THE CARL MOYER PROGRAM ADVISORY BOARD REPORT

The Carl Moyer Memorial Air Quality Standards Attainment Program; Incentives for Lower Emission Heavy Duty Engines

March 31, 2000

In memory of Dr. Carl Moyer
(1937 – 1997)

This program is named in honor of the late Dr. Carl Moyer, a Chief Scientist at Acurex, an environmental consulting firm. Dr. Moyer, a Stanford University graduate, was an advocate of seeking positive solutions to the air pollution challenges in California. His extraordinary dedication, hard work, vision and leadership made this program possible. He sought to unite business, government, and environmental groups in a common effort to reduce pollution from heavy-duty vehicles. He served as a consultant to the Cleaner Air Partnership, to the California Truck Working Group, and to various air pollution control agencies and the California Energy Commission, and in each of these assignments he brought the same vision and the same vigor, inspiring a common goal among disparate parties. The Moyer program is his vision for how to meet current air quality goals through reductions in emissions from heavy-duty mobile sources.

Carl Moyer Program Advisory Board Members		
Member	**Organization**	**Representing**
Mr. Michael Kenny	Air Resources Board Executive Officer	Advisory Board Chairman
Mr. Tim Carmichael	Coalition for Clean Air	Environmental Group
Mr. Mark DeSaulnier	Contra Costa County Supervisor	Regional Transit
Mr. Robert Garcia	Environmental Defense	Assembly Appointee
Mr. John Harris	Chairman of Harris Ranch	Agriculture
Mr. Larry Keller	Port of Los Angeles	Marine
Ms. Judith Lamare, Ph.D	Cleaner Air Partnership	Senate Appointee
Mr. Jason Mark	Union of Concerned Scientists	Senate Appointee
Mr. Peter Okurowski	California Environmental Assoc.	Locomotive
Mr. Gordon Murley	Woodland Hills Homeowners Association	Assembly Appointee
Mr. Robert Pernell	CEC Commissioner	Ca. Energy Commission
Mr. Kevin Shanahan	President of Cummins West	Trucking
Ms. Becky Wood	Teichert Aggregates	Construction

The Advisory Board would like to extend its appreciation to the Air Resources Board (ARB) staff members who were the principal contributors to our report: Jack Kitowski, Renee Kemena, Lucina Negrete, and Rosalva Tapia.

RECOMMENDATIONS OF THE CARL MOYER PROGRAM ADVISORY BOARD

The Carl Moyer Program Advisory Board has evaluated the Carl Moyer Program, and unanimously recommends the following:

1. The program is invaluable to cleaning up the air for all the people of California in an efficient, environmentally sound, and equitable way and should be continued at a funding level of at least $100 million per year through the year 2010.
2. Without the emission benefits of the Carl Moyer Program, local air districts will likely fail to attain federal ambient air quality standards. Failure to meet federal deadlines would mean all California residents would breathe higher levels of pollution. Additionally, California will face economic sanctions, including loss of federal highway funds, and higher barriers to industrial growth. Therefore, the program is crucial and should be continued.
3. The Advisory Board recommends that ARB staff incorporate specific modifications for particulate matter (PM) into the Carl Moyer Program Guidelines for review and consideration by the ARB's governing board. The Advisory Board recommends that the program encourage statewide reductions in PM emissions, and require a 25 percent PM reduction district-wide for the program in Serious PM nonattainment areas.
4. The Advanced Technology Development and the Infrastructure Development portions of the Program, both implemented by the California Energy Commission (CEC) should continue for the life of the Program. Ten percent (or a minimum of $4 million per year) from the annual funds appropriated to the Carl Moyer Program should be allocated to the Advanced Technology and Infrastructure Development.
5. In the first year of implementation, districts provided matching funds for the Carl Moyer Program totaling about $12 million. The Advisory Board finds that the ability of districts to provide increased matching funds is limited. Therefore, we recommend that the Legislature cap the current district matching fund requirement (two-to-one ratio) at $12 million.
6. California has the worst air pollution in the nation. The Federal Government provides funds for many programs throughout the United States, including programs to reduce air pollution. The Carl Moyer Program is a critical program in California that merits federal funding. We recommend that the Governor and the Legislature request federal funds to supplement funding for the Carl Moyer Program.
7. The Advisory Board believes future reviews of the Carl Moyer Program would be useful and would help continue broad support for the program. The Advisory Board suggests that the Secretary of the California Environmental Protection Agency reconvene a Carl Moyer Program Advisory Board every two years to evaluate the program and provide recommendations and direction to ARB, CEC, and district staff on continuing implementation of the Program.

