

State of California  
AIR RESOURCES BOARD

**STAFF REPORT**

**Update and Report on Joint ARB/CAPCOA AB 8 Carl Moyer Program  
Evaluation**

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This report has been reviewed by the staff of the Air Resources Board (ARB or Board) and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of ARB, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

# TABLE OF CONTENTS

I.	EXECUTIVE SUMMARY .....	1
II.	BACKGROUND .....	3
A.	PROGRAM DESCRIPTION .....	3
B.	LEGISLATIVE HISTORY .....	4
III.	CARL MOYER PROGRAM STATISTICS.....	6
A.	COST-EFFECTIVENESS.....	6
1.	<i>Project Category Groups</i> .....	7
2.	<i>Project Types</i> .....	9
B.	HEALTH BENEFITS .....	10
IV.	AB 8 CARL MOYER PROGRAM EVALUATION .....	13
A.	ARB/CAPCOA MEMORANDUM OF AGREEMENT.....	13
B.	EVALUATION OF STATE AND LOCAL INCENTIVES PORTFOLIO .....	13
C.	IMPLEMENTING NEAR-TERM GUIDELINE IMPROVEMENTS.....	15
D.	JUNE 2014 INITIAL INCENTIVE PROGRAMS ADVISORY GROUP MEETING .....	15
E.	JULY 2014 STATUS UPDATE TO THE BOARD .....	16
F.	OCTOBER 2014 SECOND INCENTIVE PROGRAMS ADVISORY GROUP MEETING .....	16
V.	POTENTIAL STATUTORY CHANGES.....	17
A.	COST-EFFECTIVENESS LIMIT .....	17
B.	LEVERAGING .....	20
C.	GREENHOUSE GAS EMISSIONS AND ANCILLARY BENEFITS .....	22
D.	EXPAND ELIGIBLE PROJECTS.....	24
E.	ADDITIONAL MODIFICATIONS TO IMPROVE IMPLEMENTATION EFFICIENCY.....	26
VI.	NEXT STEPS AND CONCLUSION .....	27
VII.	REFERENCES.....	28

## I. EXECUTIVE SUMMARY

Initiated in 1998, the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program or Program) is a grant program that funds the incremental cost of cleaner-than-required engines, equipment, and other sources of air pollution. Although air pollution regulations have significantly reduced emissions and improved air quality across California, many areas of the State continue to experience unhealthy air. The Carl Moyer Program complements California's regulatory program by providing incentives to obtain early or extra emission reductions, especially from sources in environmental justice communities and areas disproportionately impacted by air pollution.

The program is funded through a portion of the smog abatement fee included in the annual registration of newer vehicles (\$6) and through a small fee on the sale of new tires (\$0.75). The program is implemented through a partnership between the Air Resources Board (ARB or Board) and the local air districts. ARB manages program funds and develops and revises the Carl Moyer Program Guidelines (Guidelines), protocols, and criteria for covered vehicle and equipment projects and determines the methodologies used for evaluating project cost-effectiveness. Air districts solicit, evaluate, select, fund, and monitor specific clean air projects in their areas.

To date, over \$980 million in State and local funds have been invested through the Carl Moyer Program to clean up dirty engines. This has replaced more than 46,000 vehicles and engines. This has resulted in estimated reductions of 174,600 and 6,400 tons of ozone precursors and particulate matter, respectively. The resulting benefits of the program are roughly 40 premature deaths avoided annually.

The Carl Moyer Program has been modified many times over the years to both expand its scope and improve its efficiency, most recently with the passage of Assembly Bill (AB) 8 (Perea) in 2013. Among other things, AB 8 (Appendix A) extended the current expiration date for a portion of the funding that supports the Carl Moyer Program from January 1, 2015 to January 1, 2024. It also directed that ARB, in consultation with the local air districts, convene working groups no later than July 1, 2014, to evaluate the Program's policies and goals. ARB and the California Air Pollution Control Officers Association (CAPCOA) held two public workgroup meetings in June and October 2014 to solicit input from stakeholders regarding potential program improvements that will better allow it to meet its current goals, as well as position it to better meet local and State climate, air quality and toxic emission reduction goals.

Out of those working groups, which were led by ARB Board Member Sandra Berg, as well as through continuing partnership with CAPCOA, several program improvement concepts were identified. These included:

- Adjusting the cost-effectiveness limit
- Recognizing greenhouse gas (GHG) reductions
- Allowing more opportunities for leveraging
- Expanding eligible project categories
- Streamlining requirements for greater efficiency

Some of the concepts identified were changes that ARB implemented through updates to the Guidelines, which were done in July 2014; others, however, will require statutory changes in order to be implemented. To that end, staff intends to work with CAPCOA on developing appropriate statutory changes to implement the concept recommendations identified in this report.

At its July 2014 meeting, the Board heard a joint summary of progress to date from ARB and CAPCOA (the “air agencies”). At that meeting, the Board directed staff to develop a report that summarizes the successes and benefits of the current program, the process used to meet the requirements of AB 8, the concepts that were identified through that process, and the next steps to implement the concepts, many of which will likely require legislative action. This report is intended to meet the Board’s direction.

## II. BACKGROUND

### A. Program Description

At its core, the Carl Moyer Program is a statewide, locally-directed program to provide cost-effective emissions reductions that are creditable to the State Implementation Plan (SIP).

Every air district in the State has the opportunity to participate and benefit from the program in one manner or another. Although the funds are primarily allocated by population and air quality need, any air district can receive a minimum allocation of \$200,000 per year. Rural districts that may not have the resources to direct their own programs can get assistance identifying projects through the Rural Assistance Program administered by CAPCOA.

Thirty-one of 35 air districts statewide participate directly in the Carl Moyer Program. The remaining district projects are administered through agreements with partner districts. Eighty-eight percent of all funds are administered by the five large districts (South Coast, San Joaquin Valley, Bay Area, San Diego and Sacramento), six medium districts administer about six percent of funds, and nineteen small districts administer the remaining six percent.

The Program allows local air districts to select and prioritize which projects are funded, and as such is uniquely suited to respond to local air quality concerns and priorities. For example, a district with significant agricultural interests may choose to fund tractor replacements, while another district with significant marine activity may choose to repower marine vessels.

