American Automobile Manufacturers Association

CHRYSLER CORPORATION | Ford | General Motors

(1)

AAMA TESTIMONY
SEPTEMBER 28, 1998
CARB HEARING

The American Automobile Manufacturers Association, whose member companies include Chrysler Corporation, Ford Motor Company, and General Motors Corporation, appreciates the opportunity to testify before the Board today.

For several decades, the State of California and automobile manufacturers have worked diligently to clean the air and protect the citizens of California. As we have previously stated, compared to the mid-1960's today's vehicles represent a 96% improvement. In fact, even though the number of miles driven on California roads has far more than doubled, Californians are breathing the cleanest air in over 40 years and annual exposure to smog in Los Angeles, the worst smog area in the state, has dropped by 50%.

These gains have not come without a price, however. The automobile industry has spent billions of dollars developing, refining, and implementing clean air solutions. Additionally, California now spends hundreds of millions of dollars annually on clean air projects. Because the source of all of this funding ultimately comes from citizens either through higher taxes or higher prices, CARB and the automobile industry share the common responsibility of providing the cleanest air at the lowest price. Basically, we must exercise fiscal responsibility.

It is fiscal responsibility that brings us to these Hearings. We, like you, are genuinely concerned with providing a quality product at a reasonable price, while safeguarding the air we breath. In the past we have used these Hearings to voice our concern, and sometimes our opposition, to proposed changes to California Regulations.

Today, however, we are pleased to inform you that, through a cooperative effort between CARB Staff and our industry, America's automobile manufacturers support the majority of changes proposed. We believe these changes will help in the implementation of the LEV Program, thereby leading to further improvements in California's air quality while balancing costs. However, we are even more pleased by the process which led to our endorsement of these changes.

Last year CARB Staff proposed changes to the State Implementation Plan which, in our opinion, phased in modifications to medium duty vehicle (MDV) standards in a manner that presented major cost and feasibility issues. We testified to this effect at the corresponding Board Hearing. However, we agreed that more could be done to improve MDV emissions relative to current levels and further committed to work with CARB Staff to develop a better alternative.

The road to today's Hearing wasn't paved with complete and immediate agreement. It was, however, paved with determination and excellent dialog between industry and CARB Staff. Throughout the process, CARB Staff and Industry worked closely to find solutions to very complex problems, which balance technological feasibility and cost. As a result, far in advance of today's Hearing, consensus between Industry and CARB was reached on most issues, including the California assembly line and new vehicle compliance test procedures.

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For the record, we would like to note our remaining issues with this rulemaking:

- Regarding reactivity adjustment factors (RAFs), AAMA is concerned about the Staff Report's inference that it may be appropriate in the future to increase RAFs if the actual emission control systems do not reduce reactivity to the extent forecast by the Staff. Such a RAF change would improperly increase the stringency of the LEV standards, potentially requiring unique vehicle hardware, requiring a careful re-evaluation of lead-time, feasibility, and cost-effectiveness.

- We would also point out that one fuel which may be employed in the near future in California (i.e., E85) is missing from the RAF Table, because the staff lacked sufficient data. AAMA has now provided the Staff with data to fill this void. This Auto/Oil data suggests an E85 RAF of 0.69. We ask the Board to add this fuel to the RAF Table.

- We still do not endorse CARB's method of estimating the cost of compliance.

In stark contrast to the systematic and cooperative dialog which led to reasonable resolution of most of the issues involved in today's rulemaking, CARB Staff, in proposing the Smog Index Rule, did so without workshops and without adequate discussion. AAMA still objects to implementing a smog index label that applies to new vehicles only, rather than to all vehicles as was intended by Senate Bill 2050. Further, we strongly object to the late change proposed by Staff today, which would remove the statutory triggers, particularly the one requiring two districts to allocate funds to conduct pilot programs utilizing the smog indices in a market based incentive program. A labeling program alone, for only the newest and cleanest vehicles, without any assurance that it will lead to the piloting of tangible market based programs, is vastly different and less beneficial than the program outlined in Senate Bill 2050. Finally, AAMA disagrees with the assertion that the Board can rely on general authority in this area when Senate Bill 2050 specifically conditions that authority.

We have discussed these issues with the Staff, and we believe the Staff understands our positions. Staff and AAMA have agreed to continue dialog on these issues.

Although we were not able to resolve every issue to the satisfaction of ARB and Industry, we believe the systematic and cooperative process used for most of today's issues best serves the citizens of California, your constituents and our customers, and we are pleased to have been a part of it. We hope that this rulemaking process serves as a model for the future.

Recommended Reactivity Adjustment Factors for E85 Vehicles:

	Light Duty Trucks			Medium Duty Vehicles	
Fuel	**TLEV**	**LEV**	**ULEV**	**LEV**	**ULEV**
E85	0.69	0.69	0.69	0.69	0.69

Based on data provided in Technical Bulletin No. 16, "Exhaust Emissions of E85 Ethanol Fuel and Gasoline in Flexible/Variable Fuel Vehicles," July 1995; Auto/Oil Air Quality Improvement Research Program.

(2)

CARB Hearing on LEV Program Revisions
September 28, 1995

Michael R. Berube, Chrysler Corporation

Good morning, I am Michael Berube with Chrysler Corporation's Environmental and Energy Planning Department. Chrysler is a member of the American Automobile Manufacturer's Association (AAMA) and fully endorses their comments at this Hearing.

Today, the Board is considering significant changes to the LEV Program, with its many components. Chrysler has previously testified before this Board that the LEV Program and its standards pose a major technological challenge of controlling vehicle emissions while maintaining acceptable vehicle performance and cost. We are in the infancy of implementing the LEV Program and Chrysler must emphasize that we still view the LEV Program as a major technology and cost challenge. Our engineers are pushing the frontier on new technologies and calibrations, with which we simply do not have much experience. Having said this, Chrysler does recognize California's unique air quality situation and we are committing major engineering resources to achieve the goals of the LEV Program. We are encouraged with our progress to date, although I should note we have not certified to LEV standards on production gasoline vehicles yet and ULEVs pose even greater cost and technology challenges. Ultimately, we will only know our success once significant numbers of vehicles are on the road with 50,000 - 100,000 miles and in-use tailpipe emissions, enhanced evaporative systems and on-board diagnostics have been proved-out.

I mention all of this, not because I am objecting to changes that the Board is considering today. But, quite to the opposite, because Chrysler strongly supports the process that was used to arrive at today's proposed changes. That process has been one of open dialog between CARB staff and industry. Through that dialog, we certainly have not agreed on all issues, but Chrysler has been encouraged by the attempt to achieve emissions control at minimum cost and customer impact. Because the LEV Program is pressing us to the limit of technology and engineering resources, this cooperative process is absolutely imperative for success. Chrysler looks forward to ongoing dialog with staff on the LEV Program as we all gain more experience.

In particular, I would like to single out an issue that Chrysler thinks does need significantly more discussion and study between staff and industry, that is reactivity adjustment factors (RAFs). Chrysler does not support the Staff Report's statement that future RAFs should be increased to a value greater than 1.0 if early LEVs can not achieve the staff's projection of best case specific reactivity. Such a change would be equivalent to increasing the stringency of all LEV standards and would likely require new vehicle hardware.

To be clear, Chrysler supports the intent of RAFs to link the vehicle fuel to emission standards, such as the new CNG and LPG RAFs being proposed today. What we are

objecting to is expanding the use of RAFs to push new vehicle hardware. Pushing the frontier means trying new approaches and accepting new risks, as Chrysler is doing with the LEV Program -- piling-on more risks by changing RAFs may have the effect of stalling new technologies since there is a limit to the risks that can be taken by a manufacturer. It is our position that any increase in the stringency of the LEV Program requires significant study of lead time, technical feasibility, and cost-effectiveness. In addition, we feel that such an increase in stringency would be premature until experience is gained with the current LEV Program and with RAFs.

In conclusion, Chrysler hopes that the cooperative process marked by this rulemaking process can continue with future mobile emission regulations. Thank you for the opportunity to present Chrysler's position at today's Hearing..

(3)

SM-2596

General Motors Statement at the California Air Resources Board Hearing to Consider Amendments to the Low Emission Vehicle Program September 28, 1995

Good morning. My name is Al Weverstad and I am Manager of Vehicle Emissions at General Motors Environmental & Energy. General Motors has the following comments on the package of regulatory changes to the LEV Program being considered by the Board today. At the outset, we support the comments of the American Automobile Manufacturers Association and the Engine Manufacturers Association, and incorporate them by reference.

The regulatory changes being considered today cover a broad range of areas, as evidenced by the presentation of your Staff. Yet, my comments will be brief. This is because GM, through its trade associations, has worked together with the Staff throughout this rulemaking process. This work actually began after the SIP hearing last November, when we started developing an alternative to the SIP's medium-duty truck measure. This alternative, which is being proposed by your Staff today, will provide equivalent emission benefits to the November SIP measure, but at a much lower cost. Thus, we urge the Board to adopt the Staff proposal in lieu of the November SIP measure.

The brevity of my comments do not reflect on the importance of the regulations being considered today. These regulations, which affect the non-mandate portions of the LEV Program, will cover most of our future production, and will provide the overwhelming portion of the emission reductions projected in the SIP. Clearly, a smooth implementation of this portion of the LEV Program is critical. That is why a regulatory structure that facilitates a smooth implementation, such as interim in-use standards, is so important. And we support the improvements to the interim in-use standards being proposed by the Staff.

Another area that is very important to the LEV Program is reactivity adjustment factors, or RAFs. Because emissions are determined by multiplying the NMOG mass by the RAF, the RAF is part of the standard. Thus, GM commends the Staff for proposing RAFs for almost all of the different fuel/vehicle categories through the 2000 model year, and we support AAMA's proposed ethanol RAF of 0.69. This will provide us with the certainty we need in developing systems to meet the future LEV Program standards during this timeframe.

However, GM is troubled with several statements in the Staff Report that infer that RAFs may be used in the future to increase the stringency of the LEV Program. This undermines the certainty manufacturers need. Moreover, any changes that impact the stringency of the LEV Program must go through a full rulemaking process to provide the proper consideration of the feasibility, cost and benefits of such changes. Thus, GM recommends that the RAFs proposed by the Staff through the 2000 model year be

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Coalition for Clean Air

Testimony

on the

Proposed Amendments to Low-Emission Vehicle Regulations

before the

California Air Resources Board

September 28, 1995

submitted by

Tim Carmichael
Policy/Program Director

Coalition for Clean Air Testimony on Proposed Amendments to Low-Emission Vehicle Regulations before the California Air Resources Board September 28, 1995

Let me begin by saying that the Coalition for Clean Air is very pleased to be addressing the Air Resources Board and your recently confirmed Chairman. The Coalition testified in support of Mr. Dunlap's nomination and we'd like to extend our congratulations on your confirmation.

Members of the Air Resources Board, the Coalition for Clean Air appreciates the opportunity to testify on the proposed amendments to California's Low-Emission Vehicle Regulations. Our comments today relate to the Medium-Duty Vehicle Revised SIP Proposal. The Coalition for Clean Air does NOT support the proposed changes to the Medium Duty Vehicle Regulations.

The California Air Resources Board is internationally regarded as a preeminent leader in developing and implementing the kind of technology-forcing programs essential to restoring clean air to California and critical to meeting the health-based air quality standards required by federal law.

The proposed changes before you today are not in keeping with CARB's record of implementing technology-forcing programs necessary to clean California's air. The Coalition for Clean Air believes that the proposed changes are as bad for California's economy as they are for our environment and they would, in fact, take California in the wrong direction. If California really wants to be the home of new industries, advanced technology and long-term job opportunities then these proposed changes should be rejected.

