

# Low-Emission Vehicles and Clean Fuels

*in CALIFORNIA*

*By CALIFORNIA AIR RESOURCE BOARD  
TOM CACKETTE, CARIS STAFF, SACRAMENTO*

**Regulatory Hearing  
September 27, 1990**



# LEV Standards

- Use any of these to get mix to meet curve on previous page

% Reduction from { CA '93/Fed. '94 Stds.  
TIER II CALIF

	NMOG= VOCs, HC	CO	NOx
TLEV	50	0	0
LEV	70	0	50
ULEV	84	50	50
ZEV	100	100	100

*Transitional low*  
*low* " *emission vehicle*  
*ultra low* "  
*zero* "

50% decrease VOC + NOx  
 1994  
 70% ~~VOC~~ 50% NOx  
 by 1997  
 by 2000  
 by 1998, 2% of  
 vehicles  
 2003, 10%

∴ in those states that need only CO reduction (ex. UT), this system won't work well, since CO is only come much later

# Electrically Heated Catalyst Data (g/mi)

## Catalyst at Low Mileage

### Fuel: Current Gasoline

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<u>Vehicle</u>	<u>NMOG</u>	<u>CO</u>	<u>NOx</u>
LEV Standards	0.075	3.4	0.2
Toyota Camry	0.03	0.35	0.22
Toyota Celica	0.02	0.30	0.05
Buick LeSabre	0.03	0.21	0.19
Chev. Corsica VFV	0.03	0.33	0.13

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CURRENT MODEL CARS USING CURRENT GASOLINE RECIPE  
ALREADY MEET SOME OF CALIF'S TIER II STDS

*CAARB adopted Regulation*

## Additional Retail Costs of LEVs

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Gasoline	\$70-170	vs	\$1000. by industry
Methanol	\$200-370		
CNG	\$600-870		
LPG	\$1000-1200		
Electricity	\$1350-3500		

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*Manufacturers didn't challenge these # in CA administrative record*

*\* NY found \$250. additional cost for gasoline*

## Estimated Fuel Costs (2000)

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Price for a Gasoline Equivalent Gallon

Ref. Gasoline	\$1.35 - 1.45
Ethanol	\$2.33
Methanol	\$1.44 - 1.49
LPG	\$0.98
CNG	\$0.84
Electricity	\$0.59

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*Phase II  
in CA*

# ~~PROPOSED~~ REGULATIONS FOR REFORMULATED GASOLINE AND WINTERTIME OXYGENATES

Public Hearing  
November 21, 1991



*California Air Resources Board*

# Comparison of Emission Reductions Criteria Pollutants

Phase 2 RFG vs EPA RFG in 1996 for SCAB  
*South Coast Air Basin*

	<i>\$,14 /gal in CA</i> <b>Phase 2 tons/day</b>	<i>\$,04/gal phase 1</i> <b>EPA tons/day</b>	<b>Increase in Emission Reduction with Phase 2 RFG</b>
<b>VOC</b>	<b>60</b>	<b>35</b>	<b>+25</b>
<b>CO</b>	<b>530</b>	<b>460</b>	<b>+70</b>
<b>NOx</b>	<b>20</b>	<b>5</b>	<b>+15</b>
<b>SO2</b>	<b>10</b>	<b>0</b>	<b>+10</b>

*ARCO supports this since they felt they could grab a larger market share they also were afraid of requirements for alternative fuels so they produced a better gasoline fuel.*

*phase 2 here EPA by 1997 will decide what by 2000 what is the 3% /yr reduction mechanism. Industry afraid that CA phase 2 will be federal phase 2*

*Cost to use CAHII PHASE II REGULATIONS ONS BECAUSE THE SA WILL BE HIGH, USING FEDERAL REQUIREMENTS WOULD BE STRONGER NO 3% OF SA...*

Using addition of .14-.15/gal gasoline

## Impact of Phase 2 Gasoline on Motor Vehicle Operating Costs

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	<u>Current Costs</u>	<u>Increase due to Phase 2 Gasoline</u>
Vehicle operating cost, (cents/mi)	37.2	0.7
Fuel cost, (cents/mi)	4.8	0.7
Fill-up cost (\$)	11.4	1.70
Annual fuel cost (\$)	572	85
Total annual cost (\$)	4460	85

Source: AAA pamphlet, "Your Driving Costs"

*Estimated to be 10*



## AIR RESOURCES BOARD

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March 6, 1992

Mr. Morton J. Getman  
Executive Director  
Society of Automotive Vehicle  
Emissions Reduction, Inc.  
166 Washington Avenue  
Albany, NY 12210

Dear Mr. Getman:

I am pleased that our meeting of February 6, 1992, resulted in a better understanding of our mutual areas of interest. I have asked my staff to contact Les Spahn directly and offer him an opportunity to review the test program which the California Air Resources Board (ARB) will conduct to explore alternatives to the Environmental Protection Agency's (EPA) proposed Inspection/Maintenance (I/M) program. Mr. Spahn referred the review of the test program to a SAVER technical expert, Mr. Jeff Dircks, who has agreed to review and comment on the testing plan.

The test plan will compare the EPA's transient IM240 test to some steady state loaded mode options, and it will include an evaluation of whether or not a loaded mode test can be used to evaluate evaporative control system purge flow. The data from our test program will be the basis for revising the ARB's I/M computer model, CALIMFAC.

The ARB's Mobile Source Division staff will be revising the CALIMFAC model in conjunction with the data derived from the testing. The CALIMFAC is a "data-driven" model, and therefore, it would not be productive for SAVER to attempt to run the model before the test program is completed and the data are assimilated. The SAVER's participation would be most useful at this point in reviewing the test plan to ensure that the model's data needs are met.

Please let me know if anyone else, in addition to Mr. Dircks, should receive a copy of the test plan. If you have questions about the CALIMFAC model or the purpose of the test plan, please direct them to Mark Carlock, Chief, Motor Vehicle Analysis Branch, in El Monte at (818) 450-6142.

Sincerely,

A handwritten signature in cursive script that reads "Tom Cackette".

Tom Cackette  
Chief Deputy Executive Officer