Under statute, eligible projects must be cost-effective in that the amount of money a project is eligible to receive from the Carl Moyer Program is limited by the emissions reductions it provides. This ensures that the Program receives the best return on public investment. Currently, the cost-effectiveness of a project must be no more than \$17,720 per weighted ton of emissions reduced, and this value is adjusted by ARB each year for inflation. Cost-effectiveness is described in more detail in Section III below.

To be SIP creditable, emission reductions funded through the Carl Moyer Program must be real, surplus, quantifiable, and enforceable. Funded projects must not be required by any federal, State or local regulation, memoranda of agreement or understanding with a regulatory agency, settlement agreement, mitigation requirement, or other legal mandate, and ARB establishes requirements in the Guidelines to ensure that projects are surplus to regulations. Emission control technologies must be certified or verified by ARB, although certification or verification by the United States Environmental Protection Agency (U.S. EPA) may be allowed for some source categories for which ARB does not certify or verify, such as preempted off-road engines and marine engines. This ensures that real, quantifiable emission reductions are achieved over the life of a project. Robust administrative requirements

are in place to ensure that emission reductions are enforceable and are achieved for the life of a project.

The Carl Moyer Program funds a broad variety of projects, including on-road heavy-duty vehicles, locomotives, marine vessels, agricultural water pumps, off-road construction and agricultural vehicles, voluntary accelerated vehicle retirement (car scrap) and others. Although the Carl Moyer Program has primarily focused on diesel-powered vehicles, air districts have funded zero emission electrification, notably agricultural pumps and marine shore power, as well as some natural gas projects.

## **B. Legislative History**

The Carl Moyer Program was created in 1998 when \$25 million was included in the Fiscal Year 1998/1999 State budget to fund a lower-emission heavy-duty engine incentive program. ARB adopted the first set of Carl Moyer Program Guidelines in early 1999, and AB 1571, enacted that year, formally established the statutory framework for the program (Health & Safety Code (H&SC) §44275, et seq). The Program initially focused on reducing oxides of nitrogen (NOx) emissions from heavy-duty diesel engines in order to implement a strategy in the 1994 California SIP for ozone that called for the early introduction of cleaner engines. The scope of the program has expanded over the years with statutory changes adding both new covered pollutants and new source categories. Legislation enacted in 2001 (AB 1390) required air districts with a population of over 1 million to expend 50 percent of Carl Moyer Program funds for projects that operate or are based in environmental justice areas (H&SC §43023.5).

In 2004, AB 923 and Senate Bill (SB) 1107 increased and continued funding through 2015 while significantly expanding the program to include light-duty vehicle projects and agricultural sources of air pollution as defined in H&SC §39011.5(a). AB 923 also expanded the Carl Moyer Program from a NOx-focused incentive program to include projects that also reduce reactive organic gases (ROG) and particulate matter (PM or PM10). This change allowed the Carl Moyer Program to more comprehensively address all of California's air pollution challenges, including the air toxic risk associated with emissions from diesel engines.

Furthermore, AB 923 also established the ability for air districts that do not meet federal or State air quality standards<sup>1</sup> to approve an additional \$2 vehicle registration fee to fund emission reduction projects to complement the Carl Moyer Program. These funds are not only a critical source of complementary funding for the Program, but are also used for agricultural assistance projects, for light-duty vehicle scrap programs, and to support lower-emission school buses.

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<sup>1</sup> At this time, only Lake County Air Pollution Control District is in attainment with all State and national standards, and is unable to choose to collect AB 923 fees.

In addition to AB 923 and SB 1107, there have been a number of other legislative modifications made to the program to address emerging issues:

- AB 1394 (2004) added heavy-duty fleet modernization projects that reduce NOx and/or PM10 emissions through the replacement of old trucks.
- SB 467 (2005) required the Carl Moyer Program to include projects in which an applicant turns in off-road equipment powered by internal combustion engines and replaces that equipment with new zero-emission technologies.
- SB 225 (2006) provided additional resources for program administration to address the expansion of the program.
- SBX2 3 (2009) allowed a maximum project life of at least 10 years for off-road farm equipment projects. This legislation also allowed for funding of these off-road farm equipment projects up to the compliance date as determined by statute, regulation or rule.
- AB 1507 (2010) allowed for the combination of Carl Moyer Program funds with funds designed to reduce GHG emissions from federal programs or the Alternative and Renewable Fuel and Vehicle Technology Program (administered by the California Energy Commission) without including them in the cost-effectiveness calculation for the Carl Moyer Program funds.

### III. CARL MOYER PROGRAM STATISTICS

In response to requests from the Board at the July 2014 meeting, this report provides information on the cost-effectiveness of the current Program, as well as its environmental and health benefits.

#### A. Cost-Effectiveness

By statute, Carl Moyer Program projects must be cost-effective and reduce emissions beyond what would be achieved through normal fleet turnover or by regulation or other legal mandate. Cost-effectiveness is a measure of the dollars provided to a project for each ton of covered emission reductions over the life of the project. Cost-effectiveness calculations are instrumental to determining the maximum grant amount available for a project, as Carl Moyer Program funds can only be expended for benefits below the cost-effectiveness limit in place at the time the project is approved. The cost-effectiveness limit is reviewed annually and changed periodically to reflect adjustments to the Consumer Price Index. When the Carl Moyer Program began in 1998, the established cost-effectiveness limit was \$12,000 per ton of NO<sub>x</sub> reductions; today the cost-effectiveness limit is \$17,720 per weighted ton of emissions reductions and takes into account ROG and PM as well as NO<sub>x</sub>.

When the Legislature updated and expanded the Carl Moyer Program in 2004, it also authorized the Program to pay for ROG and PM reductions and directed the Board to determine appropriate weighting factors for those pollutants. Research into control costs and pollutant health effects informed the weighting factors set for these pollutants. Historically, ARB has treated NO<sub>x</sub> and ROG emissions equally. For example, the cost-effectiveness of ARB regulations is generally provided in dollars per ton of NO<sub>x</sub> + ROG, with no weighting factors to preferentially reduce one pollutant over the other. The Carl Moyer Program has followed the same approach, continuing to weight NO<sub>x</sub> and ROG emission reductions equally in the cost-effectiveness formula.