There are three major problems with the proposed changes:

First, CARB staff identifies a shortfall in NOx emissions reductions in excess of EIGHT tons per day relative to the reductions included in the State Implementation Plan. While a shortfall has been identified, the proposed changes before you contain no indication of how California will recoup this loss of emissions reductions. Unfortunately, the infamous "black box" is growing just when it should be shrinking.

Our second -- and perhaps greater concern -- relates to the proposed relaxation of the particulate matter standard for medium duty engines. This change would <u>double</u> the particulate matter standard. In light of several recent health studies that show particulate matter to be deadly, the Coalition for Clean Air finds it unconscionable that California would even consider relaxing the particulate standard in any air quality regulation.

While I am sure that you are aware of these health studies, I want to mention a few:

Dr. David Abbey and Dr. Paul Mills of Loma Linda University conducted a 10 year study which found that women living in areas of high total suspended particulates experienced a 37% increased risk of cancer.

In March of this year, Harvard's School of Public Health, the American Cancer Society, Harvard Medical School and Brigham Young University released the results of the largest study ever conducted on the health effects of particulate matter. The study found that people living in the nation's most polluted cities are up to 17 percent more likely to die prematurely than those in cities with the cleanest air.

Earlier this year, CalEPA released the results of its study which looked at the effects of particulate pollution in Riverside and San Bernadino Counties. The study found that microscopic particles of air pollution cause an estimated 275 premature deaths from heart and lung ailments each year.

The growing number of health studies which condemn particulate air pollution make it clear that if the Air Resources Board is to make any change to the particulate emission standard that change should be to strengthen it rather than weaken it.

Our third major concern relates to what appears to be a change in the philosophy behind California's air quality regulations. The Coalition believes that the Air Resources Board must maintain its reputation and continue to implement the kind of technology-forcing regulations necessary to restore clean air to California. The

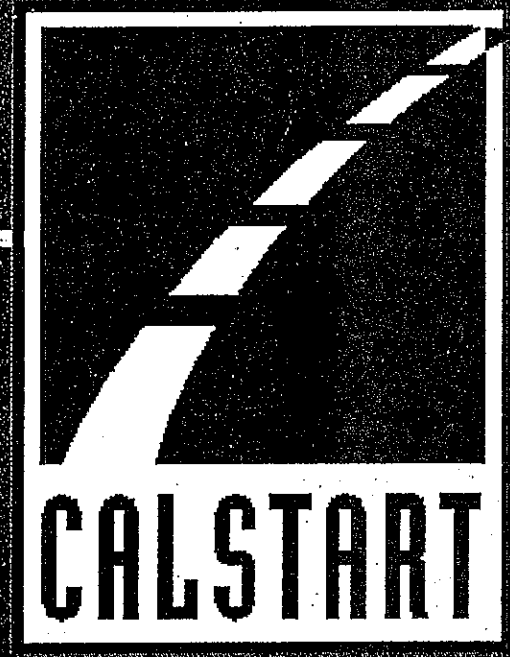
Coalition supports incentives for industry to use cleaner alternative fuels as called for in California's SIP which was submitted to the USEPA last November. Unfortunately, the delays incorporated in the proposed changes before you today, coupled with a relaxation of the standards for carbon monoxide and particulates, are designed to accommodate the prolonged use of gasoline and diesel.

While we are aware that the proposed changes suggest adding a Super Low Emission (SLEV) category for medium duty vehicles, it is unlikely that auto and engine manufacturers will pursue this level if a weakened regulation allows them to achieve medium-duty ultra-low emission levels with gasoline or diesel. The proposed changes are effectively taking away the carrot which has driven technology advancement for the first half of this decade.

In closing, the Coalition for Clean Air strongly urges that you reject the proposed changes to the Medium Duty Vehicle SIP Proposal. At a minimum, the Air Resources Board should delay action on this item until staff has identified specific replacement measures to address the shortfall in NOx emissions reductions. Because mobile sources now account for a majority of California's air pollution emissions, it is essential that these replacement measures be applied to mobile rather than stationary sources. Given the serious health implications of California's air quality problems, California cannot afford to delay or relax our air quality regulations.

Thank you.

Medium & Heavy Duty LEV/ULEV/ZEV



Bill Van Amburg
Dir., Marketing & Communications

The Pollution Challenge

Air pollution California needs to reduce...

The Pollution Challenge

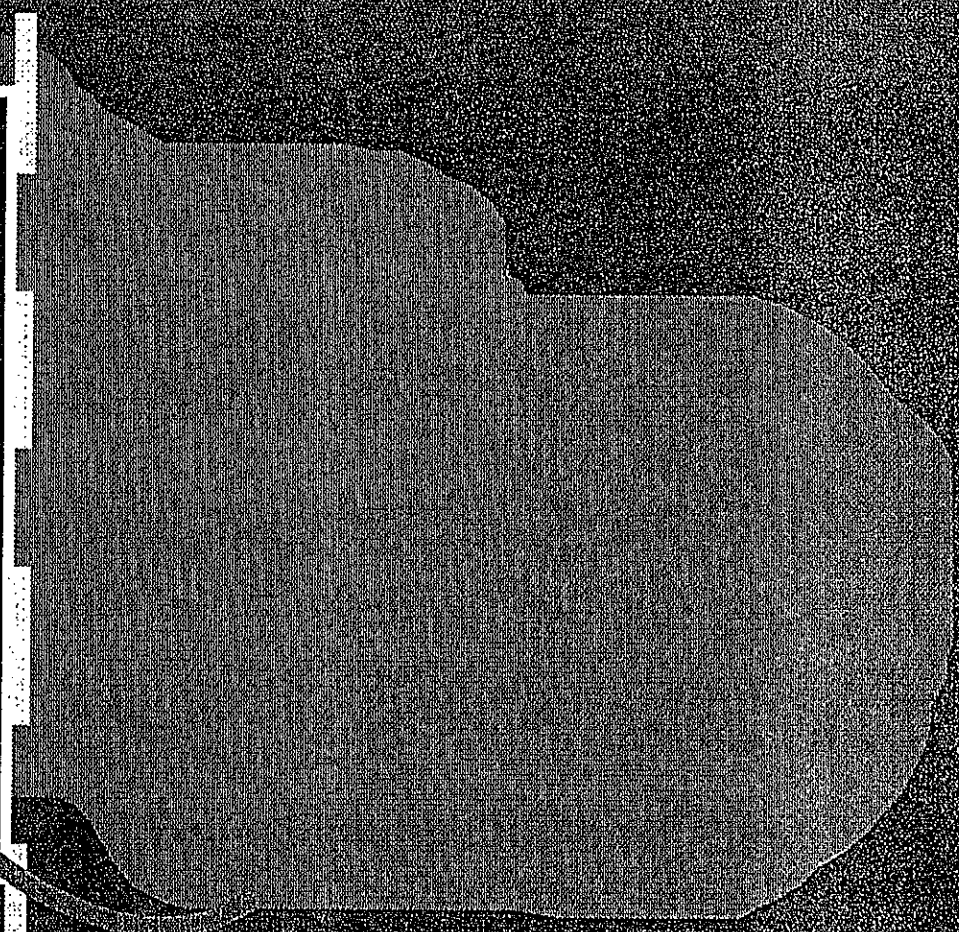
CALSTART

Roughly only one half of that pollution has been addressed... including entire LEV program and 10% ZEVs!

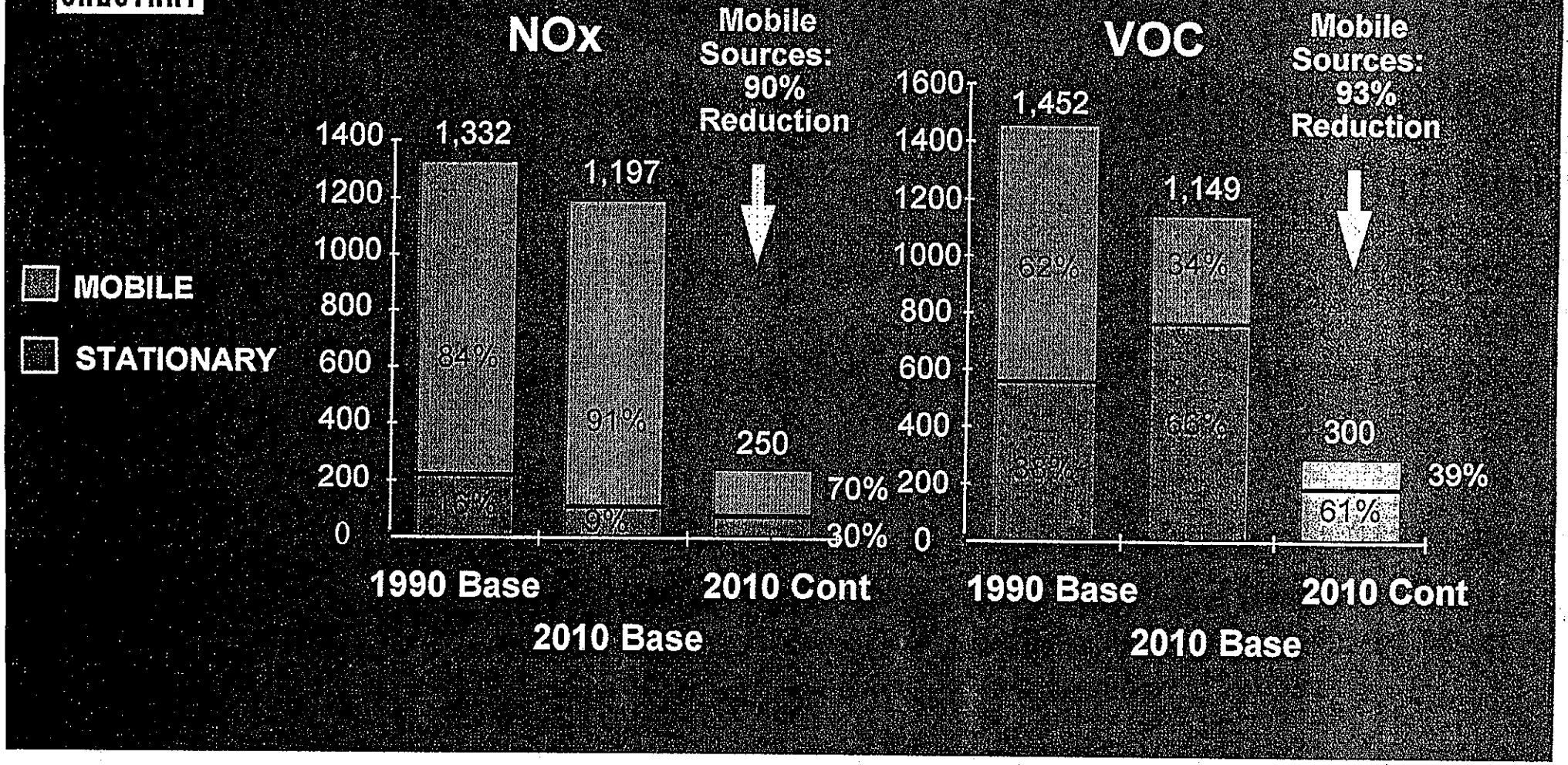
The Pollution Challenge

The other half simply disappears into a "black box"...of technologies to be identified.

