Strategies for Reducing Light-Duty Vehicle Emissions

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January 2017

Mexico City

California Environmental Protection Agency
Air Resources Board

Topics

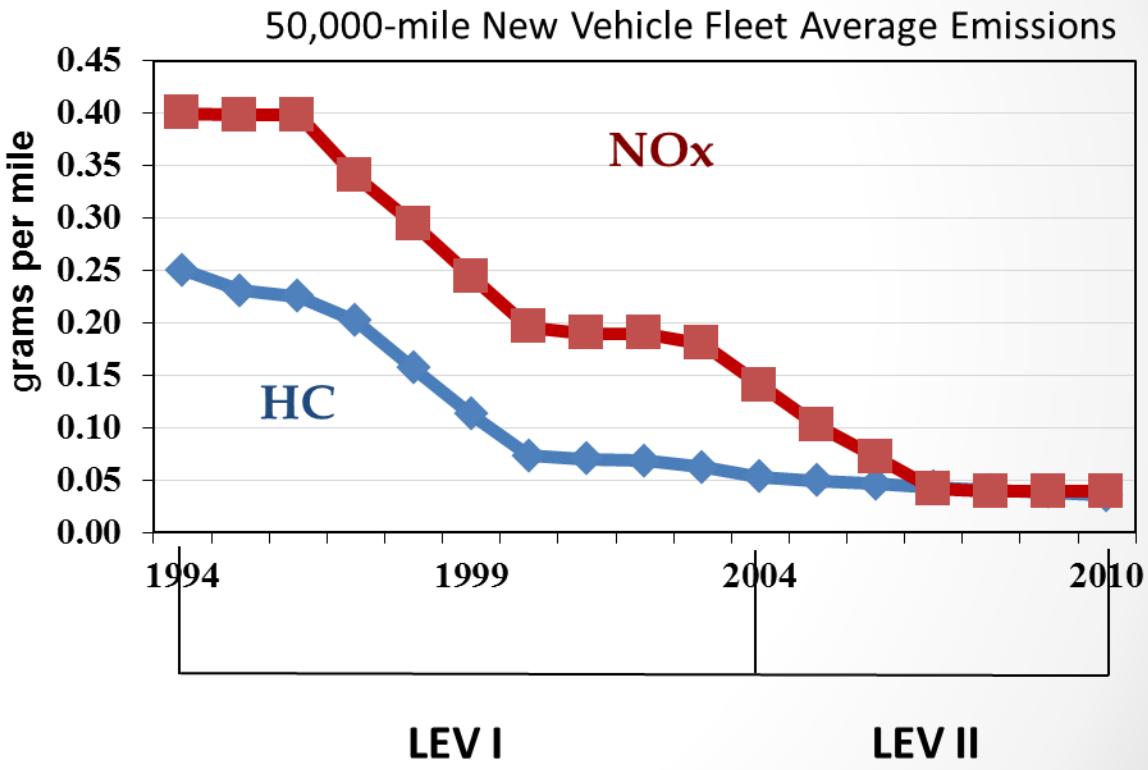
- Benefits of New Vehicle Standards
- Early Fleet Modernization
- Higher Performance Aftermarket Catalysts

More Stringent New Vehicle Standards

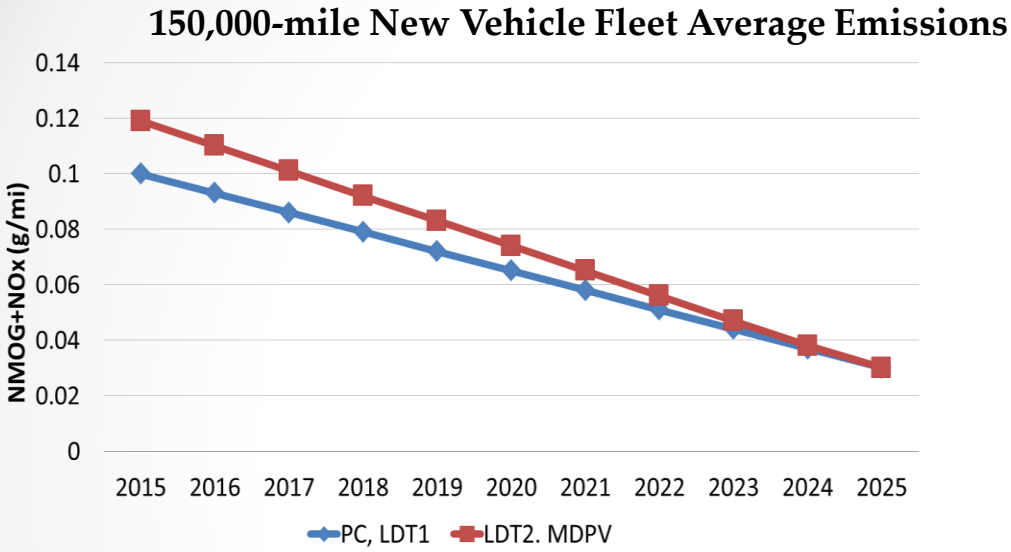
- Provides very significant emission reductions
  - Standards reduced by well over 90% since the 1990s
- Longer durability
- Increasingly stringent standards have been a cornerstone of California's ozone reduction effort for 3 decades
- Regulations have historically been very cost effective.