In 2005 ARB staff estimated the monetary benefits of the Carl Moyer Program by considering health endpoints that could be expected from reducing a given amount of combustion PM emissions, including premature deaths, asthma-related emergency room visits, lost work days, and minor restricted activity days. Because PM emissions are more harmful to human health and typically cost more to control, the Board recognized that it was appropriate to place a greater value (a weighting factor of 20) on those emission reductions relative to ROG and NO<sub>x</sub>.<sup>2</sup>

In the early years of the program, Fiscal Years 1998/1999 through 2004/2005, the Carl Moyer Program was a NO<sub>x</sub>-only program with an average allocation of about

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<sup>2</sup> Recently staff reevaluated that weighting factor by using potency factors (mortality per ton per year of emissions) to estimate the health impacts of particulate (PM<sub>2.5</sub>) and NO<sub>x</sub>. Using the most recently available statewide potency factors (2009-2011), and assuming 80 percent of diesel PM mass is PM<sub>2.5</sub>, ARB staff determined that the existing PM weighting factor of 20 is still appropriate.

\$33 million per year. In 2004, AB 923 expanded the program to include ROG and PM and provided additional funding. This increased the average allocation for Fiscal Years 2005/2006 through 2013/2014 to about \$83 million per year, including Carl Moyer Program grants, required district match funds, and administrative funds. Since its inception, the Carl Moyer Program has administered over \$980 million in State and local funds to clean up more than 46,000 engines.

To meet the needs of the expanding program, ARB developed the Clean Air Reporting Log (CARL) database, and air districts began reporting their program information into CARL in 2008. CARL calculates emission reductions, cost-effectiveness, maximum grant amount, and stores both fiscal and equipment/engine information to meet yearly reporting requirements. ARB staff has developed data profiles by source category and project type, which are presented below. The information reflects data reported in CARL for Fiscal Years 2005/2006 through 2013/2014.

### **1. Project Category Groups**

Carl Moyer Program projects typically fall into several general category groups:

- On-road heavy duty vehicles
- Off-road equipment, further separated into two sectors: agriculture and other, which includes construction and cargo handling, among other subsets
- Stationary and portable agricultural equipment
- Marine category includes shore power plug-in stations for docked ships as well as actual marine vessels
- Light-duty car scrap, which has been grouped with lawn and garden buy-back projects due to the relatively small amount of funding involved with lawn and garden

**Figure 1: Funding by Source Category Group  
Fiscal Years 2005/06 to 2013/14**

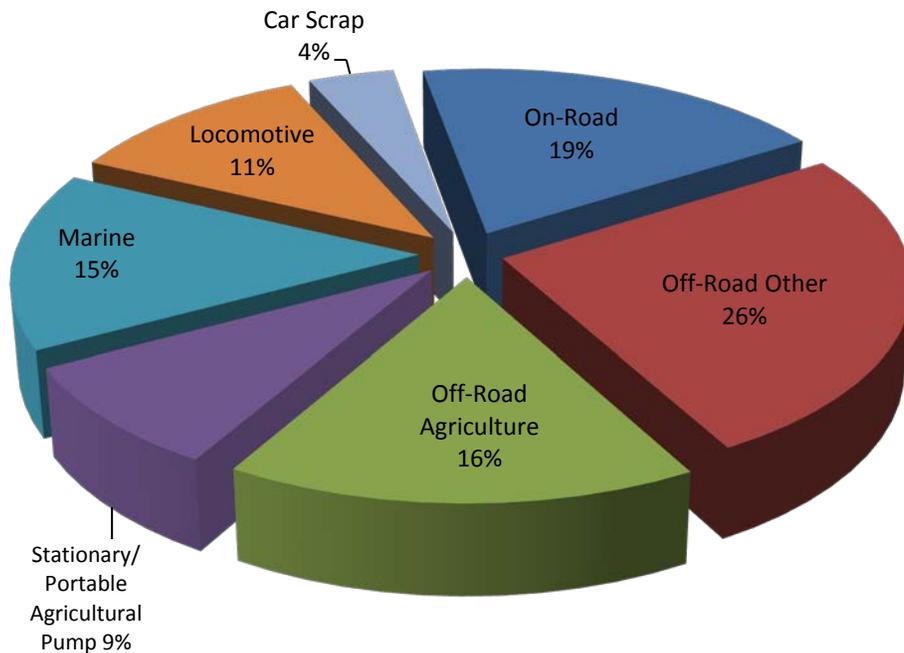


Figure 1 above shows the historical expenditure of funds statewide by project category group. Note that per the above, lawn and garden has been combined with light-duty car scrap. The off-road sector as a whole accounts for more than 40 percent of projects funded, followed by the on-road and marine groups.

Statewide, the average cost-effectiveness<sup>3</sup> for the Program is about \$10,000 per weighted ton reduced, well below the current limit of \$17,720 per ton. Table 2 below provides additional program details by source category group, including emission reductions, funded engines, funding amount and average cost-effectiveness.

<sup>3</sup> Estimates of cost-effectiveness in this report are adjusted for the changing value of funds over time. Each funded engine or piece of equipment has a project life. Due to inflation the relative value of funds spent on that engine or equipment is lower at the end of a project life than it is at the beginning. The Carl Moyer Program accounts for this change in value by applying a capital recovery factor (CRF) in the calculation of cost-effectiveness for each engine or equipment funded. Found in Appendix G of the 2011 Carl Moyer Program Guidelines, CRFs are a function of years of project life and a discount rate tied to the pace of inflation. CRFs allow costs to be annualized and cost-effectiveness to be compared on an equivalent basis among various project lives and source categories.

Cost-effectiveness is calculated at the equipment level, by multiplying the grant amount by the CRF, then dividing by the weighted emission reductions (NOx + ROG + PM\*20). The cost-effectiveness for multiple engines or equipment can then be averaged for comparison by group, such as by source category in Table 2, or for engines and equipment across all source categories to result in the \$10,000 per ton mentioned above.