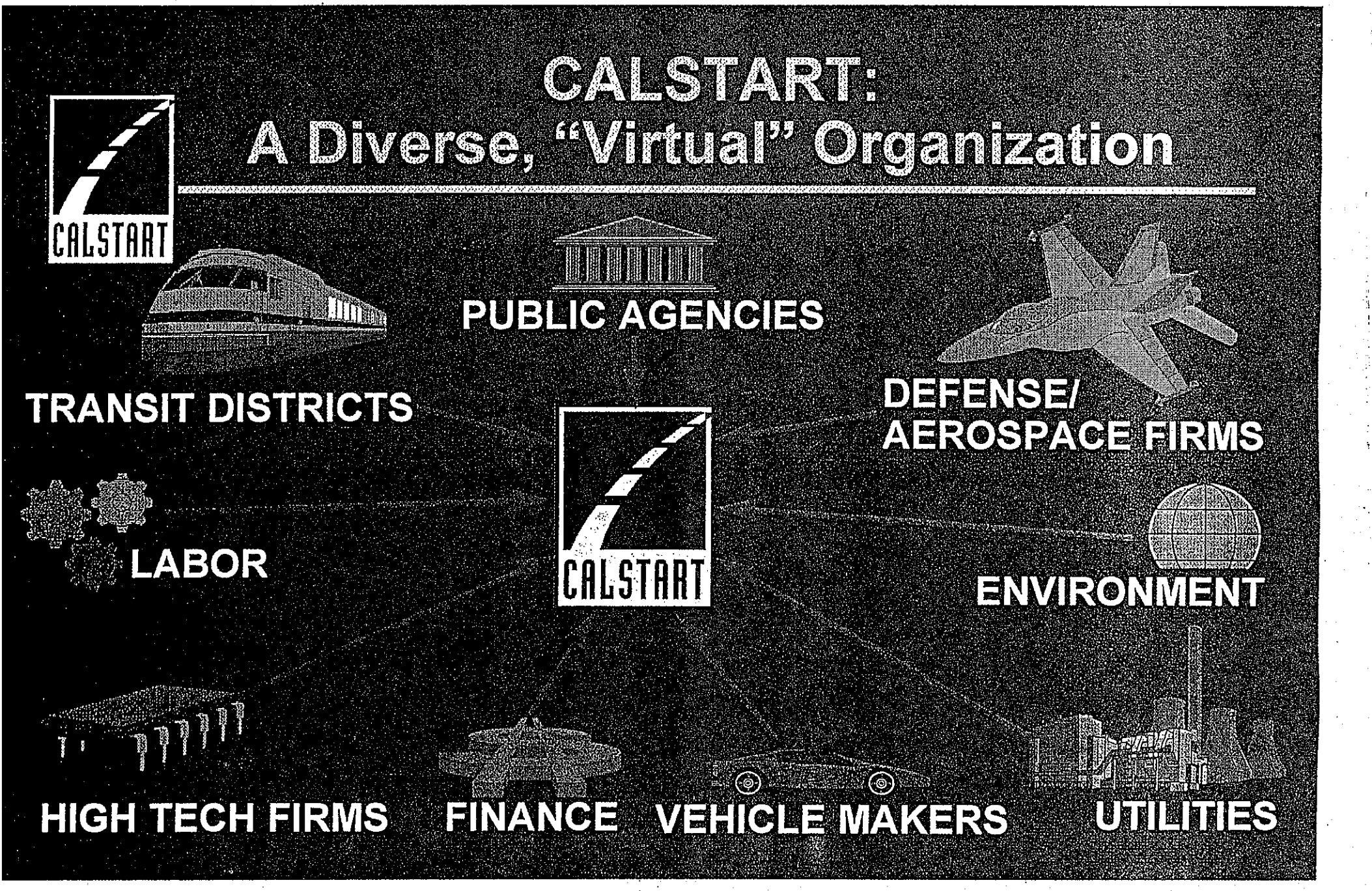
That is getting bigger.



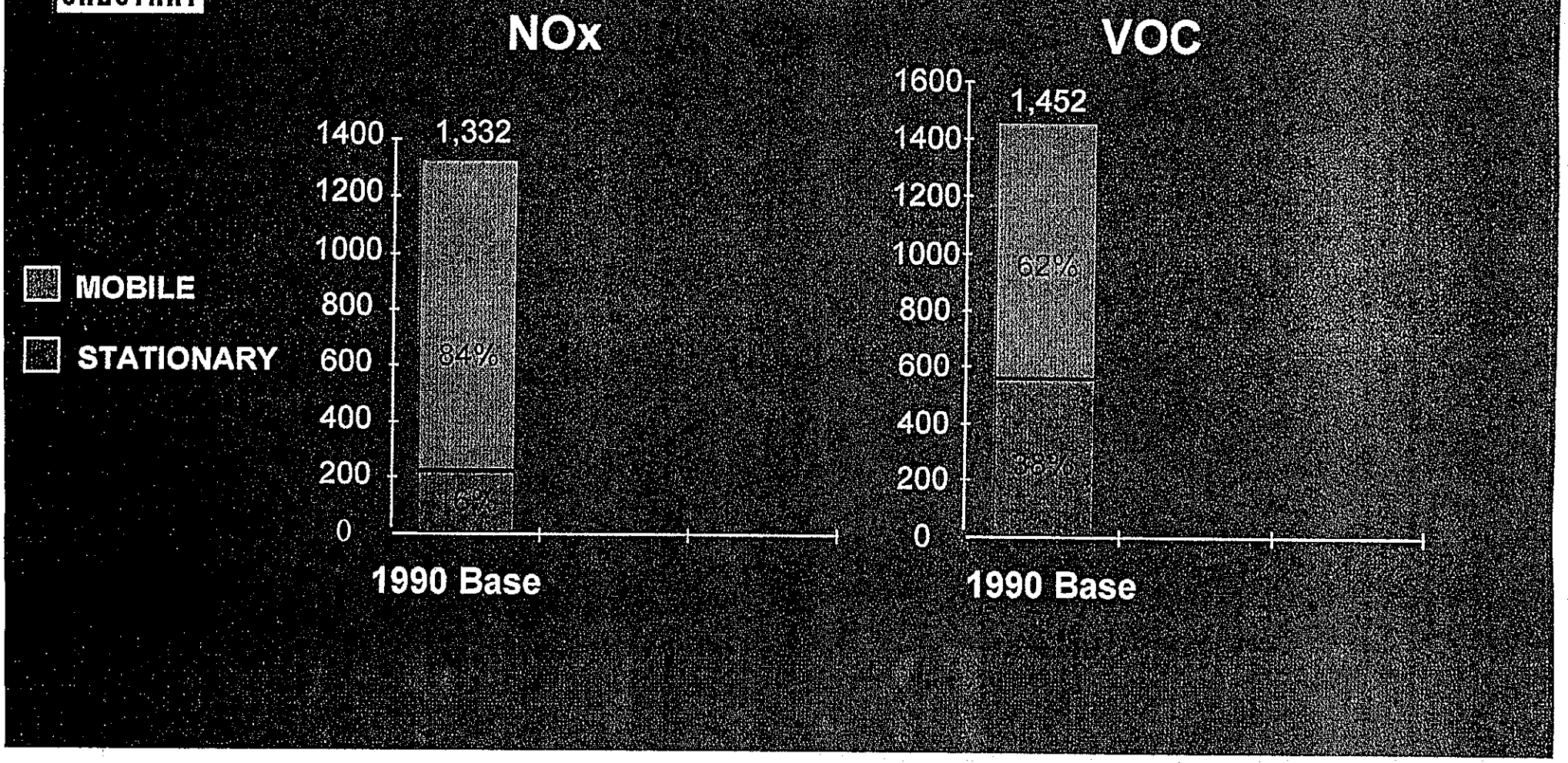
South Coast Emissions



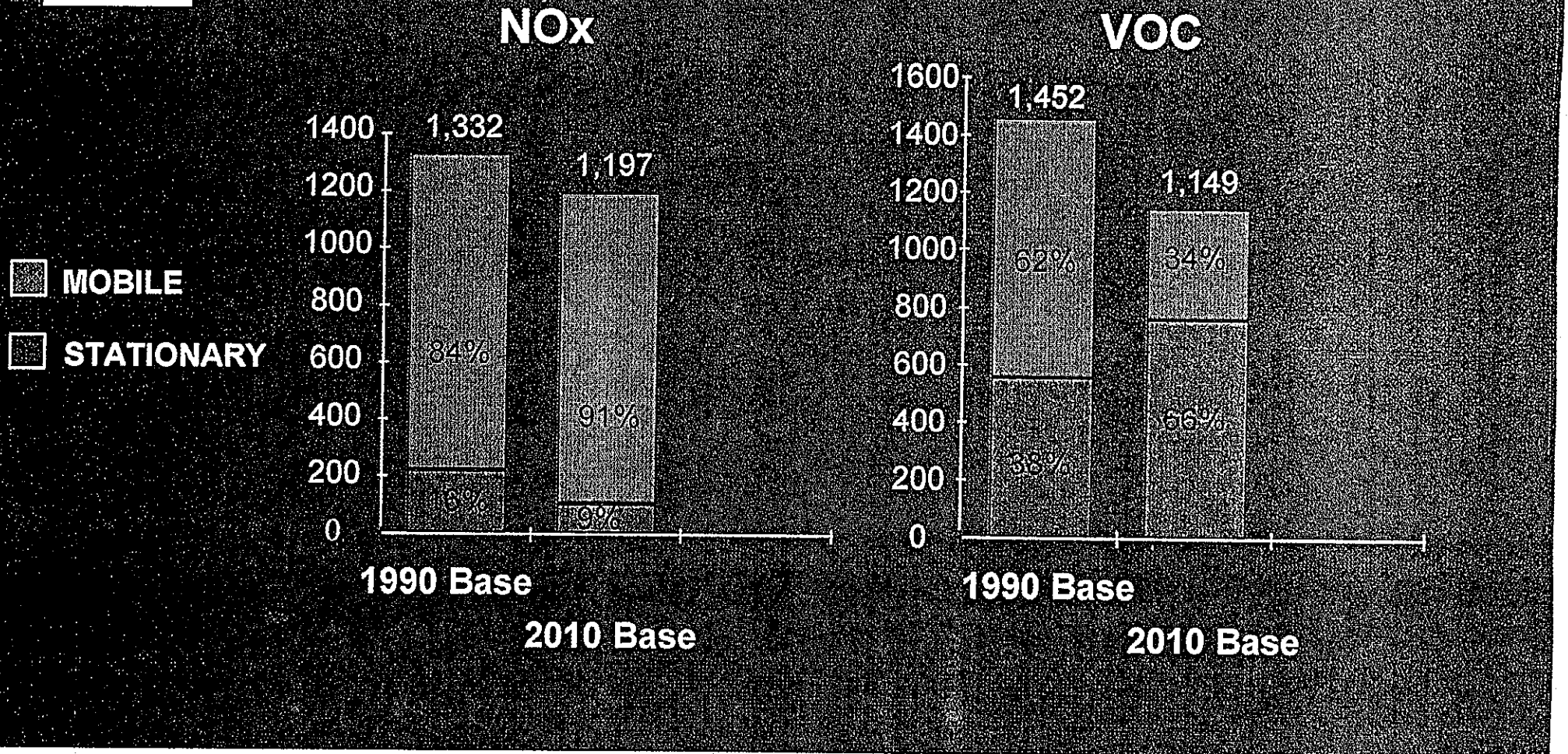
CALSTART:
A Diverse, "Virtual" Organization