LEV Program 1994-2010

- LEV I
  - Adopted 1990
  - Implemented 1994-2003
- LEV II
  - Adopted 1998
  - Implemented 2004-2010
  - Light trucks meet passenger car standards
  - NOx focused (75% reduction)

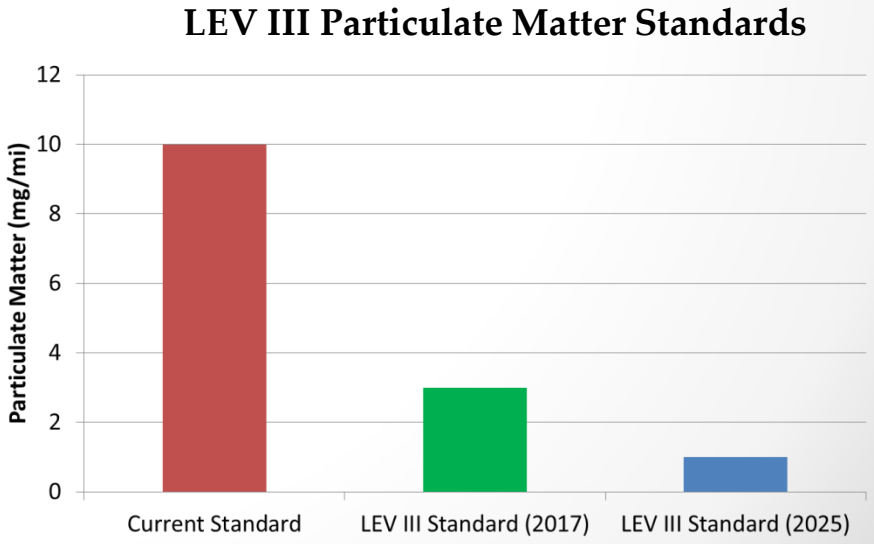