**Table 2: Emission Reductions, Funding and Cost-Effectiveness by Source Category Group (Fiscal Years 2005/2006 - 2013/2014)**

Project Category Group	Ozone Precursors NOx+ROG (tons)	PM <sub>10</sub> (tons)	Funded Engines	Funding Amount	Average Cost-Effectiveness (dollars/ton reduced)
On-Road	8,220	236	4,156	\$120,668,441	\$11,495
Off-Road Agriculture	10,484	439	2,022	\$105,206,496	\$8,664
Off-Road Other	24,440	675	1,841	\$165,456,990	\$9,797
Stationary/Portable Agriculture	20,526	546	3,162	\$55,998,831	\$4,624
Marine	13,487	437	1,203	\$94,895,197	\$9,846
Locomotive	6,830	189	179	\$72,410,129	\$7,271
Car Scrap	2,529	15	25,704	\$24,837,715	\$10,623

## 2. Project Types

While Table 2 shows the average cost-effectiveness by category, cost-effectiveness can vary substantially within a project category group based on project type. For example, whether a specific project involves an engine or vehicle replacement, repower, retrofit, or new purchase can significantly influence the overall project's cost-effectiveness. For the Carl Moyer Program, the following definitions are used to identify specific project types:

- *Repower* is the replacement of an older engine with cleaner technology and destruction of the old engine. With a repower project, the vehicle and its chassis remain in operation.
- *Replacement* is the replacement of a vehicle or equipment and its engine(s) and destruction of the old equipment or vehicle and its engine(s).
- *Retrofit* is typically the installation of an ARB-verified diesel emission control device on an exhaust system.
- *New purchase* is the purchase of a new engine or vehicle, with no old engine or vehicle destroyed.

Table 3 shows cost-effectiveness and funding amounts for these four project types within eight project category groups. While this table shows average cost-effectiveness values for the categories below the maximum cap allowed, it does not indicate those projects that could not be funded due to limitations in eligible grant amounts as a result of the cap. For instance, under the current cost-effectiveness limit of \$17,720, a typical conventional diesel school bus would only qualify for about \$10,000, compared to the typical purchase price of a bus, estimated to be about \$156,000. Additionally, a certified Optional Low NOx truck (that is 90 percent cleaner than a conventional truck) would only get between \$1,000 - \$5,000 more than a

conventional diesel truck (for a truck that averages 60,000 miles a year), even though the purchase price is expected to be \$50,000 more. As such, under the current cost-effectiveness limit it is unlikely that the Program can provide enough incentive to encourage the purchase of these vehicles. More discussion of how this issue can be addressed is provided later in Section V.

**Table 3: Average Cost-Effectiveness and Funding Amount by Source Category Group and Project Type (Fiscal Years 2005/2006 – 2013/2014) <sup>4</sup>**

Project Category Group	Project Type	Funding Amount	Average Cost-Effectiveness
On-Road	Replacement	\$75,127,512	\$14,737
	Repower	\$16,017,191	\$7,889
	Retrofit	\$14,823,733	\$7,748
	New Purchase	\$14,700,005	\$11,766
Off-Road Agriculture	Replacement	\$86,332,324	\$9,063
	Repower	\$18,869,167	\$6,850
	Retrofit	\$5,005	\$13,660
Off-Road Other	Replacement	\$19,021,139	\$15,960
	Repower	\$140,547,123	\$8,930
	Retrofit	\$629,385	\$9,066
	New Purchase	\$5,259,344	\$7,170
Stationary/Portable Agricultural Pump	Repower	\$55,830,209	\$4,656
	New Purchase	\$168,621	\$1,197
Marine	Repower	\$90,311,193	\$9,806
	Retrofit	\$2,062,899	\$15,969
	Shore Power	\$2,521,105	\$14,320
Locomotive	Repower	\$24,628,144	\$11,467
	Retrofit	\$770,598	\$2,379
	New Purchase	\$47,011,388	\$9,946
Car Scrap	Scrap	\$24,433,455	\$10,623
Lawn and Garden	Scrap	\$404,260	\$14,848

## B. Health Benefits

California experiences some of the highest concentrations of fine particulate (PM2.5) in the nation [1]. The majority of California’s population lives in areas that exceed national and State PM2.5 ambient air quality standards [2, 3]. These standards are

<sup>4</sup> On-road replacement projects include the On-Road Voucher Incentive Program, the Truck Improvement/Modernization Benefitting Emission Reductions (TIMBER) Program, and the Emergency Vehicle and Fleet Modernization programs.

based upon an assessment of research that has linked PM<sub>2.5</sub> exposure to adverse health effects, including hospitalization due to cardiopulmonary and respiratory illness and premature death [4]. Furthermore, U.S. EPA has determined that exposure to PM<sub>2.5</sub> plays a “causal” role in premature death, meaning that a substantial body of scientific evidence shows a relationship between PM<sub>2.5</sub> exposure and increased mortality, a relationship that persists when other risk factors such as smoking rates and socioeconomic factors are taken into account [4]. In addition to directly emitted PM, engine exhaust contains NO<sub>x</sub>, which is a precursor to ammonium nitrate, a secondary combustion-related PM, which is formed in the atmosphere and contributes to the ambient level of PM<sub>2.5</sub>. Also, sunlight initiated chemical reactions involving NO<sub>x</sub> lead to formation of ozone, a potent lung irritant.

Since its inception, the Carl Moyer Program has resulted in estimated reductions of about 174,600 tons of ozone precursors (90 percent of which are NO<sub>x</sub>) and 6,400 tons of directly emitted PM. The emission reductions achieved by the Carl Moyer Program are expected to reduce exposure to primary and secondary PM and ozone, in turn resulting in the prevention of premature deaths and in a reduction of hospitalizations and a number of other health impacts. ARB staff estimates that implementation of the Carl Moyer Program from 2005 to 2020 will result in about 40 premature deaths avoided, on an annual basis.

The estimate is based on a peer-reviewed methodology developed by the U.S. EPA [5]. The method was modified with California-specific exposure, demographic, and baseline mortality rate data to calculate health impacts. The reduction of both directly emitted PM and secondary PM (produced in the atmosphere from the precursor NO<sub>x</sub>) are included in the estimate.