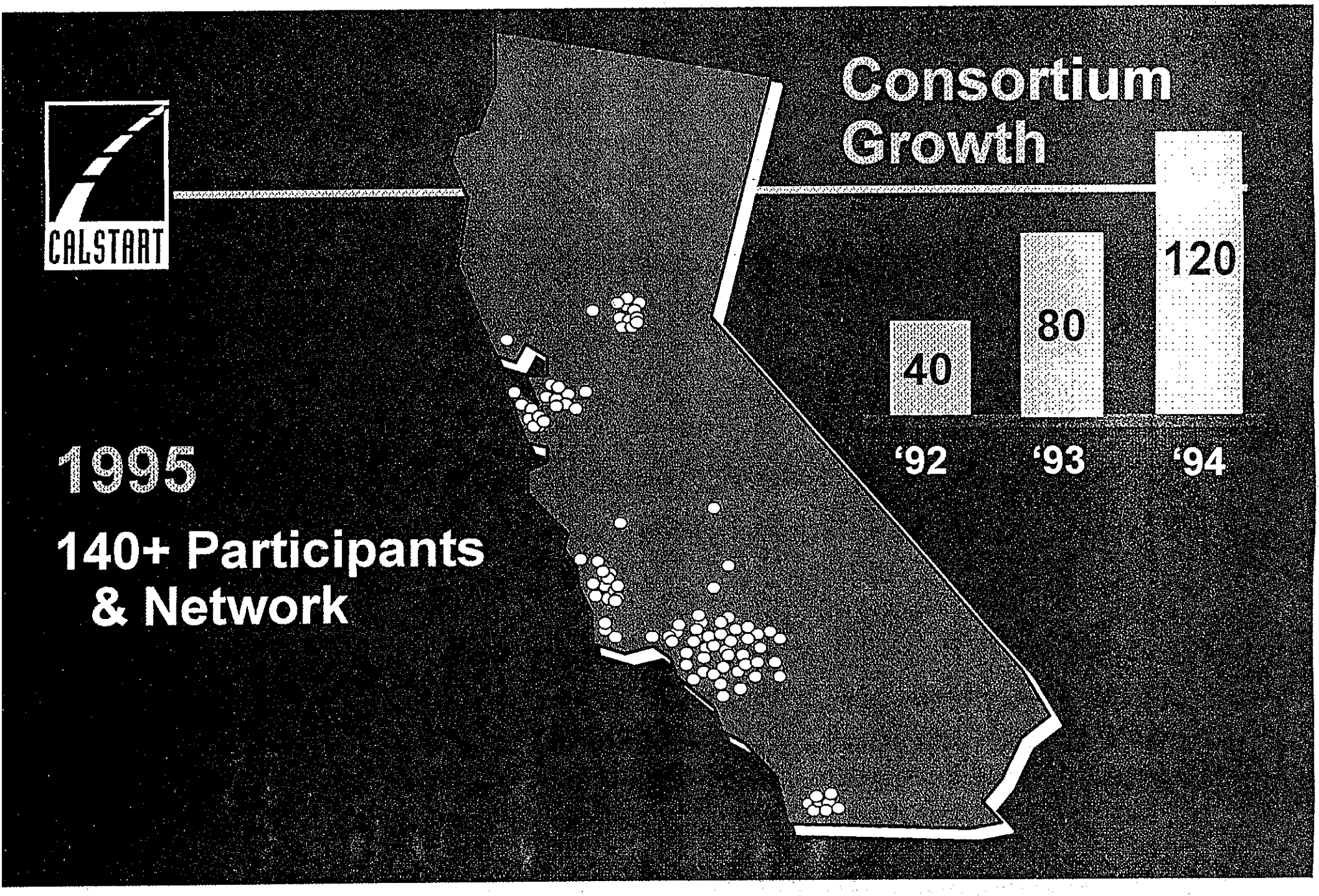


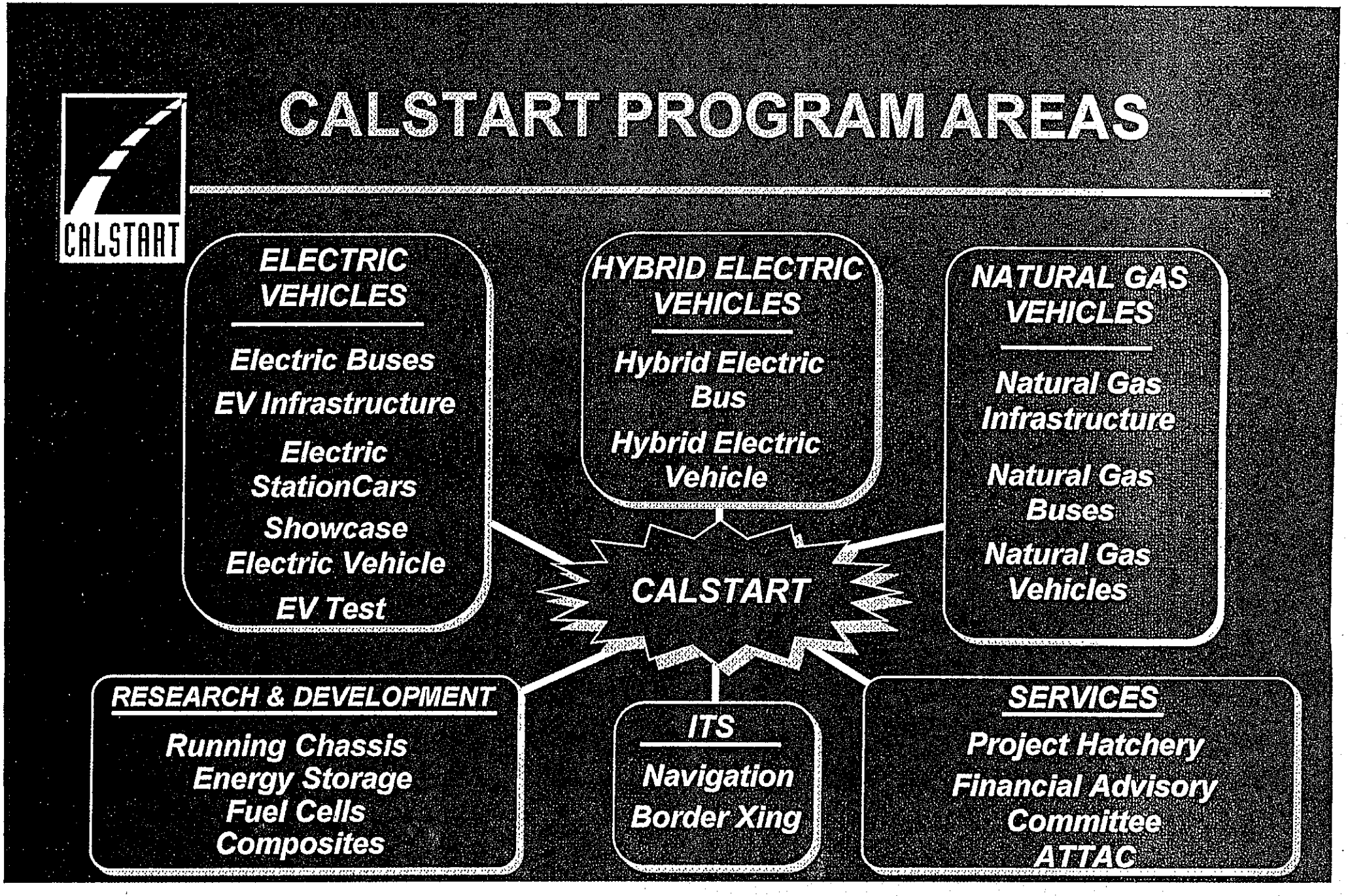
South Coast Emissions



South Coast Emissions




CALSTART
Consortium Growth
40
80
120
'92
'93
'94
1995
140+ Participants & Network


CALSTART
CALSTART PROGRAM AREAS
ELECTRIC VEHICLES
Electric Buses
EV Infrastructure
Electric StationCars
Showcase Electric Vehicle
EV Test
HYBRID ELECTRIC VEHICLES
Hybrid Electric Bus
Hybrid Electric Vehicle
NATURAL GAS VEHICLES
Natural Gas Infrastructure
Natural Gas Buses
Natural Gas Vehicles
CALSTART
RESEARCH & DEVELOPMENT
Running Chassis
Energy Storage
Fuel Cells
Composites
ITS
Navigation
Border Xing
SERVICES
Project Hatchery
Financial Advisory Committee
ATTAC

Advanced Electric Buses

CALSTART

Commercial & Military CNG/Electric Hybrid Buses

CALSTART

Vandenberg AFB
3 Transports in Service

Gillig/FMC transit bus
Roll-Out Summer 1995

Electric Postal Truck

- 3 in service near Port of Los Angeles
- Most postal vehicles drive less than 25 miles per day

Electric Step Van

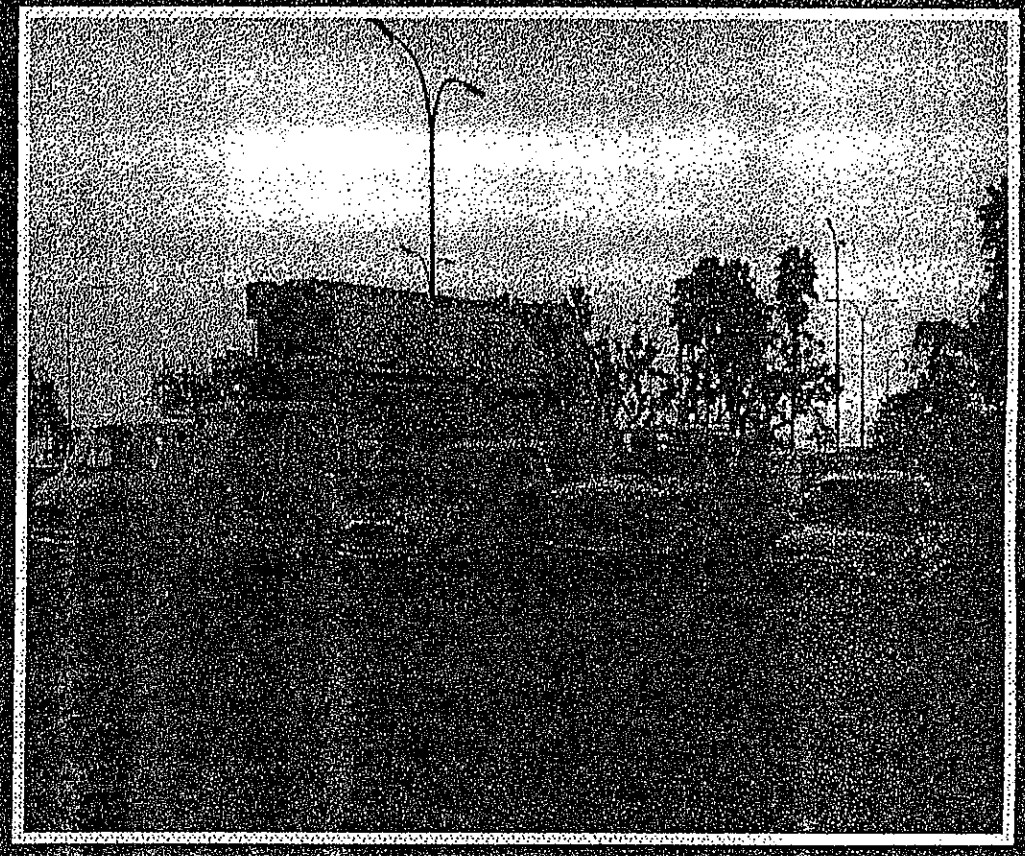
- Produced by Specialty Vehicle Manufacturing Corporation
- Designed for local fleet use
- Zero-emission city truck

Satellite Refueling Stations

- Employs the "mother station/satellite station" concept
- Uses mobile tubular storage modules
- Can be adapted for single/multiple hoses and slow/fast fill
- PCI, Oakland,CA

Heavy Duty NGVs

- Best use for natural gas in fleets
  - creates high emissions reduction
  - offers highest fuel cost savings
  - high fuel consumption helps justify the initial cost of refueling station



NGV Airport Runway Sweeper

- In service at Long Beach Airport
- Demonstrates heavy duty application of natural gas

Technology-Forcing Is Working

- Dodge Ram Van/CNG -- first LEV certified
- Dodge Minivan/CNG -- 80% under ULEV
- Honda Civic -- ULEV capable with RFG
- Mitsubishi hybrids -- beyond ULEV?
- 14 LNG buses running at LAX
- LNG long-haul trucks on I-15
- 3 CNG/Electric hybrid buses operating at Vandenberg
- 2 Electric buses at Yosemite National Park
- Turbogenerators -- heavy-duty hybrids in testing 1995
- GM-Ovonic NMH battery facility under construction
- Hybrid power batteries/ultracapacitors -- in development

(7)

South Coast Air Quality Management District

Testimony of

Paul Wuebben

Clean Fuels Officer

to

California Air Resources Board

on

Proposed Changes to the Low Emission

Vehicle/Clean Fuels Program

September 28, 1995

Sacramento, California

Good morning Mr. Chairman and members of the Board. My name is Paul Wuebben. I am the Clean Fuels Officer at the South Coast Air Quality Management District. The District appreciates this opportunity to present comments on this important rulemaking today.