LEV III: Reducing Criteria Emissions

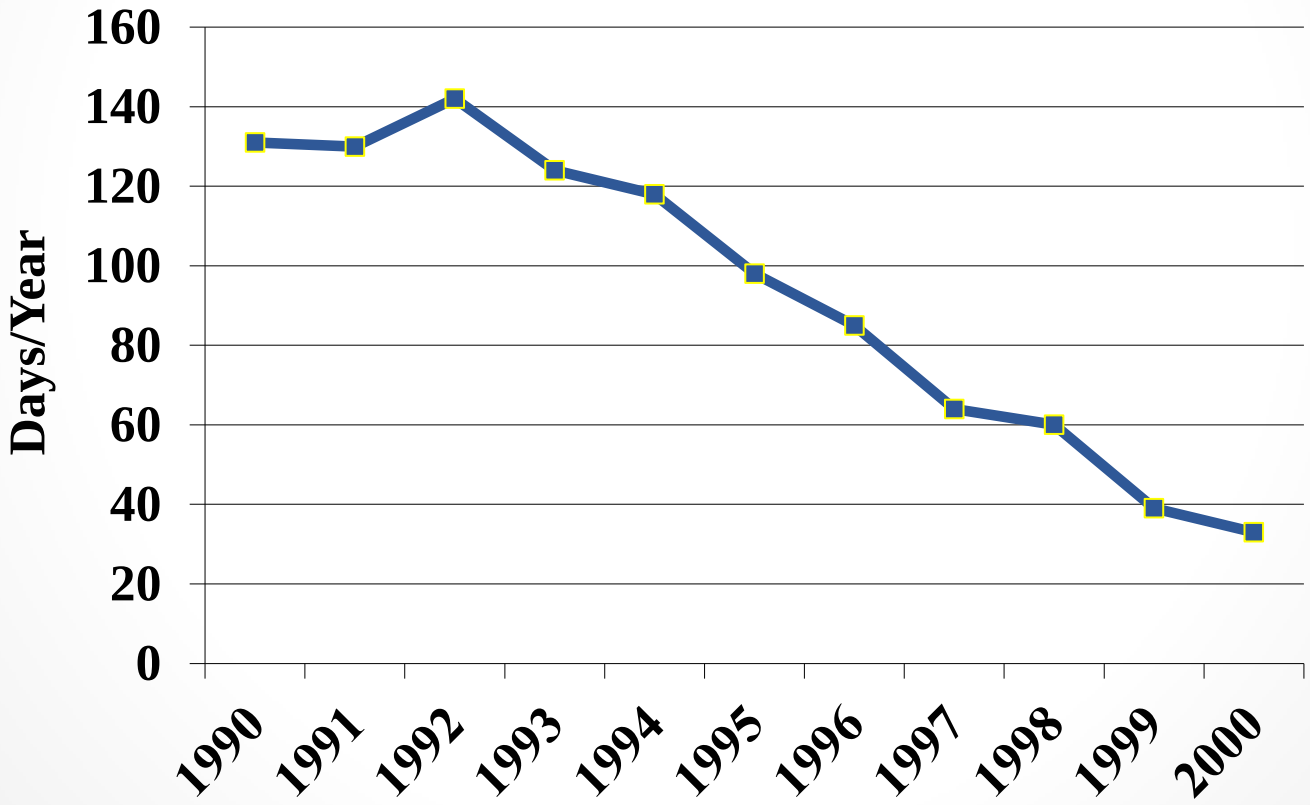


75% Reduction in fleet average emissions 2015-2025

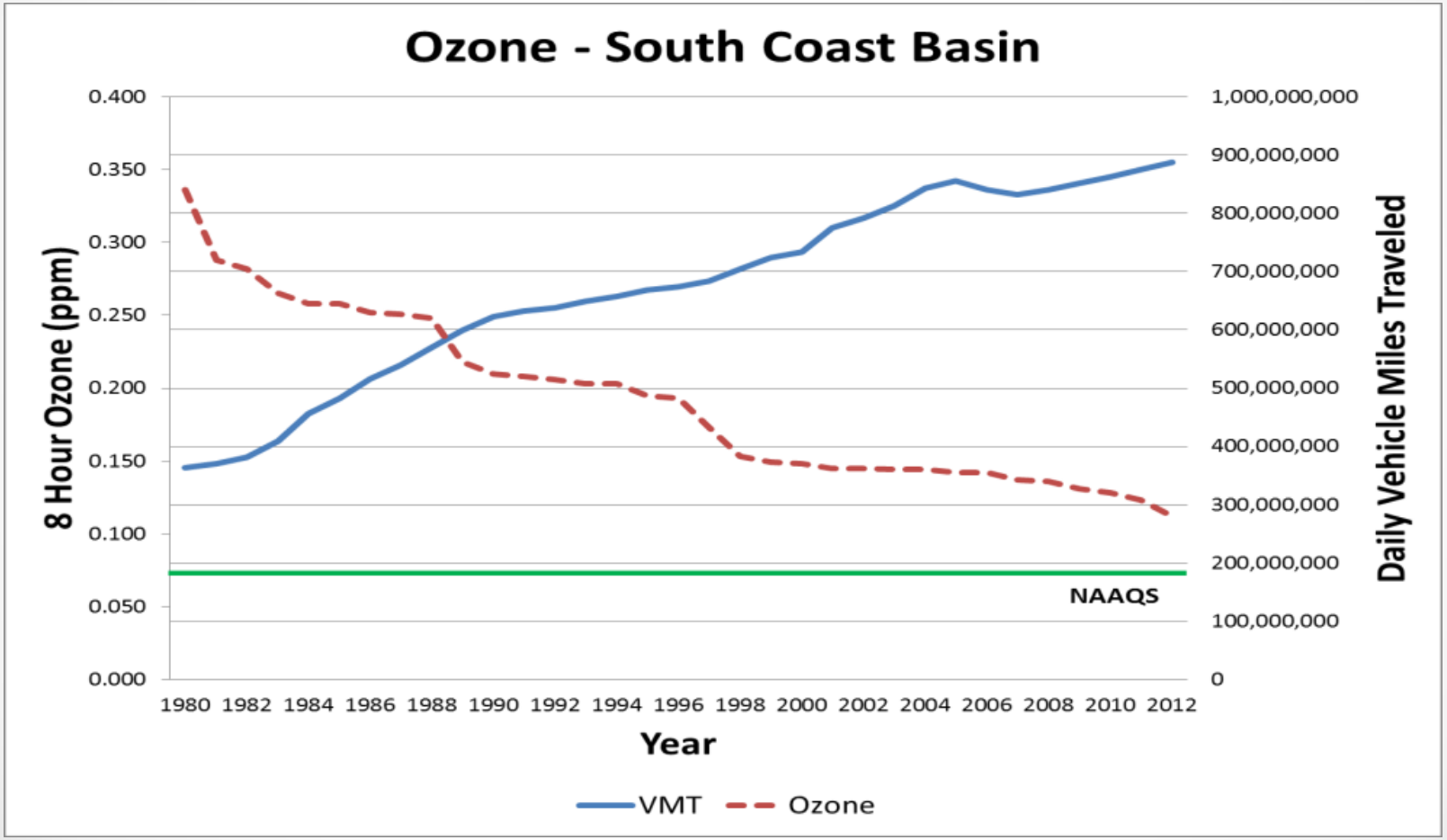
1 mg/mi PM standard in 2025 maintains current PM emission level of well controlled PFI engines