ARB staff used a methodology known as incidence-per-ton (IPT) to quantify the health benefits of regulatory controls to reduce PM<sub>2.5</sub>. This method is similar in concept to the methodology developed by the U.S. EPA for similar estimations [6]. Details of the methodology used to calculate these estimates can be found in ARB's 2010 report, *Estimate of Premature Deaths Associated with Fine Particle Pollution (PM<sub>2.5</sub>) in California Using a U.S. Environmental Protection Agency Methodology* [7].

The basis of the IPT methodology is the approximately linear relationship that holds between changes in emissions and estimated changes in health outcomes. This is a consequence of the following observations:

- Across the range of ambient PM<sub>2.5</sub> concentrations encountered in California, modeled changes in health impacts are approximately proportional to changes in ambient pollutant concentrations.
- For primary pollutants such as diesel PM, changes in ambient concentrations are approximately proportional to changes in emissions.
- For secondary pollutants such as ammonium nitrate, a linear relationship may be used as a first-order approximation to the relationship between emissions of NO<sub>x</sub> and ambient concentration of ammonium nitrate. There may be cases

where the relationship between emission of NO<sub>x</sub> and ammonium nitrate formation is greater than or less than linear.

Therefore, health impacts are approximately proportional to emissions, and can be estimated by multiplying emissions by a scaling factor, the IPT factor. IPT factors are derived by calculating the premature death incidence associated with a PM<sub>2.5</sub> source in an air basin, and dividing by the emissions of that PM<sub>2.5</sub> source. Separate IPT factors are used for each air basin and pollutant. Since the total incidence of health effects is proportional to population, the result is adjusted by the ratio of the population in the target year to the population in the base year for which the IPT factors were developed. For a more detailed explanation of how IPT factors were derived, please see the Initial Statement of Reasons that accompanied the Truck and Bus Regulation [8].

#### **IV. AB 8 CARL MOYER PROGRAM EVALUATION**

The most recent legislative modification to the Carl Moyer Program was made in 2013, with the passage of AB 8. AB 8 extended through 2023 the funding established by AB 923 to support the Carl Moyer Program and local programs and also required ARB, in consultation with the local air districts (represented by CAPCOA), to convene working groups to evaluate the policies and goals of the Carl Moyer Program.

##### **A. ARB/CAPCOA Memorandum of Agreement**

The evaluation process was formalized with the joint execution of a Memorandum of Agreement (Appendix B) between ARB and CAPCOA which formed combined air agency teams at both the leadership and program levels. Under this memorandum the air agencies specified the need to keep State and local incentive programs complementary and contributing to both near- and long-term air quality and climate goals, while recognizing that locally controlled programs must reflect local funding priorities. The memorandum included a framework and principles to guide the Program evaluation. For the evaluation process, ARB and CAPCOA followed guiding principles, specifying that each incentive program should:

- Have a clearly defined role within the State and local incentive portfolio
- Complement other State and local incentive programs
- Provide coordinated and streamlined progress towards improving air quality

##### **B. Evaluation of State and Local Incentives Portfolio**

The air agencies evaluated the Carl Moyer Program within the context of a larger incentive portfolio comprised of all State and local air quality incentive programs. Figure 2 (also included in Appendix C) was provided as a handout at a June 11, 2014 public meeting, and illustrates the variety of incentive programs available that provide air quality benefits, and the typical projects that are funded under these programs. Each incentive program has a unique position in deploying cleaner technology throughout the State; any change to the Carl Moyer Program could affect the other incentive programs. The Carl Moyer Program's unique statewide role is that it funds the reduction of emissions from a large variety of engine categories. Additionally, it has the specific requirement that the emission reduction be creditable to the SIP. In this evaluation, it was recognized that the Carl Moyer Program's role should focus on accelerating statewide deployment of cleaner technologies and bringing those technologies to the market.

An example is the relationship the Carl Moyer Program has with the Air Quality Improvement Program (AQIP). AQIP is structured to enable early investments in technology advancing projects that also provide immediate emission reductions, and investments under this program have supported the initial deployment of hybrid and zero-emission trucks, zero-emission and plug-in hybrid passenger cars, and other advanced technology demonstrations/testing critical to meeting California's long-term

air quality and climate change goals. AQIP investments are an important first step in the fundamental transformation of the California vehicle fleet to one with widespread use of near-zero and zero-emission vehicles. The Carl Moyer Program complements that program by funding technologies that were initially developed and deployed through AQIP, but are now commercialized such that they can be “handed off” to the Carl Moyer Program, allowing AQIP to redirect funding to newly advancing technologies. By closely coordinating these two programs, the State is able to provide funding to technologies from their initial development and demonstration (in AQIP) to their widespread deployment (in the Carl Moyer Program).

**Figure 2: Incentive Portfolio**

<b>Incentives Portfolio</b> <small>California Environmental Protection Agency                      Air Resources Board</small> 		Generally Funded Categories												
		Light Duty On-Road	Heavy Duty On-Road	Off-Road	Marine	Statewide (Non-Ag)	Agricultural Equipment	Locomotives	Lawn & Garden	School Bus	Portable Equipment	Technology Advancement	Alt. Fuel Infrastructure	VMT Reduction
Estimated Emissions Impact		High  Low												
Statewide Program		Approx. Program Funding Amount												
Carl Moyer	\$69 M Annually	●	●	●	●		●	●	●		●			
Prop 1B/GMERP	\$240 M Remaining		●	●	●			●						
Cap & Trade	\$200 M FY 14/15 (proposed)	●	●								●	●		
AQIP	\$25 M Annually	●	●								●			
ARFVT	\$100 M Annually	●									●	●		
CAP	\$30 M Annually	●												
EFMP	\$30 M Annually	●												
Local Program														
AB 923	\$50 M Annually	●	●	●	●		●	●	●	●	●	●	●	
AB 2766	\$30 M Annually	●	●	●			●		●			●	●	●
Lawn & Garden Programs	Varies							●						
Fireplace Change Out Programs	Varies					●								
Other Local Programs	Varies	●	●	●	●		●	●	●	●	●	●	●	●

The air agencies’ initial evaluation identified changes to the Carl Moyer Program that could be accomplished both in the near-term and long-term. Changes that could be completed under existing statute by modifying the Carl Moyer Program Guidelines were identified as near-term and were approved by the ARB Board, via public process, in July 2014, as discussed below. Long-term changes, those requiring a revision of the statute, were compiled along with additional input from the Incentive Programs Advisory Group (IPAG) and refined through successive meetings of the air agencies.

