

Standards for Vehicles In Circulation

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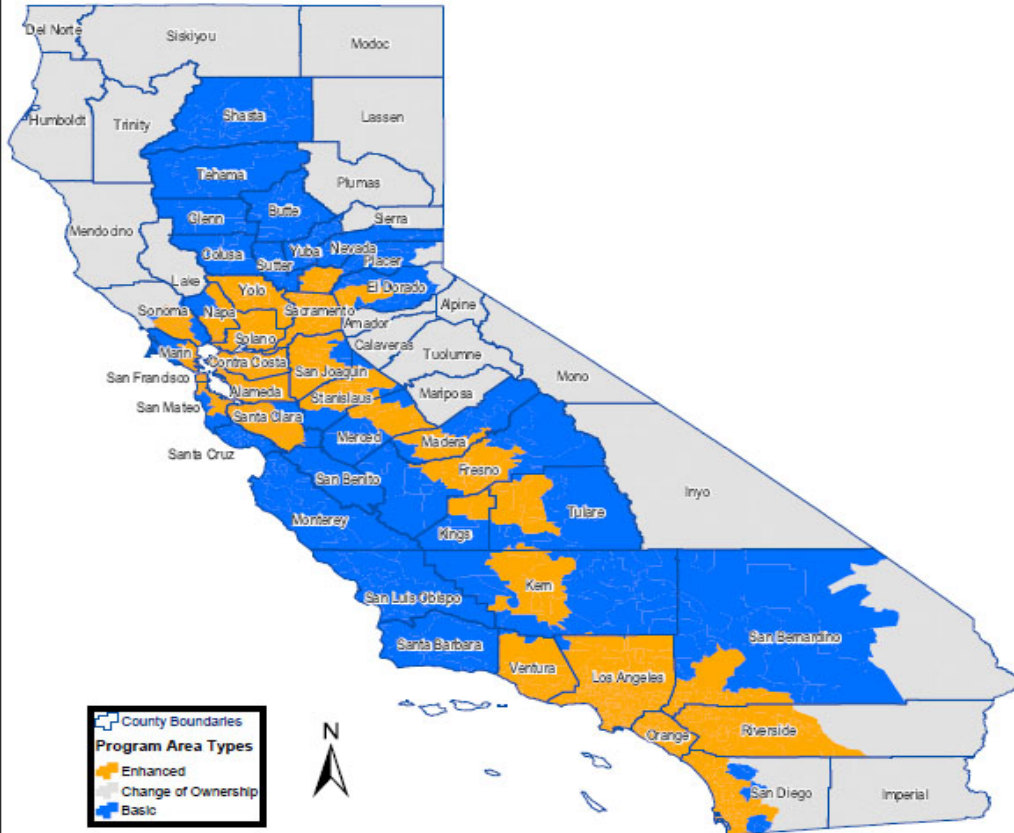
April 2015

Mexico City

Smog Check Program Overview

- Program administered by Bureau of Automotive Repair (BAR)
- Designed in Consultation with ARB
- De-centralized program design
 - Privately owned stations licensed by BAR
- Historically: Most vehicles tested by OBD and ASM
- March 2015: OBD only testing for 2000 and newer gasoline vehicles

California's Smog Check Program Area Types Updated April 2005



Bureau of Automotive Repair
Engineering
April 2005

Check web site at www.smogcheck.ca.gov for updates

Program Areas

Testing Requirements per Area

Program Area	Smog Check Required	Testing Required
Enhanced	Every 2 Years When Owner Changes	OBD for 2000+ MY OBD + ASM for 1996-1999 MY ASM for 1976-1996 MY
Basic	Every 2 Years When Owner Changes	OBD for 2000+ MY OBD + TSI for 1996-1999 MY TSI for 1976-1999
Change of Ownership	When Owner Changes	OBD for 2000+ MY OBD + TSI for 1996-1999 MY TSI for 1976-1999

OBD = On-Board Diagnostic System Focused Inspection

ASM = Acceleration Simulation Mode Test

TSI = Two Speed Idle Test

Smog Check Requirements by Vehicle Type

Fuel Type	Model-Year	Biennial Inspection (every other year)	Change-Of-Ownership Inspection	No Inspection Required
Gasoline & Alternative Fuels	Four model-years and newer			✓
	Fifth and sixth model-year		✓	
	Seven model-years – 1976	✓	✓	
	1975 and older			✓
Diesel	1998 and newer	✓	✓	
	1997 – 1976	✓	✓	
	1975 and older			✓
Hybrid	All			✓
Electric	All			✓
Motorcycles	All			✓