There are three areas upon which the District would like to comment:

- Proposed Reactivity Adjustment Factors (RAF's)
- Proposed Changes to the Medium Duty Vehicle Standards, and
- Proposed Changes to the Methanol Luminosity Requirement.

In general, your staff is to be complimented for its usual rigorous technical analysis underlying its recommendations under consideration today.

With regard to the proposed changes to the RAF's for alternative fuel vehicles, the District believes these changes are reasonable and appropriate. Their adoption will provide further certainty to auto manufacturers that choose to produce more models of Low Emission Vehicles (LEV) and Ultra Low Emission Vehicles (ULEV) which operate on clean alternative fuels. Specifically, the District strongly supports the adoption of the proposed

RAF's for the following: natural gas Transitional Low Emission Vehicles (TLEV), LEV's and ULEV's; liquid petroleum gas (LPG) LEV's and ULEV's; and methanol LEV's and ULEV's. We agree with members of the American Automobile Manufacturers Association that these RAF's will help provide a more level playing field for them when deciding how to meet their fleet average emission standard for model years through the year 2003. We believe the extension to the year 2003, as originally proposed by AAMA, is a constructive step in helping foster regulatory, as well as fuel, flexibility.

It is also helpful that the staff has identified the possibility that the baseline specific reactivity used to specify the ozone per gram potential of vehicles operating on Phase II gasoline may be higher than currently assumed. Given the importance of achieving the baseline specific reactivity assumed in the ARB's LEV program, it would be wise to obtain more data on in-use vehicles as new technology vehicles are introduced. The Board may also want to consider providing auto manufacturers limited flexibility in substituting their own baseline reactivity factors for thoroughly tested engine families if such testing shows a significant difference compared to the assumed generic factor. As noted in the staff report, six of the eight light duty vehicles which were

tested for their baseline reactivity (shown in table III-9 of the ARB staff report) have ozone per gram values above the assumed generic baseline level of 3.13 grams ozone per gram of exhaust.

The District would also like to comment on portions of the proposed Medium Duty Vehicle emission standards. As you know, a natural gas vehicle has already been certified as Medium Duty ULEV by Chrysler, and other manufacturers may follow suit if the current standards are not significantly relaxed. The more lenient in-use NO_x standard for Medium Duty vehicles should therefore not be extended beyond the staff recommended time frame of three additional years.

The proposed standards also allow a doubling of the allowed particulate emissions from ULEV's. There is no termination date for this relaxation, and the District would recommend that the 0.05 grams per mile standard be reimposed for at least model years beyond the year 2002. As you know, a recent study sponsored by the CAL-EPA has rigorously documented serious health effects associated with particulate air pollution. This study found that 275 deaths per year can be associated with particulate exposure in just two

counties in the South Coast District - namely, San Bernardino and Riverside. By permanently relaxing the ULEV particulate standard, the Board may be foregoing a major opportunity to improve public health in the early twenty-first century. There are impressive advancements underway on alternative fuel engine technologies which can easily comply with a 0.02 particulate standard. The District therefore suggests that the Board request the staff to revisit this issue over the next twelve months and that a stricter particulate standard be considered at that time.

The last issue I would like to briefly touch on is the staff proposal to eliminate the methanol flame luminosity requirement. The District strongly supports this recommendation as a means of removing an unnecessary barrier to the utilization of methanol in buses and other M-100 applications such as fuel cells.

Thank you for the opportunity to present these comments. I would be happy to answer any questions the Board may have.

PW:fp
9-28-95

(8)

WSPA Testimony at CARB Board Hearing

September 28, 1995

Good morning. My name is Kent Hoekman. I work for Chevron Research and Technology Company, and am here today representing the Western States Petroleum Association (WSPA).

WSPA appreciates the opportunity to comment on the California Air Resources Board's (CARB) "Proposed Amendments to Low-Emission Vehicle Regulations" dated August 11, 1995, and on the supporting Air Modeling Report dated June 22, 1995.

WSPA has long maintained that CARB's approach for calculating and applying reactivity adjustment factors (RAFs) is flawed, and could have a detrimental effect on air quality. The principal flaw is in the notion that a single reactivity scale can be applied uniformly under all urban atmospheric conditions.

It is true that different NMOG species contribute to urban ozone formation to different extents. In this sense, it can be said that NMOG species differ in their reactivities. However, applying a single, fixed reactivity scale -- such as the MIR scale -- neglects important influences of atmospheric conditions in determining the actual reactivity of a particular species in a real urban situation. Stated simply, the reactivity of any NMOG species is not a constant, but is a complex variable which depends upon many other factors.

The use of a single reactivity scale can produce RAFs which exacerbate urban ozone under certain atmospheric conditions. This possibility was demonstrated by CARB's air modeling work conducted in support of the proposed RAFs for CNG- and LPG-fueled low-emission vehicles (LEVs). In this work, exhaust emissions from the alternative-fuel vehicles were adjusted upward, in accordance with the proposed RAFs, and the resulting ozone impacts were assessed. If these RAFs were correct, the increased emissions from the alternative-fuel vehicles should lead to the same ozone impacts as lower emissions from the conventional-fuel vehicles. An expression used to compare these ozone impacts is the so-called "null test result," which is shown in Figure 1.

As can be seen from this expression, if the RAF-adjusted alternative-fuel case and the conventional gasoline case produced equivalent ozone impacts, the null test result would be 1.00. Null test results greater than 1.00 indicate the alternative-fuel vehicles lead to more ozone than the conventional vehicle case, while results less than 1.00 indicate less ozone from the alternative-fuel vehicles.

Various ozone metrics can be used when computing null test results. Since both federal and California ozone standards are based on peak ozone, WSPA maintains that the most appropriate metric is basin-wide peak ozone. The CARB Technical Support Document for Reactivity Regulations (dated September 27, 1991) also states that a peak ozone metric must be considered when assessing air modeling results.

Figure 2 depicts the peak ozone null test results from modeling of CNG-, LPG-, and RFG-vehicle cases. These results are taken directly from the CARB Air Modeling Report of June 22, 1995. This figure clearly illustrates that application of the proposed RAFs for both CNG- and LPG-fueled LEVs would be expected to increase peak ozone in the South Coast Air Basin when compared with either RFG- or conventional gasoline-LEVs. To achieve equivalent ozone impacts, these modeling results indicate that both CNG and LPG RAFs need to be adjusted upward.

In summary, WSPA believes that CARB's application of reactivity concepts is flawed, and can lead to worsening of air quality in some cases. The modeling work in support of the LEV RAFs strongly suggests that peak ozone will increase if the proposed RAFs for CNG- and LPG-fueled LEVs are implemented, thereby making attainment of the federal and state ozone standards more difficult. To avoid this problem, WSPA urges CARB to increase the proposed RAFs for these alternative-fuel vehicles, and then repeat the air modeling work to determine if further adjustments are necessary.

Figure 1

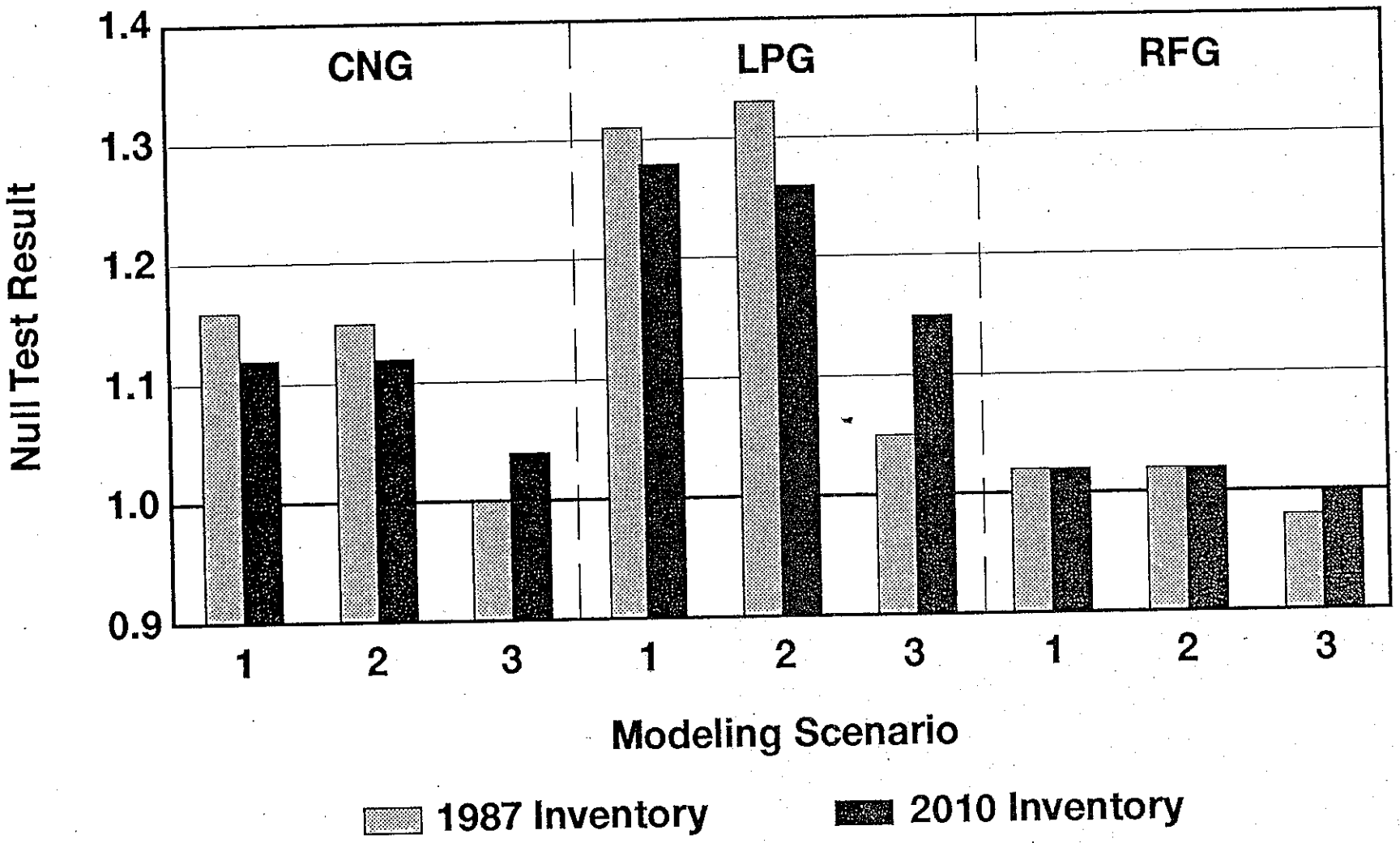
Definition of Null Test Results

$$\text{Null Test Result} = \frac{\text{Ozone}_{AFV} - \text{Ozone}_{Null}}{\text{Ozone}_{RFA} - \text{Ozone}_{Null}}$$