### **C. Implementing Near-Term Guideline Improvements**

The near-term program enhancements were approved by the Board for incorporation into the Carl Moyer Program Guidelines in 2014, under the existing public process to update the Guidelines. The changes streamlined program implementation and expanded the potential project pool for many project categories while preserving program integrity. Changes included:

- Approval to fund a new engine transmission for a marine vessel repower, when it is essential to the installation and function of the new engine
- Additional flexibility to the air districts to implement a car scrap program
- Permission for districts to use local funds for local projects funded under the Voucher Incentive Program, which provides Carl Moyer Program grants to replace on-road heavy-duty vehicles
- Increased statewide funding opportunities for vehicles subject to the Truck and Bus Regulation
- Additional opportunities to fund off-road repowers and equipment not previously eligible
- Updated emission factors based on inventory updates
- A clarified process to return funds to ARB that are not expended
- Streamlined reporting requirements

These changes can be viewed

at: <http://www.arb.ca.gov/msprog/mailouts/msc1409/msc1409.pdf>  
<http://www.arb.ca.gov/msprog/mailouts/msc1414/msc1414.pdf>

### **D. June 2014 Initial Incentive Programs Advisory Group Meeting**

Necessary long-term changes were analyzed with the understanding that the incentive landscape is much different now than when the Carl Moyer Program was developed over 15 years ago. In-use fleet rules and new equipment standards have affected potential emissions reduction benefits and surplus period for funded projects, and have directly impacted the project cost-effectiveness metric. The air agencies solicited stakeholder input on long-term program changes and held a public IPAG meeting to enable discussion. Attendees included environmental organizations, industry associations, equipment manufacturers, dealers and project grant recipients. The meeting was primarily dedicated to brainstorming. Participants worked in small groups to describe how the Carl Moyer and AB 923 Programs could better address their various challenges and goals. Small groups unveiled ideas to the larger audience for discussion and development. Two main overarching themes emerged. The first was recognition that the Carl Moyer Program is a successful criteria pollutant and toxic reduction program that should continue in that role. The second was acknowledgment that the Carl Moyer Program could expand to do more to help California achieve future air quality goals. The air agencies developed a final list of ideas to generate the basic categories for further discussion.

### **E. July 2014 Status Update to the Board**

The air agencies presented an update to the Board in July 2014, where they summarized progress to date. At that time, the Board asked that staff provide additional information on the cost-effectiveness and health benefits of the Carl Moyer Program to date, and requested that the air agencies prepare a formal report describing potential program improvements, and the process staff undertook to identify these potential improvements.

### **F. October 2014 Second Incentive Programs Advisory Group Meeting**

Following the July 2014 hearing, the air agencies further refined the stakeholder suggestions from the initial IPAG meeting and then held a follow-up public advisory group meeting to gather additional feedback on how the Program could do more. At this meeting, again utilizing small groups to brainstorm, the teams firmly established a need for four main areas of focus. Although only four areas were specifically identified at the meeting, discussion during this meeting and subsequent Program evaluation identified the need to also address areas of the program that could be modified to improve and streamline the funding process. The result is five areas, now identified as “pillars,” where changes are recommended that would enhance the Carl Moyer Program, as discussed in the next section of this report.

## V. POTENTIAL STATUTORY CHANGES

Throughout the stakeholder process, and through discussions between ARB and CAPCOA, several common themes arose as to how the Program could be improved and expanded to better accomplish local and State air quality and climate objectives. IPAG participants recognized that it was important to structure any changes as additive to the existing successful program, and to ensure that air districts retain maximum flexibility to address local emission reduction priorities. After review and analysis, the air agencies synthesized the various ideas into five major areas (pillars) on which to build an expanded and improved Carl Moyer Program:

- Adjusting the cost-effectiveness limit to more effectively incentivize the statewide deployment of cleaner technologies
- Allowing for greater leveraging of funds from multiple sources to facilitate funding for projects that achieve multiple goals
- Expanding the types of projects that would be eligible for funding to include advanced technologies and infrastructure
- Including the recognition of GHG reductions such that the investments could prioritize both criteria and GHG emission reductions
- Modifying implementation requirements to improve and streamline the funding process

As noted in the previous section, the air agencies discussed these pillars with stakeholders at the October 2014 IPAG meeting. Stakeholders widely recognized that implementation of these concepts, such as the desire to increase deployment of zero emission and near-zero technologies and the need to recognize co-benefit GHG project reductions will require legislative changes. Similarly, after any legislative changes, the Guidelines would need to be revised through the established public process in accordance with H&SC §44287(b).

### A. Cost-Effectiveness Limit

During the program evaluation process, a number of issues associated with the current cost-effectiveness limit were identified, as described below. These include:

- As technologies continue to get cleaner, the absolute emission reductions for a given project are being reduced
- As ARB in-use fleet rules are being implemented, there are fewer opportunities to achieve surplus emission reductions
- With advanced technologies, such as hybrids and zero emission vehicles, the incremental costs of the technologies are increasing, while fueling infrastructure needs may make a given project prohibitively expensive

Because of these issues, the air agencies identified a need to reevaluate the cost-effectiveness elements of the Carl Moyer Program.

As discussed previously, the requirement that eligible funding amounts be based on a specified singular cost-effectiveness limit has been a fundamental feature of the Carl Moyer Program since its initial inception. Such a limit made sense in the early years of the program, when typical projects included replacing uncontrolled or marginally controlled engines with the cleanest available technologies of the time, and many of the initial successes of the Carl Moyer Program were realized through such engine replacements. Today, however, the current cost-effectiveness cap often provides a barrier to deploying the cleanest engines now available, which are as much as 90 percent cleaner than those deployed by fleets as recently as 2006. Despite the fact that many of the engines purchased by fleets over the last several years are not as clean as those available today, the cost-effectiveness cap is a barrier to further replacements.