EXECUTIVE SUMMARY

The Carl Moyer Program is a positive solution to the air pollution challenge. In its first year the program has been an overwhelming success. Not only does the program reduce air pollution, protect human health, and promote economic vitality for all the people of California, but it also fosters development of new technologies and supports the necessary infrastructure for these technologies. During its first year, the Carl Moyer Program reduced both NOx and PM emissions in an efficient, environmentally sound, and equitable way. These near-term emission benefits of the Carl Moyer Program are significant, and are vitally needed for California to meet state and federal clean air deadlines. Failure to meet federal deadlines means all California residents breathe higher levels of pollution. Additionally, California will face sanctions, including loss of federal highway funds, and higher barriers to industrial growth. The clean air benefits of a multi-year program will help all Californians.

Air pollution has serious impacts on public health and the economy. Ground-level ozone (smog) is created by the photochemical reaction of NOx and hydrocarbons. It causes harmful health effects ranging from eye irritation to lung damage, and may aggravate existing respiratory diseases. People with compromised respiratory systems and children are the most severely affected. PM, like ozone, has also been linked to a range of serious health problems. Particles are deposited deep in the lungs and can result in increased respiratory disease, lung damage, cancer, and premature death. Every year, it costs California billions of dollars to address health-related problems, plus damage to crops and vegetation. The cost of air quality improvement programs has been demonstrated to be significantly less than the societal cost of air pollution.

This is where the Carl Moyer Program helps all the people of California. The program significantly reduces smog-forming and PM emissions from vehicles and equipment traditionally powered by heavy-duty diesel engines by providing an incentive for owners of trucks, buses, boats, agricultural pumps, forklifts, and other mobile sources to invest in cleaner technologies. Moyer Program grants offset the incremental cost of purchasing cleaner engines. For example, a company may be able to buy a new truck for $100,000, which meets the state's minimum emission standards, or buy a lower-emission truck for $125,000. The offsetting cost ($25,000) is available through the Moyer Program in order to buy the lower-emission truck. During the first year of the program, NOx emissions were reduced by about four tons per day and PM emissions by about 100 pounds per day. These emission reductions cost California about $3,000 per ton.

The near-term emission benefits achieved through the Carl Moyer Program are especially critical in areas like Sacramento, San Joaquin, South Coast, and Ventura. Sacramento, San Joaquin Valley, and Ventura need the near-term reductions to meet 2005 federal clean air attainment deadlines. Sacramento also needs near term reductions (by 2002) to help resolve current litigation and avoid future legal action that would deny federal transportation funds to the region, halting road projects. The San Joaquin Valley also needs near term reductions by 2002 to avoid a similar crisis. Although the South Coast area has a 2010 federal deadline, the extreme air pollution

problem there demands near-term reductions from incentive programs to meet federal milestones showing progress toward clean air. If California is going to achieve its public health goals and meet federally mandated emission levels, continued funding —at substantially higher levels— is needed. The Advisory Board unanimously recommends that the program be funded at a minimum of $100 million per year through 2010.

The Advisory Board heard from a number of air pollution control districts throughout the state. Each one indicated that the demand for project funds exceeded the available funds. More importantly, each district stated it could cost-effectively allocate more funding if it were available. The program has been tremendously well-received. It has performed as predicted both in terms of achieving emission reductions and cost-effectiveness. Both private businesses and public agencies have received grants to operate lower-emission vehicles and equipment. This has helped improve air quality for all the people of California. At this early stage, the demand for project funding has been five times the funding available for the South Coast and three times the funding available statewide.

Continued funding through a multi-year program is crucial to help clean up the air. It is also critical for program continuity and predictability to the local air districts, the manufacturers of “clean” engines/equipment, and the actual users of the funds. Most importantly, continued funding demonstrates to Californians that the State of California is on track toward cleaner and healthful air. Continued funding will provide local districts with a predictable source of emission benefits for their respective clean air plans, will allow them to use their match funds wisely, will encourage engine/equipment manufacturers to accelerate the introduction of emission control technology, and will provide opportunities for greater fleet participation.

The Advisory Board recommends that ARB staff incorporate specific modifications for PM into the Carl Moyer Program Guidelines for review and consideration by ARB’s governing board. This would provide oversight by ARB’s governing board and allow for public review and participation in the development of the PM requirements. The Advisory Board recommends that the program target a 25 percent reduction statewide in PM emissions, and require a 25 percent PM reduction district-wide for Serious PM nonattainment areas. The PM reduction criteria and technology-related recommendations are discussed in greater detail later in this report.