TEST REQUIREMENTS

Required Tests	BAR-97		OBD Inspection System (OIS)		
	Gasoline 1976 to 1995 (1)	Gasoline 1996 to 1999 (1)	Hybrid 2000 and newer (2)	Diesel 1998 and newer (3)	Gasoline 2000 and newer (1, 4)
Tailpipe Inspections: (see section 1.2 for specifics)					
Acceleration Simulation Mode (ASM) or Two Speed Idle (TSI) ⁽⁵⁾	√	√			
Visual Inspections: (see section 1.3 for specifics)					
Crankcase Emissions Controls	√	√	√	√	√
Thermostatic Air Cleaner	√	√			
Fuel Evaporative System (EVAP)	√	√	√		√
Exhaust Gas After Treatment Systems	√	√	√	√	√
Exhaust Gas Recirculation (EGR)	√	√	√	√	√
Ignition Spark Controls	√	√	√		√
Fuel Metering Systems	√	√	√	√	√
Air Injection System	√	√	√		√
Computers, Sensors, and Switches	√	√	√	√	√
Other Emission Related Components	√	√	√	√	√
Liquid Fuel Leak (section 1.3.3)	√	√	√		√
Visible Smoke Test (section 1.3.4)	√	√		√	√
Functional Inspections: (see section 1.4 for specifics)					
On-Board Diagnostics (OBD)		√	√	√	√
Malfunction Indicator Light (MIL)	√	√	√	√	√
Exhaust Gas Recirculation (EGR) ⁽⁶⁾	√				
Ignition Timing	√				
Fuel Cap Integrity	√				
Low Pressure Fuel Evaporative Test (LPFET)	√				

(1) Gasoline includes alternative fueled vehicles, e.g., ethanol, methanol, LPG, CNG, etc.

(2) Hybrid vehicles are powered by both internal combustion and electric power sources.

(3) Diesel-powered vehicles with a GVWR greater than 14,000 lbs. are exempt from the Smog Check Program.

(4) Exception: Some model-year 2000 and newer vehicles will require a tailpipe test on the BAR-97 EIS. These include vehicles without OBDII systems, e.g., over 14,000 GVWR, and may also include vehicles with problematic OBDII systems.

(5) ASM required for vehicles registered in Enhanced program areas, unless vehicle is incompatible with dynamometer test, then TSI shall be performed. TSI required in Basic and Change of Ownership Program areas.

(6) The EGR functional inspection is only performed in conjunction with a TSI tailpipe test.

BAR 97 System

ASM Testing (with dyno)

TSI Testing

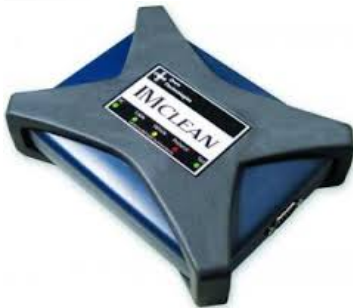
Basic OBD system testing

Systems are Certified by BAR



OBD Inspection System (OIS)

- Provides in-depth OBD focused testing
- Vendors certify systems through BAR



Data Acquisition Devices



OIS System Packages

California Smog Check Statistics

- 22 Million vehicles in program
 - 11.3 Million “initial” inspections/year
- 7,000 Smog Check Stations
- 21,000 Inspectors/Technicians
- Overall Failure rate (2014): 12.14%
- Average Inspection Cost (2014): \$47
- Average Repair Cost (2014): \$297

Smog Check Station Requirements

- To become a licensed Smog Check station, the facility must:
 - Be registered with BAR as an Automotive Repair Dealer (ARD)
 - Meet minimum equipment and facility requirements
 - Employ licensed inspectors
 - Retain service and repair records for three years