- Where
  - Ozone_{AFV} = Ozone Level for RAF-Adjusted Alternative-Fuel Case
  - Ozone_{RFA} = Ozone Level for Conventional Gasoline Case
  - Ozone_{Null} = Ozone Level for Zero Vehicle Emission Case

9/25/95 RMG M264 KHoekman Fig-1

Figure 2
Peak Ozone Null Test Results



9/25/95 RMG M264 KHoekman Fig.2

(8)

WSPA
Western States Petroleum Association

Douglas F. Henderson
Executive Director

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To Bart Croes	From Annette Guerrero
Co.	Co.
Dept.	Phone #
Fax # 322-4357	Fax #

95-9-1
9/28/95
BOARD

STATE OF CALIFORNIA
AIR RESOURCES BOARD
RECEIVED 9/27/95
BY BOARD SECRETARY

XC: Board Members
JDD TAC
JB Legal
MSD

Board Members
California Air Resources Board
c/o Board Secretary
P.O. Box 2815
Sacramento, CA 95812

Subject: 95-9-1 Public Hearing to Consider Amendments to the Certification Requirements and Procedures for Low-Emission Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles

Dear Board Members:

These comments are submitted by the Western States Petroleum Association (WSPA), a trade association of companies whose members conduct much of the producing, refining, transportation, and marketing of petroleum and petroleum products in the western United States. WSPA appreciates the opportunity to comment on the California Air Resources Board's (CARB) "Proposed Amendments to Low-Emission Vehicle Regulations", dated August 11, 1995, and on the supporting report entitled "Establishment of Corrections to Reactivity Adjustment Factors for Low-Emission Vehicles Operating on Compressed Natural Gas and Liquefied Petroleum Gas," dated June 22, 1995, herein referred to as the "Air Modeling Report".

WSPA has long maintained that CARB's approach for calculating reactivity adjustment factors (RAFs), as set forth in their LEV regulation, is fundamentally flawed and could be detrimental to air quality. The flaw is not only in the choice of a particular reactivity scale, but also in the notion that there can be one reactivity scale that would be applicable to all urban atmospheric conditions. It is scientifically possible to calculate a reactivity scale for a given set of environmental conditions; however, different environmental situations will yield different reactivity scales. Thus, the choice of a single scale could be detrimental to air quality compared to requiring the same mass emissions from all vehicles. The fact that, in some cases, applying reactivity adjustments can lead to a worsening of the air pollution problem is evident in the present rulemaking.

The Air Modeling Report clearly shows that if CARB's proposed reactivity adjustment factors are implemented for CNG- and LPG-fueled low-emission vehicles, peak ozone levels in the South Coast Air Basin would be expected to increase in comparison to the case with either conventional gasoline or reformulated gasoline. The following table summarizes the results of

the air modeling analysis of the relative impact on the ozone peak of applying the CNG, LPG, and RFG RAFs.

Meteorology	Emissions Inventory	Null Test		
		CNG	LPG	RFG
June 24-25, 1987	1987	1.16	1.31	1.02
June 24-25, 1987	2010	1.12	1.28	1.02
Aug. 27-29, 1987	1987	1.15	1.33	1.02
Aug. 27-29, 1987	2010	1.12	1.26	1.02
Aug. 30-Sep. 1, 1982	1987	1.00	1.05	0.98
Aug. 30-Sep. 1, 1982	2010	1.04	1.15	1.00

ΔO_3
.028ppm
.020
.017
.026
.125
.057

The null test result shown is the ratio of the change in peak ozone concentration predicted from modeling in which reactivity adjusted emissions from an alternative fuel vehicle is used compared to the change in peak ozone predicted for conventional gasoline. If the RAF for a particular fuel were correct in providing equivalent peak ozone impact, the null test result would be 1.0. A null test result that is greater than 1.0 indicates that the RAF is too small, thereby allowing an excessive increase in emissions and thereby exacerbating the ozone problem. A null test result that is less than 1.0 indicates that the RAF is conservative and its use would not lead to an increase in peak ozone.

The increase in the predicted light-duty vehicle contribution to peak ozone averages 10% for CNG and 23% for LPG over the three episodes modeled. In this rulemaking, CARB proposes no correction to the CNG RAF and a 10% upward adjustment to the LPG RAF. Clearly, these adjustments will not be sufficient to eliminate this projected increase in peak ozone.

CARB relies on model results for geographic ozone extent and population ozone exposure to determine RAF correction factors and ignores results for peak ozone. However, both federal and California ozone standards are based on peak ozone. Consequently, adoption of the currently proposed RAFs for CNG and LPG will make it more difficult to meet the federal and state ozone standards for the reasons noted above.

We further note that ignoring RAF impacts on peak ozone is inconsistent with guidance provided earlier by CARB health experts. The initial technical support document for the reactivity regulations, dated September 27, 1991, states that CARB health experts had evaluated the issue of ozone metrics (measures) for use in reactivity regulations and had concluded that "reactivity regulations will be derived based on ozone peaks" because the federal and state standards were protective of cumulative exposures (pages V-1 and V-2). The current rulemaking ignores this advice.

scales

In summary, WSPA continues to strongly contend that CARB's method of calculating RAFs leads, in an unknown number of cases, to increases in peak ozone. Under these circumstances, WSPA cannot endorse the application of CARB's reactivity concept. To the extent CARB seems determined to go forward with this approach, however, WSPA believes that, in order to avoid increases in peak ozone, larger adjustment factors need to be applied to the proposed RAFs. WSPA recommends that CARB increase the proposed RAFs for CNG and LPG vehicles and then repeat the air modeling analysis to determine if further adjustments are needed.

Sincerely,

cc: Peter Venturini, Chief of Stationary Source Division, ARB
K. D. Drachand, Chief of Mobile Source Division, ARB
John Holmes, Chief of Research Division, ARB

STATE OF CALIFORNIA
AIR RESOURCES BOARD
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95-9-1
9/28/95

XC: Board Members
JDD TAC
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MSD

76 PRODUCTS COMPANY

September 26, 1995

California Air Resources Board
P.O. Box 2815
Sacramento, California 95812
Atten: Ms. Pat Hutchens
Board Secretary

DENNIS W. LAMB
General Manager
Fuels Planning & Technology

COMMENTS ON PROPOSED CHANGES TO THE LOW EMISSION VEHICLE REGULATION

Dear Board Members:

76 Products Company, an operating group of Union Oil Company of California (dba Unocal) appreciates the opportunity to comment on the California Air Resources Board's (CARB) proposed amendments to the certification requirements and procedures for low-emission passenger cars, light-duty trucks, and medium-duty vehicles. Specifically, our comments will address the issues contained in the CARB staff report entitled Proposed Amendments to Low-Emission Vehicle Regulations, dated August 11, 1995 and the supporting report entitled Establishment of Corrections to Reactivity Adjustment Factors for Low-Emission Vehicles Operating on Compressed Natural Gas and Liquefied Petroleum Gas, dated June 22, 1995, herein referred to as the "Air Modeling Report."

Proposed Amendments to Reactivity Adjustment Factors (RAFs)

Unocal, along with the Western States Petroleum Association (WSPA), has long maintained that CARB's approach for calculating reactivity adjustment factors (RAFs), as set forth in its LEV regulation, is fundamentally flawed and could be detrimental to air quality. The flaw is not only in the choice of a particular reactivity scale, but also in the notion that there can be one reactivity scale that would be applicable to all urban atmospheric conditions. It is scientifically possible to calculate a reactivity scale for a given set of environmental conditions; however, different environmental situations will yield different reactivity scales. The concept of averaging scales across different conditions to derive a single reactivity scale that would be applicable to all situations is fundamentally wrong. Thus, the choice of a single scale could be detrimental to air quality compared to requiring the same mass emissions from all vehicles. The fact that, in some cases, applying reactivity adjustments can lead to a worsening of the air pollution problem is evident in the present rulemaking.

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A Unocal Company

The Air Modeling Report clearly shows that if CARB's proposed RAFs are implemented for CNG- and LPG-fueled low-emission vehicles, peak ozone levels in the South Coast Air Basin would be expected to increase in comparison to the case with either conventional or reformulated gasoline. The following table summarizes the results of the air modeling analysis of the relative impact on the ozone peak of applying the CNG, LPG, and RFG RAFs.

Meteorology	Emissions Inventory	Null Test CNG	Null Test LPG	Null Test RFG
June 24-25, 1987	1987	1.16	1.31	1.02
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Aug. 30-Spt. 1, 1982	1987	1.00	1.05	0.98
Aug. 30-Sep. 1, 1982	2010	1.04	1.15	1.00

The null test result shown is the ratio of the change in peak ozone concentration predicted from modeling in which reactivity adjusted emissions from an alternative fuel vehicle is used compared to the change in peak ozone predicted for conventional gasoline. If the RAF for a particular fuel was correct in providing equivalent ozone impact, the null test result would be 1.0. A null test result greater than 1.0 indicates that the RAF is too small, thereby allowing an excessive increase in emissions and exacerbating the ozone problem. A null test result less than 1.0 indicates that the RAF is conservative and its use would not lead to an increase in peak ozone.

The increase in the predicted light-duty vehicle contribution to peak ozone averages 10% for CNG and 23% for LPG over the three episodes modeled. In this rulemaking, CARB proposes no correction to the CNG RAF and a 10% upward adjustment to the LPG RAF. Clearly, these adjustments will not be sufficient to eliminate this projected increase in peak ozone.

CARB relies on model results for geographic ozone extent and population ozone exposure to determine RAF correction factors, and ignores results for peak ozone. However, both federal and California ozone standards are based on peak ozone. Consequently, adoption of the currently proposed RAFs for CNG and LPG will make it more difficult to meet the federal and state ozone standards for the reasons noted above.

We further note that ignoring RAF impacts on peak ozone is inconsistent with guidance provided earlier by CARB health experts. The initial technical support document for the reactivity regulations (dated September 27, 1991) states that CARB health experts had evaluated the issue of ozone metrics (measures) for use in reactivity regulations and had concluded that "reactivity regulations will be derived base on ozone peaks" because the federal and state standards were protective of cumulative exposures (pages V-1 and V-2). The current rulemaking ignores this advice.

We strongly contend that CARB's method of calculating RAFs leads, in an unknown number of cases, to increases in peak ozone. Under these circumstances, we cannot endorse CARB' reactivity concept. To the extent CARB seems determined to go forward with this approach, however, we believe that, in order to avoid increases in peak ozone, larger adjustment factors need to be applied to the existing and proposed RAFs. We recommend that CARB increase the proposed RAFs for CNG and LPG vehicles, ~~and~~ then repeat the air modeling analysis to determine if further adjustments are needed.

Medium-Duty Vehicle Revised SIP Proposal

We support CARB's proposed changes to the mobile source control measures for medium-duty vehicles contained in the California State Implementation Plan (SIP). The proposed changes, which require various amendments to the Low Emission Vehicle Regulation, include:

- reducing the 50,000 mile and 120,000 mile LEV NOx standards to ULEV levels beginning in 1998 (thereby eliminating the need for 100% ULEVs in 2002);
- increasing the 120,000 mile ULEV NOx standard;
- increasing the ULEV CO and PM10 standards to LEV levels;
- extending the intermediate in-use standards for LEVs and ULEVs; and
- establishing the new "Super Low Emission Vehicle" or "SLEV" category.

These changes will provide vehicle manufacturers greater flexibility in complying with the stringent emission certification requirements contained in the Low-Emission Vehicle Regulation. This improved flexibility will allow manufactures to choose among a number of vehicle technologies to meet the emission requirements, rather than restrict them to a few technologies which are likely still in the prototype stages of development. By offering greater compliance flexibility, the proposed changes will increase the likelihood that the Low-Emission Vehicle Regulation will achieve the projected emission reductions cost effectively and without the need for expensive conversions to lesser-performing vehicles.