Two important components of the Carl Moyer Program are the Advanced Technology Development and the Infrastructure Demonstration portions -- both implemented by the CEC. These program components are vital for fostering development of advanced new engine, retrofit, and aftertreatment technologies, and for providing funds for the fueling infrastructure necessary to support alternative-fuel projects already funded through the vehicle/engine portion of the Carl Moyer Program. The Advanced Technology Development and the Infrastructure Demonstration components are included in the Advisory Board’s recommendation for continued funding for the Carl Moyer Program as a whole.

The Advisory Board recommends that the Carl Moyer Program be funded through 2010 at a minimum of $100 million per year. The Advisory Board examined possible funding sources for the Carl Moyer Program and determined that the funding should be a combination of one-time and on-going funding sources. For a one-time appropriation, the Advisory Board recommends that a total of at least $500 million be placed into an account for use over the next five years (timing consistent with the 2005 attainment deadlines in Sacramento, San Joaquin, and Ventura). An appropriate source of this one-time appropriation is the State's General Fund budget surplus.

On-going funding should come from a variety of sources. As part of a long-term multi-year program, the Advisory Board recommends that a portion of the funds continue to be derived from the General Fund from 2006 through 2010. Other sources of on-going funding are identified later in this report. On-going funding from 2006 through 2010 would provide for efficient, environmentally sound, and equitable emission reductions that assist the South Coast region in meeting its 2010 federal clean air deadline; would help areas throughout the state to meet California's health protective air quality standards; would reduce public exposure to pollution; and would promote economic vitality for all the people of California. Long-term funding is critical to maintaining program momentum, ensuring the availability of infrastructure to support alternative-fuel projects, and fostering further improvements in advanced technology that will significantly reduce harmful emissions in the years to come.

The Carl Moyer Program has proven itself to be a very efficient, environmentally sound and equitable way to achieve the significant near term reductions California needs, and the Advisory Board unanimously recommends it be continued.

TABLE OF CONTENTS

I. ADVISORY BOARD FINDINGS 1
- A. Program Status 1
- B. Need for the Program 1
- C. Technology and Fueling Infrastructure 3
- D. Particulate Matter 3
- E. Amount and Source of Funding 4

II. NEED FOR CONTINUED FUNDING 6
- A. Demand for Funding 6
- B. Need for Statewide Emission Reductions 6
- C. Issues Regarding Conformity 7
- D. Societal Costs of Air Pollution 7
- E. Summary 7

III. PARTICULATE MATTER EMISSION REDUCTIONS 8
- A. Public Health Issues 8
- B. Particulate Matter Reductions from the Carl Moyer Program 8
- C. Recommendation 8

IV. FUNDING 10
- A. Recommended Funding Level for the Carl Moyer Program 10
- B. Recommended Sources of Funding 10
- C. Sources of Funding Evaluated 10

I. ADVISORY BOARD FINDINGS

.

The Carl Moyer Program Advisory Board, created by Assembly Bill 1571 (Villaraigosa/Brulte), has evaluated the program and considered the need for continued funding. The Advisory Board heard testimony from industry representatives, program participants and other stakeholders, reviewed ARB's status report on the program, and interviewed air districts, ARB, and CEC staff regarding program implementation. The Advisory Board's findings based on that evaluation are shown below.

A. Program Status

- The Carl Moyer Program is an effective, environmentally sound, and equitable program that will significantly benefit air quality and human health, and promote economic vitality for all the people of California. It should be continued.

- NOx emission reductions from the first year of the program are estimated at about four tons per day. The program has also reduced PM by more than 100 pounds per day.

- The program has been well received. Although the program covers only the incremental capital cost of vehicles and equipment that are cleaner than required, numerous private businesses and public agencies have applied for project grants.

- The Carl Moyer Program provides cost-effective benefits. Program cost-effectiveness for the first year of funding is about $3,000 per ton of NOx reduced. This is less than half the cost of typical stationary source emission reduction control strategies.

- By reducing NOx and PM, the Carl Moyer Program not only provides cost-effective emission reductions, but also helps save California billions of dollars in health costs, lost tourism, and lost business due to air pollution.

- The program has put numerous types of cleaner vehicles and equipment into operation in California. Figure I-1 illustrates the percent of total funds spent in each project category.

