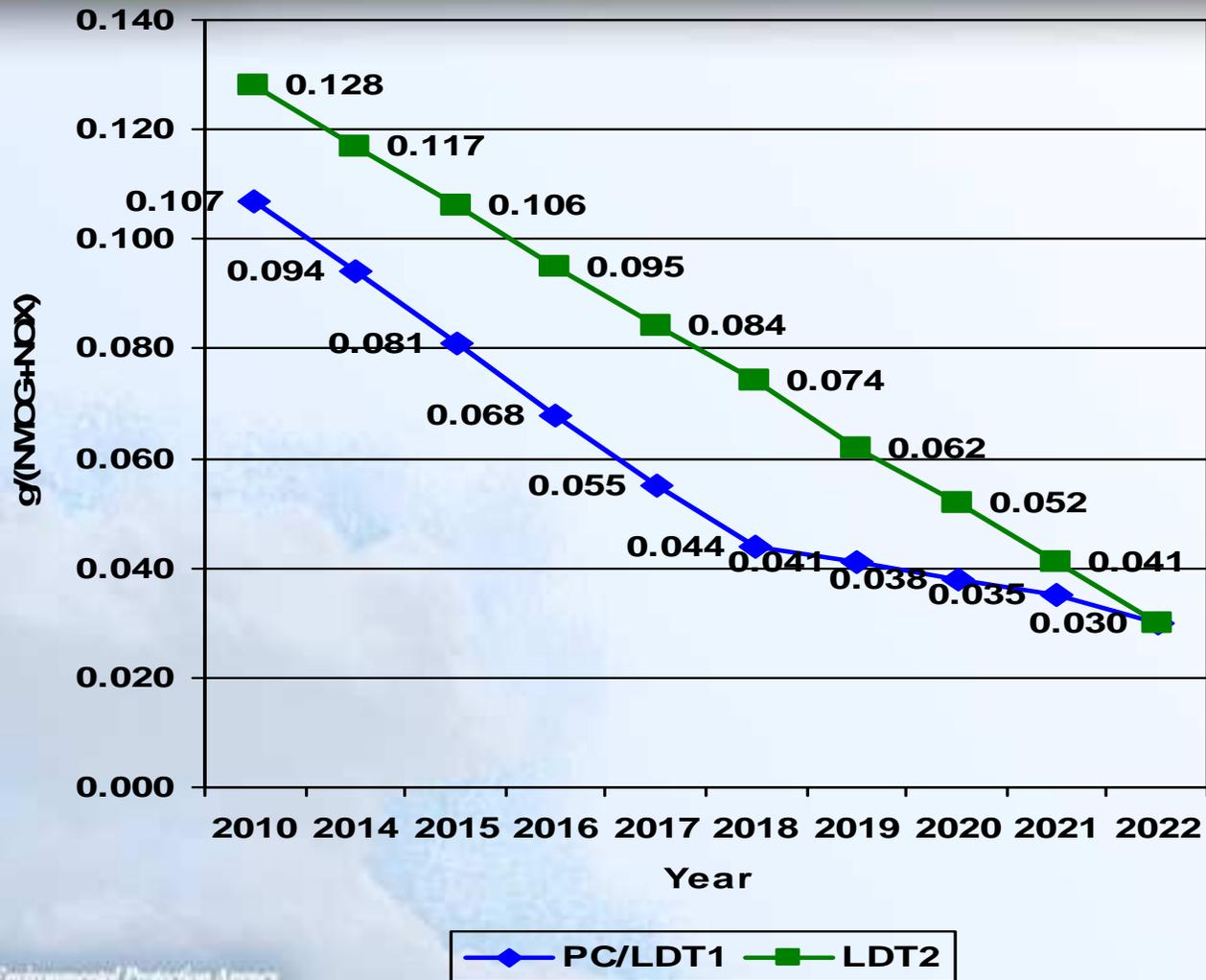
- Applicable to light- and medium-duty vehicles
  - LDVs up to 8,500 lbs GVW
  - MDVs 8,501-14,000 lbs GVW
- LEV II fully phased-in in model year 2010
  - NMOG fleet average requirements for PC/LDT1 (0.035 g/mi) and LDT2 (0.043 g/mi)
- Percentage certification requirement for MDVs
  - chassis certified - 40% LEV, 60% ULEV
  - engine certified - 100% - ULEV

# **Low Emission Vehicle Program Light-Duty Vehicles**

# Proposed Revisions to LEV Program (LDVs)

- Phase-in 2014-2022
- Fleet average requirement equivalent to SULEV by 2022
- Additional emission categories provided for flexibility
- Combined NMOG and NOx standards
- Intermediate FUL standards
- Eliminate 50,000 mile intermediate useful life standards
- Increase durability requirement from 120,000 miles to 150,000 miles
- More stringent particulate matter standard
- NMOG+NOx credit 0.005 g/mi for 15 year/150,000 mile emission warranty
- Revised baseline reactivity factor (RFA)

# Fleet Average Requirement



# Proposed LEV III LDV Emission Standards

Vehicle Emission Category	Durability Basis (miles)	Existing NMOG standards (g/mi)	Existing NO <sub>x</sub> Standards (g/mi)	Combined NMOG+NO <sub>x</sub> Standards (g/mi)	Proposed NMOG+NO <sub>x</sub> Emission Standards (g/mi)
LEV	150,000	0.090	0.070	0.160	0.160
ULEV	150,000	0.055	0.070	0.125	0.125
<b>ULEV70*</b>	<b>150,000</b>	-	-	-	<b>0.070</b>
<b>ULEV50*</b>	<b>150,000</b>	-	-	-	<b>0.050</b>
SULEV30	150,000	0.020	0.010	0.030	0.030
<b>SULEV20*</b>	<b>150,000</b>	-	-	-	<b>0.020</b>