In addition, we believe that the concepts illustrated in this proposal can be easily applied to the light-duty vehicle category to increase the flexibility in achieving the emission reductions attributable to the zero-emission vehicle (ZEV) program. For example, by slightly reducing the ULEV NOx standards for light duty vehicles, the exhaust hydrocarbon and NOx emissions benefits of the ZEV program can be achieved by a purely performance-based LEV program. The end-result would be a cost-effective and practicable market-based system, rather than the current mandate-based system. This same concept can also be applied to carbon monoxide (CO) and evaporative hydrocarbons. The current LEV/ZEV program can therefore be redesigned to deliver the

program's emission reduction goals without the need for mandated technologies. We urge CARB to apply the concepts illustrated in this proposal to the light-duty vehicle category and explore the potential emission reduction benefits of all available options.

Proposed Amendments to the Fuel Specifications for M100 Fuel Methanol

We do not support CARB's proposal to remove the requirement for a luminosity additive in the specification for M100 fuel methanol. Although we agree with staff's conclusion, based on the study conducted by the U.S. EPA, that the risk of an M100 fire is low, the risk has not been eliminated, and will increase with the growing acceptance of M100 fueled vehicles. In addition, the serious consequences of an M100 fire have not diminished. The fact is, if M100 does catch fire, the flame will be virtually invisible, and could lead to serious injury to unsuspecting accident victims and firefighters.

Staff also asserts that the risk of a M100 fire is further mitigated by the fact that M100 vehicles are fleet vehicles which are fueled at a central location by trained personnel. In the staff report, staff states that "the risk would be very low that an untrained person would come in contact with an M100 fuel spill or fire." We disagree with this logic. First, the fact that trained personnel are used to refuel M100 vehicles will not reduce the exposure of unsuspecting accident victims and firefighters if an M100 fire were to occur as a result of M100 vehicle accident on a public highway. Second, as M100 vehicles grow in acceptance and the fuel becomes more widely available, it is likely that their use will grow beyond fleet applications, thereby increasing the exposure to M100 fires by the untrained or unsuspecting public.

We do not agree that the reduced risk of M100 fires should be used as basis to remove the luminosity requirement for M100 fuel methanol. We recommend that the luminosity additive requirement for M100 fuel methanol remain intact and that the requirement for fire suppression systems be used as a substitute until a suitable luminosity additive is identified.

We appreciate the opportunity to comment on the proposed amendments to the Low-Emission Vehicle Regulations. If you have any questions or require further information, please contact Melissa Sherlock at (213) 977-5974.

Sincerely,

D. W. Lamb /mad

Dennis.W. Lamb
General Manager
Fuels Planning and Technology

(10)

STATE OF CALIFORNIA
AIR RESOURCES BOARD

Proposed Amendments to Low-Emission Vehicle Regulations: Title 13, California Code of Regulations, sections 1956.8 and 1960.1, and "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," and "California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles."	**Release Date: August 11, 1995** **Hearing Date: September 28, 1995**

ORAL STATEMENT OF THE ENGINE MANUFACTURERS ASSOCIATION

Good morning. My name is Glenn Keller, Executive Director of the Engine Manufacturers Association ("EMA"). EMA is the national association representing world-wide manufacturers of engines for all applications other than passenger cars and aircraft. EMA's members produce, among other things, the engines used in medium-duty vehicles (MDV's), both compression ignition and spark-ignited, which under CARB's regulations include those vehicles having a gross vehicle weight rating (GVWR) greater than 6,000 pounds. Accordingly, EMA has a vested interest in the regulations at issue.

In general, EMA is very appreciative of the several opportunities that CARB Staff has provided EMA to comment on the development of the pending amendments to both the MDV and the heavy-duty rules. This cooperative process among regulators and the affected industry has resulted in stringent, yet generally workable, requirements in California. This in turn will yield significant additional air quality improvements while at the same time preserving a full array of efficient and durable mid-range power sources in California.

EMA sincerely hopes that this type of cooperative effort continues. And there is good reason to assume that it will. This is evidenced by the comprehensive Statement of Principles (SOP) recently entered into among U.S. EPA, CARB and the engine industry regarding future emission regulations for heavy-duty on-highway vehicles. Pursuant to this SOP, regulators and the engine manufacturing industry will be working together in a concerted attempt to reduce aggregate oxides of nitrogen (NO_x) and non-methane hydrocarbon (NMHC) emissions from heavy-duty vehicles to either a combined standard of 2.4 g/bhp-hr or a combined standard of 2.5 g/bhp-hr with a NMHC cap of 0.5 g/bhp-hr. Both of these standards are to be implemented by the year 2004. This SOP constitutes a true milestone in the attainment of cleaner air through reasoned regulatory efforts. It will increase certainty and stability for the heavy-duty engine industry which is vital for manufacturers' strategic business planning. And it will also ensure cleaner air in a manner which is both realistic for industry and responsive to genuine environmental concerns.

The amendments being considered today are yet another component of the collaborative efforts of government and industry to bring about cleaner air. More specifically, EMA applauds CARB's commitment to harmonize its emission requirements with the anticipated federal requirements under the SOP for heavy-duty engines and vehicles beginning with the 2004 model year. A major component of the CARB MDV category (vehicles with a GVWR of 8,500 to 14,000 pounds) is also subject to EPA's requirements for heavy-duty vehicles.

Under the pending CARB Staff proposal, the revised emission standard applicable to engine dynamometer-certified MDV's in the 2004 model year will be a combined NO_x and NMHC standard of 2.4 g/bhp-hr or 2.5 g/bhp-hr with a NMHC cap of 0.5 g/bhp-hr, in lieu of the originally proposed 2.0 g NO_x and 0.5 g NMHC standard. This combined standard both increases the feasibility of attaining these goals and continues the movement toward harmonization with the federal requirements anticipated pursuant to the SOP. These two factors will likely result in lower MDV purchase costs to California consumers while still serving to progress California's commitment to cleaner air.

In addition, Staff's proposal to adopt standards aligned with the announced federal standards in 2004 will greatly enhance industry's prospects for responding to the technological and environmental challenges of the next century. Staff's decision in favor of harmonized requirements also will go a long way toward assuring a joint and cooperative response by industry and government to future challenges as they arise.

Accordingly, EMA urges the Board to adopt these critical and positive revisions to the MDV and heavy-duty otto-cycle Rules.

Of course, bringing about the full harmonization of the CARB and EPA regulatory programs will require more than an alignment of specific emission standards. Nevertheless, CARB Staff's in-depth involvement in the implementation of the SOP and CARB's specific recognition in the SOP of the benefits of fully harmonizing state and federal regulations hopefully will result in the attainment of this very important objective.

EMA also applauds the flexibility for the industry that CARB has recognized as necessary and, therefore, included in the proposed changes to the Rules at issue. Such flexibility is vital to any achievable program given the inherent differences between chassis-certified MDV's and engine-dyno certified MDV's. To that end, and as we have previously stated, EMA greatly appreciates and fully supports the specific amendments to the MDV Rule that provide for a stair-step 100% phase-in program for engine-dyno certified MDV's, and that retain a 100% Tier 1 requirement for engine-dyno-certified MDV's through the 2001 model year. EMA also appreciates the recent Staff amendments permitting intermediate in-use standards for engine-dyno certified MDV's -- specifically an in-use LEV standard for the 2002 and 2003 model years of 3.2 g/bhp-hr (NMHC + NO_x), and an in-use ULEV standard for the 1992-2003 model years of 2.7 g/bhp-hr (NMHC + NO_x). These amendments will provide the engine industry with the necessary stability and leadtime to meet the increasingly stringent LEV and ULEV

standards through the 2004 model year. And more importantly, they serve to avoid the prospect of certifying engines to standards applicable for only one year.

In conclusion, EMA appreciates the opportunity to work with CARB Staff. EMA looks forward to similar cooperative efforts in implementing the SOP and in achieving full harmonization of the CARB and EPA regulatory programs, not just the resulting emission standards.

Thank you for your attention, and if you have any questions I would be happy to respond.

95-9-1
9/28/95

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(11)

Statement
of the
Manufacturers of Emission Controls Association
on the
Proposed Amendments to California's Certification Requirements and Procedures for Low-Emission Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles

September 28, 1995

Good Morning. My name is Dale McKinnon and I am the Technical Director of the Manufacturers of Emission Controls Association (MECA). MECA is pleased to provide this statement in support of the Air Resources Board's proposal to amend the certification requirements and procedures for low-emission passenger cars, light-duty trucks and medium-duty vehicles. MECA commends the Board for its continuing efforts to implement a motor vehicle emission control program that will address California's serious air quality problem.

MECA is a non-profit association of companies which manufacture emission controls for motor vehicles. Our companies are developing and producing control equipment that can help reduce NOx, HC, CO and particulate emissions from diesel engines, as well as control technology which is used on gasoline- and alternative-fueled motor vehicles and engines. We have on numerous prior occasions provided information to the Board and Staff on the status of emission control technology developments. In the interest of time, we will limit ourselves to making a few brief comments relating to available and evolving exhaust control technologies which will assist engine manufacturers meet the proposed medium-duty vehicle emissions standards.

For the past two decades California has provided critical leadership in the development of its mobile source emission control program. The standards adopted by the Air Resources Board over the years have stimulated enormous technical development efforts that have resulted in important advances in engine design and control technology which are providing significant reductions in motor vehicle pollution. The proposed emission standards for medium-duty vehicles will stimulate further development efforts by both the engine manufacturers and those developing control technologies.

Gasoline-Powered Medium-Duty Vehicles

We concur with the Staff's conclusions that control strategies being employed on other categories of motor vehicles can be applied to medium-duty vehicles. For example, improvements which have occurred in catalyst technology both with regard to improved light-off characteristics, improved durability, and high temperature resistance are well suited to assist medium-duty, gasoline powered vehicles meet the proposed emission standards.

We also concur with the Staff's assessment that, if needed, electrically-heated catalysts (EHCs) could be optimized for medium-duty applications. This technology has evolved dramatically over the past five years and its effectiveness and durability is being established for possible light-duty vehicle application to meet the ULEV standards. Additional

development work would be necessary to apply this technology to medium-duty vehicles. Most notably, the energy requirements necessary to heat the EHC, which would have a larger catalyst volume in medium-duty vehicle application, would have to be addressed. Hydrocarbon traps have reached a stage of development to be considered a viable candidate.

Diesel-Powered Medium-Duty Vehicles

MECA members have developed and are manufacturing control technologies that could be used to help diesel-powered medium-duty vehicles to meet the proposed emission standards. For example, our members are working on lean-NOx catalyst technology that shows considerable promise for providing significant NOx reductions from diesel engines. Also, oxidation catalyst and trap oxidizer technology can be used to control particulate emissions.

Oxidation catalyst technology has been proven effective in reducing engine out particulate by up to 30 percent, HC by up to 30 percent, and CO by up to 30 percent. Trap oxidizer technology can reduce particulate emissions by up to and over 90 percent. We concur with the Staff's assessment that these technologies will be among the technology choices available to engine manufacturers to meet the proposed medium-duty standards.

Although the technologies discussed above can be used in conjunction with the diesel fuel currently available in California, even further reductions in fuel sulfur content will enhance their performance.

Conclusion

In closing, we wish to reiterate our support for the proposed revisions to the Low Emission Vehicle program. Our industry stands ready to do its part to help insure that the objectives of the regulatory changes are achieved.

Thank you.