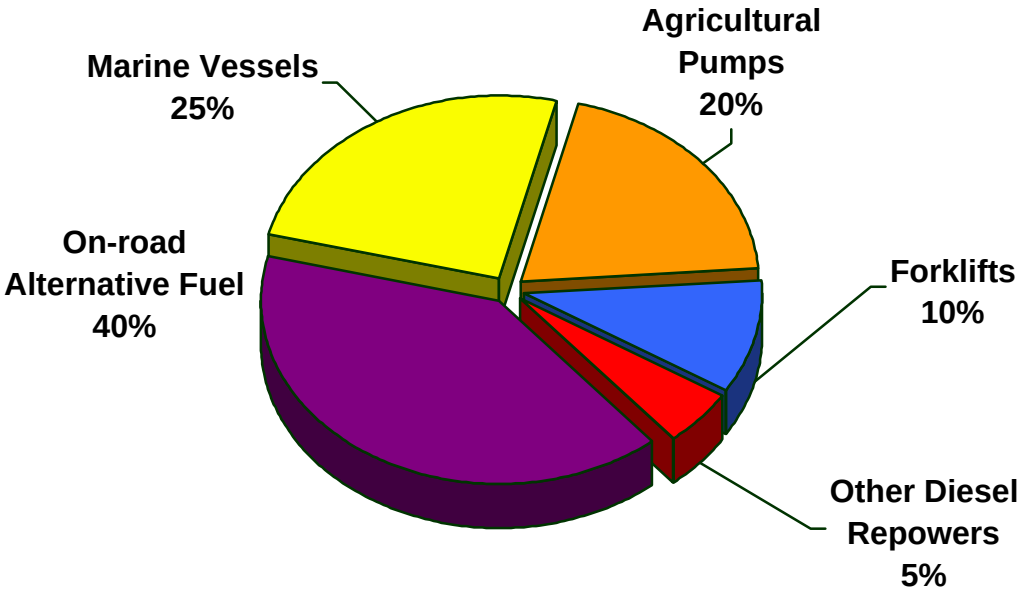
B. Need for the Program

- The Carl Moyer Program is an efficient, environmentally sound and equitable means of achieving near-term NOx and PM emission reductions. Clean air benefits all the people of California.

- Local air districts need the NOx emission reductions the program provides in order to meet state and federal clean air deadlines. The NOx benefits are particularly

Figure I-1

Carl Moyer Program Funding Per Project Category
Preliminary Estimates



critical in the Sacramento, San Joaquin, South Coast, and Ventura areas. Failure to meet these requirements can result in significant economic consequences.

- California residents need the public health benefits the Carl Moyer Program can provide by reducing exposure to particulate matter.

- A commitment to a multi-year program is crucial to help clean the air, for continuity and predictability to the local districts, for project applicants, and for manufacturers of the equipment. Continued funding will provide local districts with a predictable source of emissions benefits for their clean air plans. It will also provide opportunities for greater fleet participation and encourage manufacturers to accelerate the introduction of emission control technology.

C. Technology and Fueling Infrastructure

- The Advanced Technology Development portion of the program fosters the development of advanced new engine, retrofit, and aftertreatment technologies, and can encourage the introduction of even more cost-effective technologies. Advanced Technology Development is an important part of the program, and should be continued.

- Alternative fuel infrastructure is necessary to support Carl Moyer Program alternative-fuel vehicles and equipment, and should continue to be funded under the program.

- The Advanced Technology and Infrastructure Development portions of the program, combined, should be funded at 10% of the program's budget, with a minimum of $4 million dollars per year.

- Repowering of older trucks with new engines meeting October 2002 emission requirements should be included in the program.

- ARB staff should quantify the associated emissions benefits, and consider including a program to retire pre-1988 heavy-duty diesel engines. A program such as this could lead to an accelerated turnover of heavy-duty trucks using pre-1988 model year engines. A significant number of these vehicles: 1) Operate in and out of California's ports; 2) Haul aggregate material in and around densely populated areas; and 3) Operate around-the-clock, on a seasonal basis, hauling agricultural products.

- ARB staff should consider diesel-water emulsions for inclusion in the program. Staff should evaluate test data submitted by proponents of diesel-water emulsions in support of emissions benefits, performance, and durability claims. ARB staff should also present recommendations regarding the appropriateness of including such technology in the Carl Moyer Program to the ARB governing board for review and consideration.

D. Particulate Matter

- Particulate matter is a serious public health concern, and can result in increased respiratory disease, lung damage, cancer, and premature death. Some areas in the state exceed federal PM ambient air quality standards and most areas do not attain the more stringent state PM standards. Particulate matter from diesel-fueled engines has been identified by the ARB as a toxic air contaminant.

- Technology and fuels to reduce PM in addition to NOx are available now, and include alternative fuels, improved combustion efficiency, and aftertreatment.

- Although the program was originally designed as an ozone attainment strategy, there are significant public health benefits to reducing PM in addition to NOx.

- The Advisory Board recommends that the ARB staff should update the Carl Moyer Program Guidelines to include PM emissions baselines, and thus provide districts the tools to quantify the PM benefits of Carl Moyer projects.