\*New emission standards

# Proposed LEV III LDV Intermediate In-use Emission Standards

Applicable to first two years a test group is certified to a new standard

Vehicle Emission Category	Durability Basis (miles)	Proposed FUL Emission Standards (g/mi)	Proposed Intermediate In-use (NMOG+NOx) Emission Standards (g/mi)
LEV	150,000	0.160	-
ULEV	150,000	0.125	-
<b>ULEV70*</b>	<b>150,000</b>	<b>0.070</b>	<b>0.100</b>
<b>ULEV50*</b>	<b>150,000</b>	<b>0.050</b>	<b>0.070</b>
SULEV30	150,000	0.030	0.040**
<b>SULEV20*</b>	<b>150,000</b>	<b>0.020</b>	<b>0.030</b>

\*New emission standards

\*\* Not applicable to PZEV carry over

# Baseline RFA Reactivity Factor

- Reactivity factor provides fuel specific emission adjustment relative to RFA
  - Favors clean fuels
- RFA, or reformulated fuel A, represents industry average commercial gasoline when LEV program adopted in 1990
  - Defined by Auto/Oil study
- Update baseline reactivity of RFA fuel to reflect revised MIRs
  - Approved by Reactivity Scientific Advisory Committee March 25, 2009
- Primarily benefits E85

# **Medium-Duty Vehicles**

## **8,501 – 14,000 lbs GVW**

# Proposed Revisions to LEV Program ( MDVs)

- Phase-in 2016-2022
- More stringent emission standards
  - Additional emission categories provided
- Combined NMOG and NOx standards
- More stringent PM standards
- Eliminate 50,000 mile intermediate useful life standards
- Increase durability requirement from 120,000 miles to 150,000 miles
- MDVs 8,501-10,000 lbs GVW must chassis certify

# Current LEV II MDV Emission Standards (Chassis Certified)

Weight Class (lbs GVW)	Vehicle Emission category	NMOG (g/mi)	NO <sub>x</sub> (g/mi)	CO (g/mi)	HCHO (g/mi)
8,501-10,000	LEV	0.195	0.2	6.4	0.032
	ULEV	0.143	0.2	6.4	0.016
	SULEV	0.100	0.1	3.2	0.008
10,001-14,000	LEV	0.230	0.4	7.3	0.040
	ULEV	0.167	0.4	7.3	0.021
	SULEV	0.117	0.2	3.7	0.010

# Proposed MDV Emission Standards (Chassis Certified)

Emission Category	8,501-10,000 lbs. GVW		10,001-14,000 lbs. GVW		VEC
	NMOG+NO <sub>x</sub> (g/mi)	CO (g/mi)	NMOG+NO <sub>x</sub> (g/mi)	CO (g/mi)	
LEV	0.395	6.4	0.630	7.3	1.0
ULEV1	0.340	6.4	0.570	7.3	1.2
ULEV2	0.250	6.4	0.400	7.3	1.4
ULEV3	0.200	4.2	0.270	4.2	1.5
SULEV1	0.170	4.2	0.230	4.2	1.6
SULEV2	0.150	3.2	0.200	3.7	1.7

# MDV Phase-in (8,501-14,000 lbs GVW)

Year	LEV	ULEV34/ ULEV57	ULEV25/ ULEV40	ULEV20/ ULEV27	SULEV17/ SULEV23	SULEV15/ SULEV20
2015*	40%	60%	0%			
2016	20%	60%	20%			
2017	10%	50%	40%			
2018		40%	50%		10%	
2019		30%	40%		30%	
2020		20%	30%		50%	
2021		10%	20%		70%	
2022			10%		90%	

\*Current Requirements

# Phase-in Requirements (LDV/MDV)

- Phase-in to 150,000 mile durability
  - New test groups must certify to 150K durability
  - Carry over/carry across existing test groups allowed
- Phase-in to E10 certification fuel by 2018
  - New test groups must certify to 150K durability
  - Carry over/carry across existing test groups allowed

# Other Provisions

- 5 Year carry forward/back of credits or debits
  - Currently credits carry forward 3 MYs then discounted 50% next two MY years, go away in third MY year. Carry back 1 MY
- E10 NMHC to NMOG conversion factor
  - Additional data needed
- Aggregate manufacturers if 33.4% ownership
  - Currently 10%
  - Simply to interpret
  - Indicates strong investment
- Revising Intermediate Volume Manufacturer cutpoint from 60,000 to 20,000 units per year
- 3 year moving average to determine manufacturer status the following MY
  - Currently OEM moves to lower category the next MY when 3 year average sales meet category criteria
  - Currently OEM moves to higher category the 4<sup>th</sup> year after 3 year average sales meet category criteria

# Emission Pooling?

- Industry has requested that pooling of criteria and GHG emissions in California and section 177 states for compliance purposes be allowed.
- ARB supports this.
- OEMs would still be required to report model year sales and emissions on a state-by-state basis.
- Buy-in of Section 177 states required.
  - Some may be concerned about impact on SIP compliance

# Questions/Comments

# Contacts/Information

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Advanced Clean Cars Webpage  
[http://www.arb.ca.gov/msprog/clean\\_cars/clean\\_cars.htm](http://www.arb.ca.gov/msprog/clean_cars/clean_cars.htm)

LEV III Webpage  
<http://www.arb.ca.gov/msprog/levprog/leviii/leviii.htm>