Smog Check Inspector Requirements

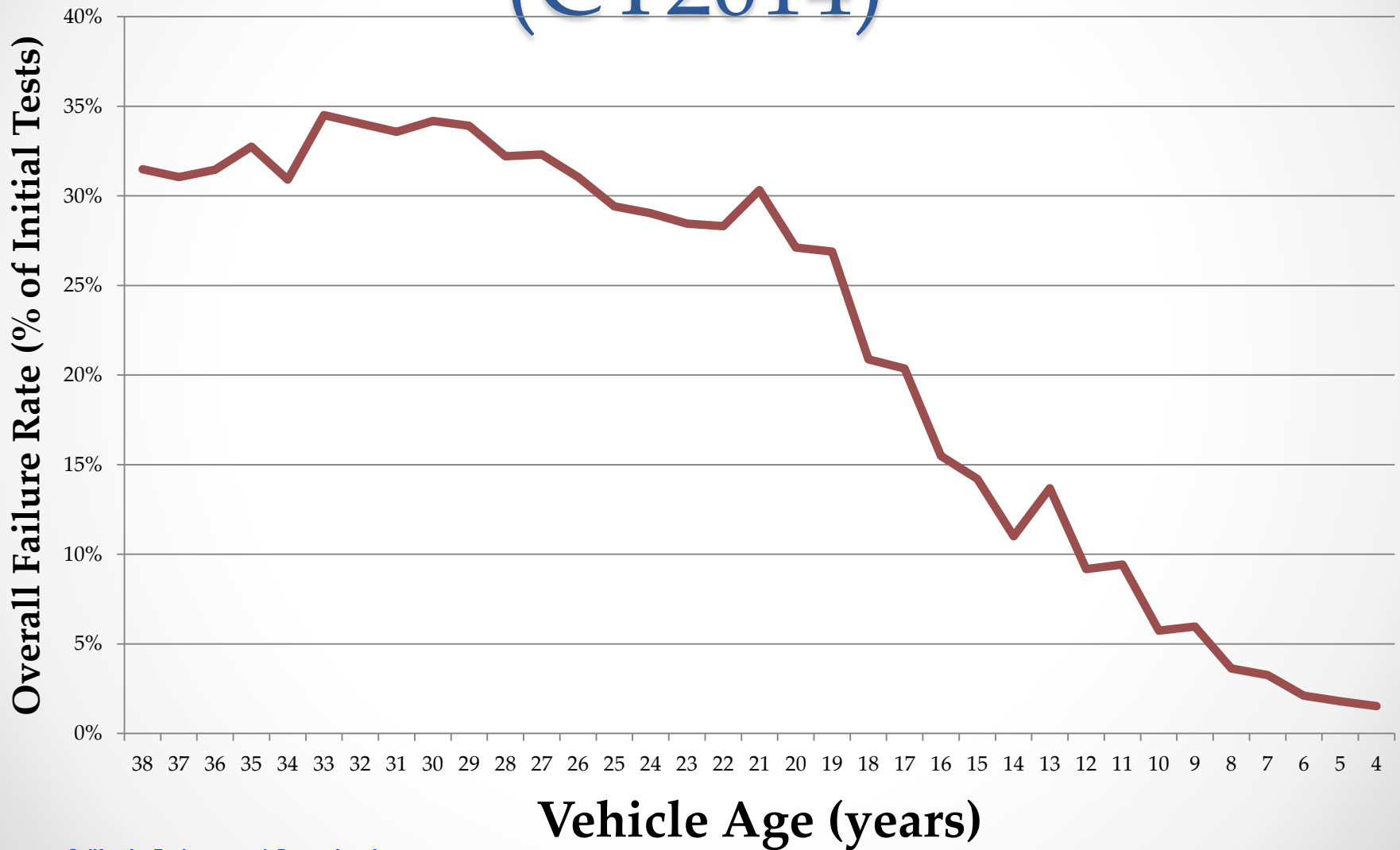
- To become a licensed Smog Check inspector, the candidate must:
 - Meet minimum experience requirements
 - Meet minimum training requirements
 - Pass a BAR licensing examination