- The Advisory Board recommends a statewide target of 25 percent reduction in PM emissions from projects funded through the Carl Moyer Program. The 25 percent reduction target is a program-wide target, rather than a project-by-project target.

- For Serious PM nonattainment areas, the Advisory Board recommends a requirement of 25 percent reduction in PM emissions from projects funded through the Carl Moyer Program. The 25 percent reduction requirement applies to the district program as a whole, rather than a project-by-project basis. Currently, the South Coast Air Quality Management District and the San Joaquin Valley Air Pollution Control District are Serious PM nonattainment areas.

- The Advisory Board recommends that the inclusion of PM considerations in the Carl Moyer Program be accomplished through modifications to the Carl Moyer Program Guidelines, subject to approval of the ARB governing board. This ensures oversight of the program by the ARB governing board and provides for public participation in the development of PM program requirements.

E. Amount and Source of Funding

- The Carl Moyer Program provides real, quantifiable emission reductions that are efficient, environmentally sound and promote economic vitality for all the people of California. Funding for the program should be continued at a substantially increased level to reflect the tremendous societal benefits that can be obtained in a cost-effective manner.

- In the South Coast, the demand for project funding is five times the available funding. Statewide, demand is three times the available funding.

- Based on the demonstrated demand, the need for NOx emission reductions to attain national ambient air quality standards, and the need for PM emission reductions to improve public health, at least $100 million per year is required to adequately fund the Carl Moyer Program. At this level, the cumulative emissions benefit of five years of funding would be 60 to 80 tons per day of NOx, and more than 2000 pounds per day of PM, by 2005.

- The Advisory Board recommends as a source of funding, a one-time appropriation of at least $500 million from the General Fund surplus, to be placed in an account for use over the next five years. This would provide at least $100 million per year for the next five years. That is roughly equal to the demand for funding in the first year

of the program. Demand is expected to increase as the program continues. Long-term, on-going funding is crucial to the program. A number of potential sources of funding are discussed later in this report. The General Fund would also be an appropriate part of the overall funding after the first five years.

- Local air districts provide matching funds for the Carl Moyer Program primarily through motor vehicle fees. These matching funds (two-to-one match) totaled about $12 million in the first year. These funds are important and should be continued. The ability of districts to provide increased matching funds at the current ratio is limited. The Advisory Board recommends that the Legislature cap the amount of district matching funds at $12 million.

- The Advisory Board recommends that the Legislature authorize a $1 levy on all motor vehicles statewide as an additional source of funding for the Carl Moyer Program.

- The Advisory Board also recommends that the Legislature seek additional funds from the federal government. Specifically, the Governor and the Legislature should petition the appropriate federal agencies and Congress requesting federal funds for the Carl Moyer Program.

II. NEED FOR CONTINUED FUNDING

The Carl Moyer Program is providing immediate and cost-effective emission reductions in smog forming pollutants and particulate matter emissions. In assessing whether it is appropriate to provide continued funding for the Carl Moyer Program, two questions must be answered. The first deals with the demand. Are there sufficient cost-effective projects to utilize the funds? The second question deals with the need. Is an incentive program needed to achieve our clean air requirements? The second question must also consider the consequences of failing to meet California's clean air goals

A. Demand for Funding

Based on project applications received by the districts, the demand for Carl Moyer Program funding far exceeds the available funds. The South Coast Air Quality Management District received requests for over $50 million in funding, or about five times their 1998-99 allocation. Statewide, the demand for funding was more than three times the available funds. If the program is continued, awareness of the program and the types of technology available for qualifying projects would likely increase the demand for funding.

The late Dr. Carl Moyer performed an analysis of the overall funds that would be required based on the total number of engines in service and the types of qualifying projects that could be done. Based on his analysis, Dr. Moyer testified at a special interim legislative hearing that about $150 million per year for several years could be used on qualifying projects. He estimated that about $100 million should be allocated to the South Coast through 2010. Dr. Moyer's analysis was based on the need to reduce NOx emissions only and did not include additional funding for particulate matter reductions.

B. Need for Statewide NOx Emission Reductions

Carl Moyer program funds provide a significant contribution toward meeting California's heavy-duty diesel incentive commitments. Areas such as the Sacramento Region, the San Joaquin Valley and Ventura County, which must achieve attainment of the federal ozone standard by 2005, are counting on the near-term emission reductions provided by the Carl Moyer Program to demonstrate attainment. New on-road and off-road engines meeting new, cleaner required standards will bring significant improvement -- over time. But heavy-duty diesel engines turnover is fairly slow. More must be done to address emissions from the current fleet, and generate near-term emission reductions.