Tables 4 and 5 below provide examples of eligible funding amounts for a truck replacement project going to a 2010 model year truck (0.2 g/bhp-hr NOx standard) and an Optional Low NOx truck, certified to a 0.02 g/bhp-hr level, respectively. As the model year differential between the baseline and new truck decreases so does the resulting emission reduction benefit, and thus the funding that can be provided under the cost-effectiveness limit. At the current limit, less than \$25,000 can be provided towards replacing a 2003 model year truck (less than 20 percent of an estimated \$150,000 purchase price. Additionally, as shown in the table, under the current limit, little additional incentive (about \$2,500 more) is available towards the purchase a similar replacement truck certified to the Optional Low NOx standard, which in total represents only 13 percent of the estimated \$200,000 purchase price.

**Table 4: Comparison of Funding Amounts for a Replacement Truck Meeting the 2010 NOx Standard (0.2 g/bhp-hr) at 60,000 Annual Miles of Operation**

Baseline Engine Model Year	NOx Standard (g/bhp-hr)	Surplus NOx Emission Reductions (tons)	Funding Available @ Current Cost-Effectiveness Limit	Percentage of Purchase Price Funded**
1996	5.0	3.7	\$62,118	41%
1998	4.0	2.9	\$49,177	33%
2003	2.5	1.4	\$23,294	16%
2007	1.2	0.6	\$9,835	7%

\* NOx+NMHC

\*\*Example purchase price of a new truck meeting the 2010 emission standard is \$150,000. Additional assumptions: Gross vehicle weight rating > 33,000 pounds; Baseline truck has 2020 engine upgrade compliance requirement; Project life is four years due to compliance requirements.

**Table 5: Comparison of Funding Amounts for a Replacement Truck Meeting the Optional Low NOx Standard (0.02 g/bhp-hr) at 60,000 Annual Miles of Operation**

Baseline Engine Model Year	NOx Standard (g/bhp-hr)	Surplus NOx Emission Reductions (tons)	Funding Available @ Current Cost-Effectiveness Limit	Percentage of Purchase Price Funded**
1996	5.0	4.0	\$64,111	32%
1998	4.0	3.3	\$51,899	26%
2003	2.5	1.7	\$27,476	14%
2007	1.2	0.9	\$14,776	7%
2010	0.2	0.3	\$5,495	3%

\* NOx+NMHC

\*\*Example purchase price of a new truck meeting the Optional Low NOx standard is \$200,000. Additional assumptions: Gross vehicle weight rating > 33,000 pounds; Baseline truck has 2020 engine upgrade compliance requirement; Project life is 10 years (including six additional years of surplus emissions because the truck is cleaner than the 2020 compliance requirement).

Furthermore, because Carl Moyer Program projects must be surplus to regulatory requirements, the implementation of today's in-use fleet rules (such as the Truck and Bus Regulation, the In-Use Off-Road Diesel Regulation, etc.) requiring the retrofit or replacement of older equipment has limited the amount of early and surplus emission reductions that can be obtained from funded projects since most projects funded under the Program, such as trucks and off-road equipment, must meet regulatory clean-up requirements.

Looking ahead, the challenge of finding cost-effective projects will become even greater, as fewer relatively uncontrolled sources will be available each year that passes while ARB's in-use fleet rules are implemented. In addition, the need to fund projects in communities disproportionately impacted by emissions and to boost the deployment of commercialized advanced technologies will be hindered by limitations imposed by the current cost-effectiveness limit. So while cost-effectiveness has been a hallmark of the Carl Moyer Program to date, the importance of meeting additional State and local objectives and priorities necessitates reexamining the existing limit in place and its ability to effectively incentivize projects in the future.

For example, transformative technologies such as hybrid power trains and electrification not only provide criteria and toxic benefits, but also achieve reductions in GHG emissions (which are currently not recognized in the Program). However, to successfully deploy such technology, corresponding investments in fueling infrastructure may be necessary to support advanced and zero emission technologies, foster adoption and spur sector growth. Unfortunately, the current cost-effectiveness limit inhibits the ability to provide sufficient financial incentive for an equipment owner to replace an internal combustion engine with a different power

source entirely, even while these technology options, which provide co-benefits such as GHG emission reductions, are becoming increasingly viable.

Based on these issues, the air agencies have determined that the cost-effectiveness limit should be modified to allow flexibility to address changes in the equipment and technologies currently funded under the program, as well as projects that will be funded under the Program in the future. The air agencies are currently investigating how the cost-effectiveness limit could be modified to better account for the changing economic and regulatory environment given the current state of clean technologies (including cost and emission reduction potential). This analysis includes benchmarking against such things as the typical cost-effectiveness of other incentives programs, and the cost-effectiveness of recently approved rules and the current value of NOx credits in local air district stationary source programs. Expectations are that this analysis will result in a revised cost-effectiveness structure that will enable continued reductions of criteria pollutants and toxics, as well as facilitate a longer term shift to cleaner, more advanced technologies (that also provide GHG co-benefits) by enhancing local air districts' ability to encourage early adopters of cleaner technologies. Importantly, local air districts would continue to retain their discretion to be more stringent than the cost-effectiveness limit where they believe it is appropriate.

## **B. Leveraging**

A critical way to ensure participants receive sufficient incentive to participate in projects that may otherwise be too expensive is to make the program better able to work with other incentive programs and funding sources. However, there are currently statutory limitations on how Carl Moyer Program funds can be used in conjunction with other public funding. Specifically, H&SC §44283 (d) provides that any "state funds, or funds under the air district's budget authority or fiduciary control" received in addition to Carl Moyer Program funds must be included when determining the cost-effectiveness of a project. Additionally, H&SC §44283 (g) requires that the incremental cost of any project "shall be reduced by the value of any current financial incentive that directly reduces the project price, including any tax credits or deductions, grants, or other public financial assistance", thereby reducing the grant amount allowed to be paid with Carl Moyer Program funding. These requirements essentially restrict the ability for Carl Moyer Program funds to be used to leverage other funding sources, and complicate any project involving multiple sources of funding.