STAR Stations

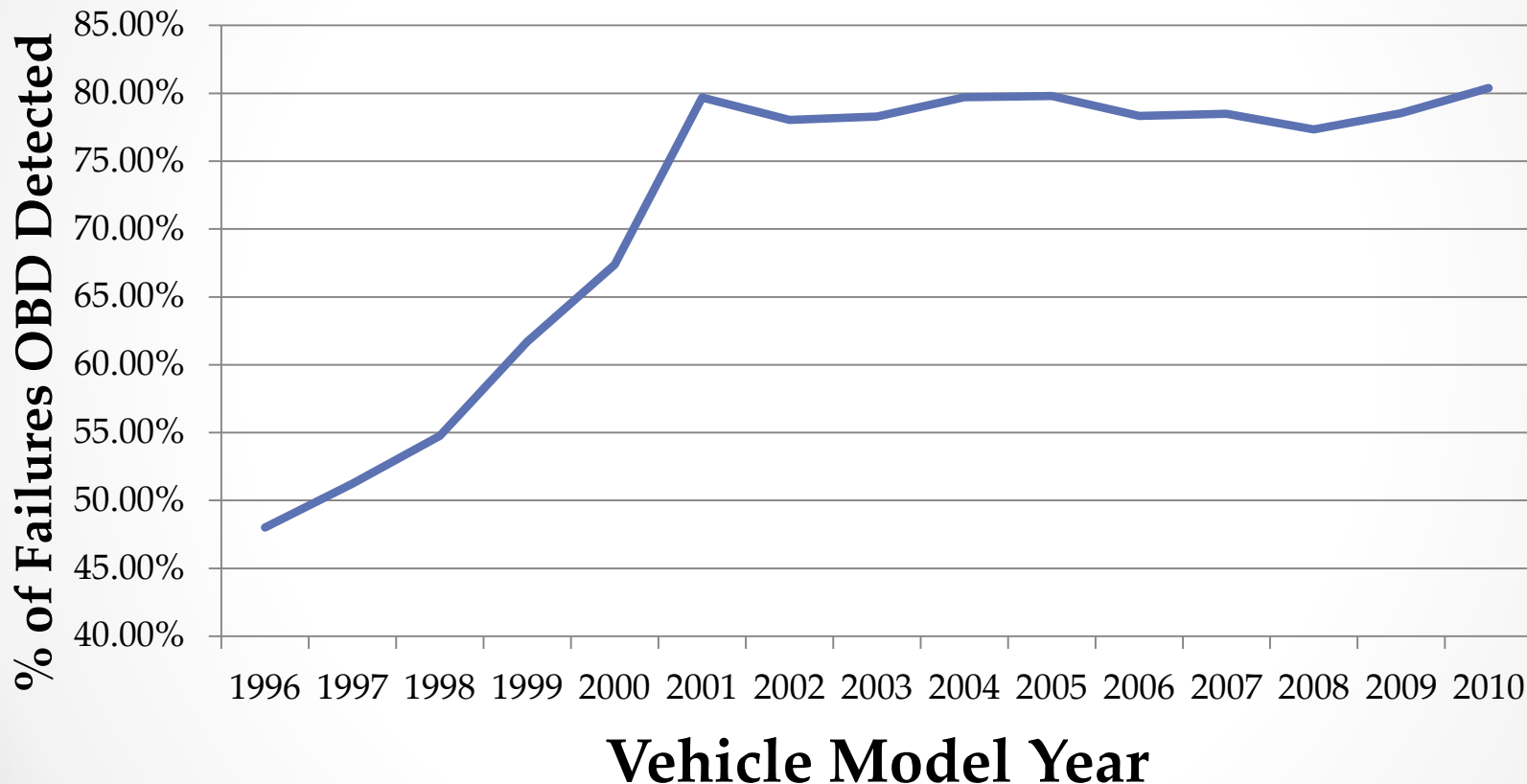


- Voluntary certification program began January 1, 2013
- Stations and inspectors must meet specified performance standards established by BAR
- Perform tests on directed vehicles and gross polluters
- Perform Repair Assistance services under BAR's Consumer Assistance Program (CAP)

Smog Check Failure Rate (CY2014)



Portion of Failures Detected by OBD (CY2014)



The remainder of failing vehicles were identified another test element (e.g., tailpipe Testing, visual inspection)

Consumer Assistance Program (CAP)

- Provides low income motorists with up to \$500 to fix failing vehicle
 - Testing and diagnosis costs paid by owner
- Also includes vehicle retirement option
 - \$1,000 to \$1,500 to have vehicle scrapped
- Money for the program comes through Smog Check and vehicle registration fees.

Roadside Inspections

- BAR conducts random roadside inspections throughout state
- Participation is voluntary / incentivized
- Vehicles are ASM/OBD tested
- Real world data
 - No pre-inspection repair bias
 - Used for program evaluation