The South Coast Air Basin, which is classified as extreme and must attain the ozone standard by the year 2010, is also counting on the near-term reductions to meet their progress commitments. Funding from 2006 through 2010 is also critical to help South Coast meet their federal ozone attainment deadline, to help areas maintain the federal ozone standards, to help areas throughout the state to meet or maintain California's

health protective air quality standards, and to reduce public exposure to particulate matter.

C. Issues Regarding Conformity

The Carl Moyer Program is needed not only as an ozone attainment strategy, but also to provide near-term mobile source reductions to show that transportation plans conform with local air quality plans. Local transportation agencies rely on effective state motor vehicle control programs to make the federally-required findings that emissions from new transportation projects and plans "conform" to emission budgets set forth in air quality plans. If these findings cannot be made, federal transportation funds for new projects stop.

Conformity determinations are an ongoing concern, particularly in Sacramento, the San Joaquin Valley, and the South Coast Air Basin. Failing to achieve near-term emission reductions could result in a loss of billions of dollars in federal transportation funds earmarked for transportation projects in those areas.

D. Societal Costs of Air Pollution

The Carl Moyer Program will help reduce the dramatic economic and societal costs of NOx and PM pollution for all the people of California in an efficient, environmentally sound and equitable way. The minimum recommended funding of $100 million per year would cost only $3 per person per year for the 33 million people of California, less than a penny a day per person. The economic and societal benefits would far exceed the costs. For example, the cost of air pollution to Southern California is $9 to $14 billion per year due to increased health care, lost tourism, and loss of work productivity. Cleaning up the air to meet health-based air quality standards would produce $4.5 billion per year in health benefits in Southern California alone, according to the South Coast Air Quality Management District. A recently released study by the U.S. EPA estimated the total costs and benefits of Clean Air Act programs. The study showed that, in 2010, the benefits of cleaning up the air under the program outweigh the costs by a four-to-one margin.

E. Summary

The demand for Carl Moyer funds far exceeds the current level of funding. Several areas in California are facing near term deadlines to attain the federal ambient ozone air quality standards and are depending on the emission reductions gained by the Carl Moyer Program to help them reach attainment. While the ARB has adopted stringent emission standards for on- and off-road heavy-duty engines, these standards affect only new engines. Consequently, the emission benefits are not fully realized until the fleet is replaced well after 2005. In addition, incentive funds can obtain emission reductions from specific equipment or fleets that could not practically be regulated. Increased funding is essential to deliver the near-term emission reductions needed for attainment in 2005, and provide longer-term health and air quality benefits through 2010.

III. PARTICULATE MATTER EMISSION REDUCTIONS

The purpose of the Carl Moyer Program is to reduce emissions and help California meet its air quality obligations under the State Implementation Plan for Ozone (SIP). The program is intended primarily to reduce emissions from vehicles and equipment that have traditionally been powered by heavy-duty diesel engines, which have both high NOx and high PM emissions. Because the Carl Moyer Program's main purpose is to reduce ozone precursor emissions to meet California's SIP requirements, it has historically focused on achieving NOx reductions. However, no program that aims to "cleanup" heavy-duty vehicles can ignore PM emissions. Therefore, the question arises of whether Carl Moyer Program grants can be effectively used to also achieve significant PM reductions.

A. Public Health Issues

Particulate matter is a serious public health concern. In California, many areas do not attain the federal PM standards, and most of the state does not meet the more stringent state PM standards. South Coast and San Joaquin Valley have the most severe fine particulate problem in California. Particulate matter, like ozone, has been linked to a range of serious health problems. Fine diesel particles are deposited deep in the lungs and can result in increased hospital admissions and emergency room visits; increased respiratory symptoms and disease; decreased lung function, particularly in children and individuals with asthma; alterations in lung tissue and respiratory tract defense mechanisms; and premature death. On August 27, 1998, after extensive scientific review and public hearing, the ARB formally identified particulate emissions from diesel-fueled engines as a toxic air contaminant. Reducing particulate matter emissions would greatly benefit public health.

B. Particulate Matter Reductions from the Carl Moyer Program

Some of the technologies funded through the Carl Moyer Program, such as electric motors or other projects using alternative-fuel engines, reduce PM emissions. Some diesel to diesel repowers also reduce PM, because less efficient diesel engines are replaced with new, more efficient diesel engines that emit less NOx *and* PM. Even without specific requirements to reduce PM, the Carl Moyer Program has achieved approximately 100 pounds per day of PM reductions. These have been considered "free" PM benefits since the projects funded are justifiable and cost-effective based entirely on their NOx reductions.