Days Above National 1-hour Ozone Standard (Southern California)



Air Quality Has Improved Even as Vehicle Use Increases



Early Fleet Modernization

EFMP designed to hasten removal of older vehicles and promote new vehicle technologies

Two components:

- Retirement-only – Administered by BAR and is available statewide
  - $1500 to scrap car
- Retire and Replace (includes EFMP Plus-Up) – currently available in the San Joaquin Valley and South Coast air districts
  - $2500- $9500 to scrap car and replace with cleaner, new or used vehicle

Retire and Replace Overview

- Tiered to provide more funding to lowest income drivers and more funding to most advanced technology replacement
- EFMP Plus-Up uses GGRF to provide additional money for advanced technology replacements for residents living in or near a disadvantaged community (DAC)
- District has flexibility to best serve local needs

Goals of Retire and Replace

- Provide air quality , GHG benefits, and access to advanced technology vehicles for low income and DAC populations
- Support statewide goals for SIP and ZEV deployment
- Stimulate the market for advanced technology vehicles

Retire and Replace Program Update

- Programs in South Coast and San Joaquin Valley initiated in July of 2015.
- 1,411 vehicles replaced (as of October 1, 2016):
  - 217 (15%) are BEV
  - 350 (25%) are PHEV
  - 587 (42%) are conventional hybrids
  - 247 (18%) are ICE vehicles
- 94% of all participants have household incomes equal to or less than 225% of federal poverty level
- 97% of participants live in or near a disadvantaged community (i.e. in a zip code containing a DAC)

EFMP Funding

Program	Source	FY 14-15	FY 15-16	FY 16-17
Retire-only	EFMP (AB 118)	$34.2 million	$34.2 million	$29.6 million
Retire & Replace	EFMP (AB 118)	$2.8 million	$2.8 million	$7.4 million
	Plus-Up (GGRF)	$2.0 million	$10 million	**$30 + million**

EFMP Program Expansion

- $10+ million available in FY 16-17 to expand program to additional air districts
- Three new districts plan on adopting program
  - Bay Area AQMD
  - Sac Metro AQMD
  - San Diego APCD
- New programs likely to start by summer of 2017

Aftermarket Catalysts

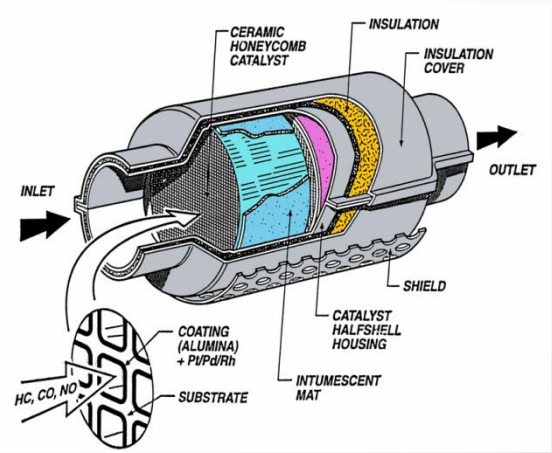
- Intended to offer low cost replacement option for older vehicles
- US federal requirements for replacement converters are severely out of date
  - 70% HC, 30% NOx conversion efficiency
  - Low emission vehicles typically need greater than 90% efficiency to meet standards
  - No provision for compatibility with vehicle OBD systems
- Catalysts meeting federal requirements can often be worse than the malfunctioning OEM converters they replace.

California AM Catalyst Rules

- Adopted in 2007.
- Implementation began Jan 1, 2009
- Adopted under anti-tampering authority (instead of authority to regulate vehicle manufacturers)
  - California Vehicle Code Section 27156

AM Converter Requirements

- Conversion Efficiency – high enough for vehicles to meet certification emission standards
- Durability: 5 years or 50,000 miles
- OBD II compatibility demonstration for converters designed for 1996 and newer vehicles
- Evaluation procedure Improvements
  - Quality control
  - 5 year / 50,000 mile warranty
  - Converter labeling



Identifying California AM Cats

- ARB Approval information is printed on the can
  - D-XXX-XX – EO number (ARB's approval number)
  - YYYYYY – Part Number
  - ZZZZ – Date of Manufacturer. First 2 digits=month, last 2=year
- On-line look up for California approved aftermarket catalysts.
  - http://www.arb.ca.gov/msprog/aftermkt/devices/amquery.php