Manufacturers of Emission Controls Association
1707 L STREET, N.W.
SUITE 570
WASHINGTON, D.C. 20036-4201
202-296-4797 FAX: 202- 331-1388

September 25, 1995

VIA OVERNIGHT MAIL

Ms. Pat Hutchens
Board Secretary
California Air Resources Board
Executive Office
2020 L Street
Sacramento, CA 95814

Dear Ms. Hutchens

RE: The Air Resources Board's Proposed Amendments to the Certification Requirements and Procedures for Low-Emission Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles

Enclosed are 20 copies of MECA's testimony on the above-referenced item being considered at the September 28, 1995 Public Hearing. Please distribute copies of our testimony to the members of the Board and the appropriate ARB staff. Also please enter our testimony into the official record of the public hearing on this issue. We plan to make an oral statement at the hearing.

Sincerely,

Dale L. McKinnon
Technical Director

Recycled

(12)

California Natural Gas Vehicle Coalition

Gregory E. Vlasek
Executive Director

Monica Alejandrez
Executive Assistant

September 25, 1995

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Mr. John Dunlap, Chairman
California Air Resources Board
2020 L Street
Sacramento, CA 95814

95-9-1
9/28/95

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Chaffey College Center for Economic Development

City of Long Beach Gas Department

Energy Technology Training Center College of the Desert

Hurricane Compressors

MESA Environmental

Pacific Gas & Electric

San Diego Gas & Electric

Southern California Gas

SunLine Transit

United States General Services Administration Fleet Management

Dear Chairman Dunlap:

Re: September 28, 1995 Board Hearing -- Proposed Amendments to Medium-Duty LEV/ULEV Regulations

The natural gas vehicle industry wishes to express concern about ARB's proposed modifications to the medium-duty LEV program, and, more specifically, about its implications for the SIP. ARB has a long history of successfully engineering and executing technology-forcing vehicle emission programs, despite the technical nay-saying of vehicle manufacturers and the petroleum industry. That ARB is, in effect, removing NOx reductions from a specific SIP control measure and placing them in the so-called black box of unspecified future reductions -- without mitigation -- is disturbing to us, and should be to the Board as well.

While the proposed acceleration of NOx reductions compared with the original 1990 medium-duty LEV timetable is laudable, it nevertheless falls far short of commitments made in the 1994 SIP for the medium-duty class, with no net benefit to the SIP NOx reduction effort and an incremental degradation of our attainment status for toxic PM_{10} and carbon monoxide emissions.

With specific regards to PM_{10} attainment, we are also concerned about the combined indirect effect of this rulemaking with that embodied in the "Statement of Principles" agreement with EPA and OEMs for heavy-duty LEVs. The agreement for NOx reductions to accrue from the Statement of Principles is predicated on the abeyance of stricter PM_{10} and CO standards by ARB and EPA. With this rulemaking, the Board appears prepared to forego any definitive further progress in reducing PM_{10} or CO emissions from either medium- or heavy-duty vehicle classes for many years to come. We hope this does not prove to be the case, especially in view of the mounting evidence of carcinogenicity related to diesel particulate matter and pending plans for a new state PM_{10} attainment strategy.

On a positive note, our industry is pleased to see and support recognition of a "super-LEV" category for which NMOG credit may be earned by OEMs. NGV supporters advocated this approach as early as March, 1990. Unfortunately, presented as an option to the newly relaxed ULEV standards, we are doubtful that OEMs will find sufficient incentive to pursue the necessary advanced technologies to achieve the 1.7 credit offered.

As a partial remedy to the shortage of SIP NOx emission reductions in the medium-duty class, and to the incremental loss of PM_{10} and CO reductions from both medium- and heavy-duty vehicles, we support a SIP strategy that contains a phase-in of the

A non profit corporation sponsored by California's natural gas providers and others committed to bringing the environmental and economic benefits of natural gas to the transportation fuel market.

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proposed medium-duty SLEV tier as an OEM tailpipe standard beginning about 2002. Judging by the very impressive Ford F-150 data offered in the staff report (pages 28-30), this suggestion does not seem unreasonable even for gasoline. This approach will encourage OEMs to continue working for advanced, long-term vehicle solutions (including natural gas, hydrogen, electric and hybrid technologies) for the heavier vehicle classes, rather than focusing on short- to mid-term compliance.

As a further SIP remedy, the natural gas industry will also be urging ARB and EPA to adopt a straight 2.0 gram NOx standard and not to forego future PM_{10} and CO reductions in regulatory proceedings for heavy-duty vehicles.

Finally, we would also like to register support for adoption of the proposed natural gas RAF for medium-duty vehicles. This measure enables OEMs to establish with reasonable reliability the relative ozone benefits of potential CNG product offerings, while posing very little risk of detriment to the breathing public.

As always, thanks are due to you, the Board and staff for your genuine efforts to balance widely divergent economic and political pressures against your ultimate goal of healthful air for this and future generations.

Very truly yours,

Greg Vlasek

cc: ARB Board members
ARB Executive Officers

The Gas Company®

James P. Greene

95-9-1
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September 27, 1995

Ms. Pat Hutchins, Board Secretary
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95814

tel 916 446-5282
fax 916 443-2994

RE: California Air Resources Board 5-9-1, Amendments to the Certification Requirements and Procedures for Low-Emission Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles

Dear Ms. Hutchins:

Southern California Gas Company (The Gas Company) hereby submits comments regarding the California Air Resources Board's (ARB's) proposed amendments to the medium-duty vehicle emission standards and the associated State Implementation Plan (SIP) Measure (M3 - Accelerated Medium-Duty ULEV). In general, our comments focus on the relationship between those amendatory regulations and the Board's long-term emission reduction goals for mobile sources.

The staff report indicates that the expected emission reductions are about 8.7 tons per day (tpd) less than previously believed, due to more recent, enhanced inventory modeling assumptions. We are concerned that stationary sources may be challenged to make up the difference between the original SIP commitment and the reductions expected from the revised staff proposal. As the primary supplier of stationary source fuel in the South Coast Air Basin, The Gas Company is very concerned that our customers--those businesses and industries that keep the Southern California economy running--may be unfairly burdened with this responsibility. We urge the Board to find other reductions for mobile sources to overcome this shortfall, and we pledge our support for that effort.

In addition, the proposal calls for a doubling of the allowable particulate matter (PM) emissions for vehicles that are engine-certified. Virtually all of the recently published particulate matter studies indicate that PM emissions are a serious health hazard. Particulate Matter standards should not be relaxed until the results of numerous ongoing studies are reviewed and the 1997 PM Attainment Plan is completed.

With regard to the new, Super Low-Emission Vehicle, or SLEV category, The Gas Company appreciates ARB staff consideration of the need for an emission standard level below the current ULEV category. Although the new category was included at the request of the natural gas vehicle industry, unfortunately the proposed amendments to both the ULEV standards, and the modified phase-in schedule

virtually ensure that no manufacturer will certify to the optional level, since the proposed LEV/ULEV standards and revised phase-in schedule are achievable with gasoline and diesel technology.

In conclusion, The Gas Company urges the ARB to remain committed to the 1994 SIP emission reduction goals and the vehicular regulations that are now on the books. We fully support the Board in that endeavor.

Sincerely,

James P. Greene Jr.

Regional Vice President

c: Mr. John Dunlap, Chair
Mr. Jim Shoning

NISSAN RESEARCH & DEVELOPMENT, INC.

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September 28, 1995

Mr. K. D. Drachand, Chief
Mobile Source Division
California Air Resources Board
9528 Telstar Avenue
El Monte, California 91731

Dear Mr. Drachand:

Attached are Nissan's comments regarding the proposed changes to the Low Emission Vehicle regulations.

Nissan appreciates this opportunity to provide pertinent information on these important subjects. If you have any questions, please contact Mr. Robert A. Cassidy at (310) 719-5827.

Sincerely,

John Schutz
Director, Powertrain & Emissions
General Manager, Los Angeles Office

NISSAN COMMENTS

Proposed Revisions to the CARB LEV REGULATIONS

September 28, 1995

Nissan recognizes the importance of environmental issues for the people of California, and believes in developing environmentally safe and low polluting vehicles to assist in achieving clean air goals. Nissan has cooperated to achieve these goals in the past, and is committed to continue with these efforts.

In order to maximize the efforts directed toward improving air quality, it is imperative that we have a strong working relationship with your office, and in turn, that the ARB enforce realistic and achievable standards.

From the stand point of both issues, Nissan provides the following comments on CARB's proposal with a focus on creating realistic and effective LEV standards.

1. ULEV and LEV Interim In-Use Standards

- Nissan welcomes CARB's proposal to extend the period for LEV and ULEV in-use standards. However, as we have already discussed in our June 15, 1995 comments, it will require at least four (4) years to observe the higher mileage effectiveness of these new emission control systems and to provide meaningful feedback for production changes. This time schedule is outlined in Attachment 1, "Schedule of In-use Feed Back."

- As of today, Nissan expects to introduce LEV production in the 1997 model year or later, and to introduce ULEV production at the earliest in the 2000 model year. Therefore, Nissan proposes the interim in-use standard period be extended to the 2001 model year for LEVs and to the 2004 model year for ULEVs and that the existing standards not change during these periods. This is consistent with our last comments of June 15, 1995. However, the current CARB proposal is establishing a more stringent 50,000 mile interim in-use standard than was originally discussed at the workshop, as well as introducing a completely new interim 100,000 mile standard. These are not consistent with the Nissan concept of an interim standard as will be demonstrated in the following discussion.

The interim in-use standard for the '99MY is 0.09 g/mile compared to the '98MY standard of 0.10 g/mile. This will increase the probability of an engine family not passing the standard. Nissan believes that in order to pass this new and more stringent standard (0.09 g/mile), manufacturers will require adequate time for feedback to confirm the effectiveness of the new emissions control system.

Attachment 2 shows the situation where the more stringent standard is enforced as proposed by ARB. Since there is only a one year gap between the'97MY vehicle production and the production trial of the '99 MY vehicle, there is not adequate time to receive and utilize feedback which will confirm the effectiveness of the new emissions control system in customer use.

In order to provide adequate feedback for implementation on production vehicles, it will require at least four (4) years as discussed earlier.

Based on the reasons cited above, Nissan proposes the current interim in-use standard for LEVs of 0.100 be extended through the model year 2001 and similarly the ULEV standard of 0.058 be extended through the model year 2004. These should both be 50,000 mile standards, and 100,000 mile standards should not apply.

Current and Proposed Interim In-Use Standard Items at 50,000mile

Emission Category		Standard Item	50,000mile Interim In-Use Standard (g/mile)	
			'98MY (current)	'99MY (proposed)
LEV	LDV/LDT (0-3759lbs)	NMOG	0.100	0.090
ULEV		NMOG	0.058	0.055
		CO	2.6	2.1
	LDT (3751-5750lbs)	NMOG	0.075	0.070
		CO	3.3	2.8

2. 50° F Standard

- Nissan welcomes CARB's proposal to modify the ULEV 50° F emissions adjustment factor based on CARB's experimental results.

  However, Nissan proposes a value for the adjustment factor of '2.5 or higher' rather than CARB's '2.0' as discussed in our comments dated June 15, 1995. This is based on our ULEV development vehicle data which provided a value of 2.46.

3. Emission Control Label Specifications

- Nissan welcomes CARB's proposal to incorporate the VEC Bar Code requirement after the '98MY and the provisions for a special waiver for this standard.

  In order to comply with HSC43200.5 regulations, some areas in California (San Diego and Ventura Counties) already require a smog index label as part of the specifications for emissions control labeling. Nissan intends to comply with this requirement. However, several issues regarding the smog index label pilot program remain unclear.

  Therefore, we believe additional workshops and discussions will be required to resolve these issues prior to implementation.

At the request of Nissan, the two one-page Attachments, each marked "Confidential," have been deleted from this comment letter