C. Recommendation

The Advisory Board recognizes that diesel PM is a serious public health concern and PM reductions are necessary throughout the state. However, the Carl Moyer Program was developed and funded to achieve NOx reductions so that districts can meet imminent federal air quality standards. These federal requirements carry with them

significant sanctions for non-compliance. The first steps in balancing these two concerns are to ensure that districts are aware of the serious health risks associated with PM emissions, that information on the PM reductions of funded projects is being gathered and reported, and that no-cost and low-cost PM reductions are being achieved wherever possible.

The Advisory Board recommends that appropriate PM criteria be included in the Carl Moyer Program guidelines by ARB staff for review and consideration by ARB's governing board. This would provide oversight by ARB's governing board and allow for public review and participation in the development of the PM requirements. The criteria should include an annual target of 25 percent PM reductions from the statewide Carl Moyer Program. The 25 percent reduction target is a program-wide target, rather than a project-by-project target.

For areas with the most severe PM problems, the Advisory Board recommends that the 25 percent reduction in PM emissions from projects funded through the Carl Moyer Program be a requirement. The 25 percent reduction requirement would apply to the district program as a whole, rather than on a project-by-project basis. Currently, the South Coast Air Quality Management District and the San Joaquin Valley Air Pollution Control District are the two areas in California classified as Serious nonattainment for the federal PM standards.

IV. FUNDING

This chapter presents the Advisory Board's recommendations on the amount of future funding for the Carl Moyer program, recommendations for funding sources, and a brief discussion of the potential sources of funding evaluated.

A. Recommended Funding Level for the Carl Moyer Program

The Advisory Board finds that the Carl Moyer Program is a vital and effective program that will significantly benefit air quality and public health. Funding for the program should be continued. A commitment to a multi-year program through 2010 is important for continuity and predictability to the local districts, users, and manufacturers of the equipment.

The Advisory Board finds that the appropriate amount to adequately fund the Carl Moyer Program (all components: the vehicle projects, advanced technology development, and infrastructure) is at least $100 million per year through 2010. This amount is based on the demonstrated demand and the need for NOx emission reductions to attain national ambient air quality standards. At the recommended funding level the Carl Moyer Program would cumulatively reduce statewide NOx emissions by about 60 to 80 tons/day and PM emissions by more than 2000 pounds per day by 2005.

B. Recommended Sources of Funding

The Advisory Board recommends that the Carl Moyer Program be funded through 2010 at a minimum of $100 million per year. The Advisory Board examined possible funding sources for the Carl Moyer program and determined that the funding should be a combination of one-time and on-going funding sources. For a one-time appropriation, the Advisory Board recommends that a total of at least $500 million from the State's General Fund budget surplus be placed in an account for use over the next five years (timing consistent with the 2005 attainment deadlines in Sacramento and San Joaquin).

On-going funding should come from a variety of sources. As part of a long-term multi-year program, the Advisory Board recommends that a portion of the funds continue to be derived from the General Fund from 2006 through 2010. The Advisory Board also recommends the Legislature authorize a $1 motor vehicle registration fee increase. This fee would create a state fund to help finance the Carl Moyer Program. The "windfall" of funds from the increase in sales tax revenue to the state associated with rising gasoline and diesel fuel prices could provide periodic funding. Other funds discussed below could also provide a portion of the long term funding, although the potential for funding from these sources is more limited.

C. Sources of Funding Evaluated

The Advisory Board evaluated several sources of funding for the Carl Moyer Program, which it did not specify in its recommendation. These sources include: the Petroleum

Violation Escrow Account (PVEA Funds), Diesel Emission Reduction Funds (DERF), the Motor Vehicle Account (MVA), interest from the Oil Spill Prevention Fund, redirection of out-of-state diesel fuel sales tax, diesel penalties, the Federal CMAQ Fund, and the High Polluter Repair/Removal Account. In general, the restrictions imposed on these funds would not eliminate them as a potential source of funding for the Carl Moyer Program. However, the funds in these accounts are heavily earmarked for other programs.

1. General Fund Surplus

The Governor's preliminary budget indicates a $3 billion dollar surplus. Given the current economic outlook for the year, the final budget will likely show a larger surplus. The budget surplus could fund a one-time appropriation to provide multi-year funding for the Carl Moyer Program.