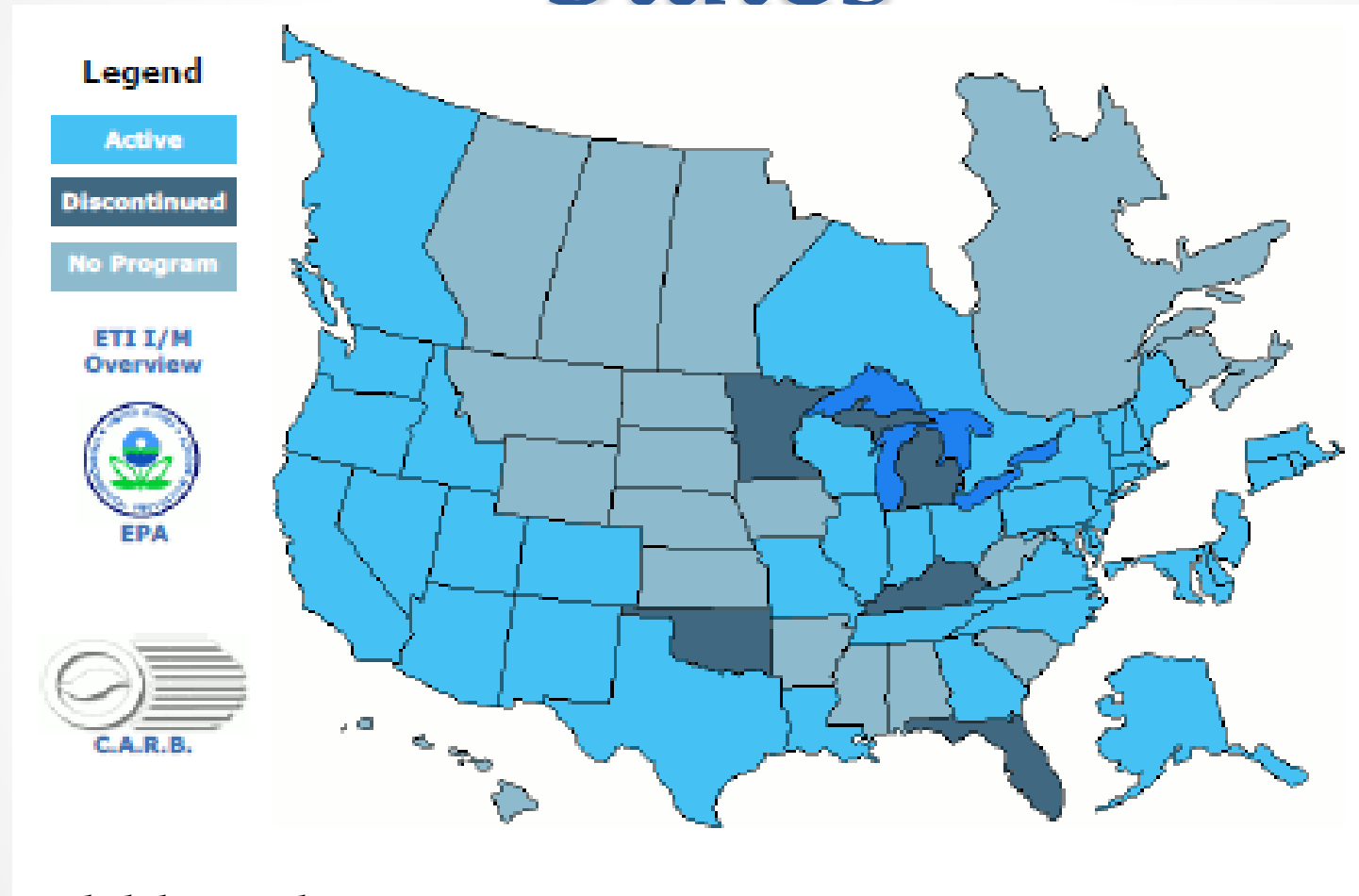
Referee Network

- Contractor Run
- Unusual Configurations (Kit Cars, Engine Changes, etc.)
- Inspection Compatibility Issues
- Inspection Disputes
- Able to Bypass Normal Inspection Procedures

Setting Cutpoints

- Cutpoints generally designed to fail portion of worst performing vehicles in category
 - Model year groupings
 - Vehicle class groupings
- Typically established at “safe” levels and refined through program/test data
- BAR’s cutpoint lookup application
 - <http://www.bar.ca.gov/pubwebquery/cutpoints/showmake.aspx>
- BAR’s generic cutpoint table:
 - http://www.bar.ca.gov/pdf/ASM_Ave_Ph43.pdf

I/M Programs in U.S. States



www.obdclearinghouse.com

California Environmental Protection Agency

 **Air Resources Board**

US State I/M Programs

- Every state except Colorado uses OBD as primary inspection method for 1996 and newer.
- Testing for 1995 and older vehicles vary by state
 - No testing
 - Visual inspections
 - TSI
 - ASM
 - Transient dyno tests