2. Motor Vehicle Account (MVA)-State Agency Funding

This account derives the majority of its revenue from fees collected from vehicle registration, drivers' licenses, identification cards, and the sale of information. Except for the sale of information and identification card fees, all MVA revenues are restricted for use in transportation related purposes per Article XIX of the State Constitution. The Advisory Board recommends that the Legislature increase motor registration fees by $1 per vehicle per year statewide. The fees collected from this increase would be placed in a state fund, to be used specifically for the Carl Moyer Program. The MVA funds currently go to the DMV, the California Highway Patrol, and the ARB as follows:

DMV	$330 million plus $10 million for capital outlay
CHP	$844 million plus $7 million for capital outlay
ARB	$58 million plus $7.5 million for local air districts

3. Diesel and Gasoline Sales Tax "Windfall" from Increased Fuel Prices

While the funds generated through the state sales tax on fuel are already heavily earmarked for other programs, the recent increase in fuel prices will result in an increase in the total revenues collected from the sales tax on gasoline and diesel fuel. A $0.05 increase in price of gasoline and diesel generates an additional $42.7 million a year in revenue. Although fuel price increases are unpredictable, this would be an appropriate source of funding for the Carl Moyer Program.

4. Request Federal Matching Funds

The state and the California Air Pollution Control Officers Association should actively seek matching federal funds to further accelerate emission reductions achieved through the Carl Moyer program. Federal match funding would accelerate NOx reductions in areas with 2005 attainment deadlines. It would allow districts to also focus on both NOx

and PM emissions reduction strategies, which would benefit areas heavily impacted by emissions from heavy-duty vehicles and equipment.

5. Diesel Off-Cycle Settlement Penalty Monies

These funds come from a settlement agreement with engine manufacturers regarding off-cycle emissions. These funds are intended to help mitigate off-cycle emissions. The state of California received a total of $19 million, $14 million of which have already been allocated to the Carl Moyer Program under the 1999/2000 fiscal year budget act. This leaves about $5 million in the account, half of which will be received in the 2000/2001 fiscal year, and the remainder in 2001/2002 fiscal year. This is an appropriate source of funding (albeit short-term) for the Carl Moyer Program.

6. Petroleum Violation Escrow Account (PVEA)

The PVEA receives revenues from negotiated settlements and judgements against U.S. oil companies from legal actions by the federal government to recover oil company overcharges during the period of price regulations-August 1973 to January 1981. The Department of Energy disburses PVEA funds to the states. The funds are required to be spent on projects that increase energy efficiency and/or reduce reliance on petroleum-based fuel. Because most of the penalties have already been paid, the availability of PVEA funds is declining sharply. New PVEA appropriations will likely be from accrued interest, which will eventually terminate.

7. Diesel Emission Reduction Fund (DERF)

The ARB collects these funds through the heavy-duty vehicle inspection program from fines on trucks that violate the smoke limits. The funds are provided to the CEC for use on on-road diesel-related projects. The CEC has received approximately $430,000 since June 1998. CEC staff is considering using these funds for solicitation of conventional low sulfur diesel and diesel exhaust aftertreatment demonstration projects.

8. Motor Vehicle Registration Fees - District Funding (authorized by AB 2766 and other legislation)

State law authorizes local air pollution control districts that are designated by the ARB as nonattainment for a pollutant emitted by motor vehicles to levy a motor vehicle registration fee of $1 to $4. The fee is collected by the DMV and disbursed to the districts. Various districts statewide received a total of about $86 million from this fee. These funds are used to meet the match requirement under the Carl Moyer Program and other local air pollution mitigation activities. Without these funds, districts would not be able to participate in the Carl Moyer Program.

9. Interest from the Oil Spill Prevention Fund

These funds go to the Department of Fish and Game and there are restrictions on their use. A total of $3 million remains in the fund account.

10. Diesel and Gasoline Sales Tax

There is currently a five percent state tax on both gasoline and diesel pump prices. California uses approximately 14.7 billion gallons of gasoline and 2.4 billion gallons of diesel a year. Since the tax is applied to the price of the fuel, the revenues vary according to the price, but is in the range of $850 million per year. These funds are primarily used for highway projects.

11. Federal Money

The Federal CMAQ Fund: California receives about $150 million per year in CMAQ funds, which are available through local transportation commissions. Projects must relate to congestion mitigation and air quality improvement. CMAQ funds are controlled by local planning organizations whose first priority is transportation projects. Local planning organizations should be encouraged to dedicate a larger portion of the funding to projects with substantive air quality benefits.

12. High Polluter Repair or Removal Account

Funds from the High Polluter Repair or Removal Account are currently used to assist low-income families whose cars fail smog check to get their vehicles repaired, or for voluntary vehicle scrappage as part of the smog check program. Funding for the High Polluter Repair or Removal Account was generated from a $300 fee on California vehicle owners bringing in out-of-state vehicles. That fee has been invalidated as the result of a court decision, and therefore the High Polluter Repair or Removal Account is not a viable source of long-term funding for the Carl Moyer Program.