This is a significant barrier for many larger, more complicated projects (such as those often associated with locomotives, marine, and off-road equipment projects) that often require a variety of funding sources to make the proposed project financially viable. The air agencies, along with stakeholders all agreed that the Carl Moyer Program should be structured to work in conjunction with these programs, leveraging other funding sources to jointly obtain the respective goals of the programs, as well as provide the applicants with the ability to utilize multiple streams of funding to make

complex clean air projects more feasible. For instance, deployment of advanced technologies can provide both short-term and long-term benefits beyond those claimed by the Carl Moyer Program. These advanced technology projects, especially those requiring infrastructure investments such as rail electrification, can be extremely expensive, and Carl Moyer Program funds alone may not be sufficient to fund the entirety of those projects.

It is believed that the intent of the current limitations is to ensure that the Program does not overpay for projects that already receive funding from another source, and that participants provide a meaningful financial commitment to the project. However, similar to the cost-effectiveness limit discussed above, this particular element of the Program does not reflect how the air quality and participant needs have evolved over time, and has had the unintended consequence of discouraging projects that accomplish multiple goals simultaneously, while putting project proponents in the situation of sometimes selecting a technology alternative that is not as clean. One example raised at the October 2014 IPAG meeting involved a group wanting to buy compressed natural gas (CNG) street sweepers. The Carl Moyer Program could have provided funding towards the project, but not sufficient enough to cover the entire incremental cost. There were other programs focused on fuel diversity that could potentially have been utilized to co-fund the project. However, the current statutory limitations did not allow these funds to be used in conjunction with the Program. Therefore, the applicant was unable to acquire the CNG sweepers using Carl Moyer Program funds.

Another example where the current statutory language presents funding barriers is with public agencies receiving State funds to acquire vehicles into its fleet. A private entity provides funding to an eligible project without that funding counting towards the project's overall cost-effectiveness. However, for a public agency, statute requires all additional State funding to be included in cost-effectiveness calculations, even though the "base" State funding may not have been provided for the purpose of achieving emission reductions (i.e., the vehicle was previously slated for replacement). The effect of this is to raise the overall cost per ton of the project (since both the base State money and the Carl Moyer Program funding are considered together), thereby reducing the amount of Carl Moyer Program funding available, or in some cases even eliminating the project from Program eligibility. The end result is that government agencies relying on public funds to improve their fleets are less likely to purchase the cleanest equipment – the opposite of the desired outcome. As the need to deploy advanced technologies becomes more critical, these outcomes will become increasingly common unless action is taken to allow new leveraging.

In 2010, the Legislature made an exception to this restriction and approved AB 1507, which allowed Carl Moyer Program funds to be combined without penalty with funds from the Alternative and Renewable Fuel and Vehicle Technology Program (which is maintained by the California Energy Commission) or federal programs designed to reduce GHG emissions. Expanding on the AB 1507 action and allowing for the broader leveraging of Carl Moyer Program funds with other funding sources would

provide a greater opportunity to obtain emission reductions. Allowing leveraging of funds could increase the Program's ability to fund advanced technologies, projects that result in additional GHG reductions, and projects by public agencies, as well as projects that may not otherwise occur due to the high cost of the project, but which have large associated emission reduction benefits.

The air agencies recognize that while there is need to reexamine the Program's current limitation on combining multiple funding sources, safeguards will be needed to preserve the continuing integrity of the Program. Specifically, the air agencies believe that the Program should not allow total grant funding to exceed the total cost of the project, when all funding sources are considered. There is also agreement that it is important to continue to have grantee buy-in for a project, but since different projects have different circumstances, the details of how much grantee buy-in is appropriate should be left flexible and determined through the Carl Moyer Program Guideline development process.

To prevent double-counting of emissions benefits, it should also be specified that any other sources of funding should not require the same emission reductions that will be obtained through the Carl Moyer Program. The air agencies recognize that maintaining SIP creditability requires a thorough examination of additional funding sources to ensure that no emission benefits are double-counted. Additionally, because new programs and sources of funding may become available in the future, the air agencies agree that developing methods to handle those funds through the Carl Moyer Program Guideline development process would best enable the Program to be most responsive to the needs of applicants and ensure the prudent and effective use of public funds.

Expectations are that changes to how public funds are considered will result in increased opportunity to leverage Carl Moyer Program funds with other funding sources that will result in additional emission reductions, thereby providing a better return on Program investment. It will simplify the process for applicants and make it more advantageous for applicants to leverage other funding sources with the Carl Moyer Program to purchase cleaner equipment. This will also enhance the ability of the Carl Moyer Program to coordinate its goals with the goals of other programs such as the Air Quality Improvement Program, providing additional opportunities for achieving reductions of criteria pollutants as well as promoting advanced technologies.

### **C. Greenhouse Gas Emissions and Ancillary Benefits**

Nowhere is the need to leverage funding more critical than with regards to GHG reductions. AB 32 (California's Global Solutions Warming Act of 2006) requires California to reduce its GHG emissions to 1990 levels by 2020, and paves the way for California's transition to a sustainable, low-carbon future. ARB's Scoping Plan describes the approach California will take to reduce GHG emissions to achieve this goal. The 2014 update to the AB 32 Scoping Plan highlighted the need to leverage

funds in order to foster additional GHG emissions reductions and noted “Incentive funding is essential to encourage use of alternative transportation modes, develop and deploy low-carbon fuels, spur fleet turnover, and continue to develop advanced technologies.” The plan recognized that programs such as the Carl Moyer Program could provide funding for technologies that reduce criteria pollutant and air toxic emissions, often with concurrent GHG emission reduction benefits.

Under H&SC §44275, covered emissions in the Carl Moyer Program only include NO<sub>x</sub>, ROG, and PM, while H&SC §44283(b) allows only those pollutants to be included in the cost-effectiveness calculation. As such, ancillary reductions of GHG emissions do not increase the amount of funding that can be awarded for a given project. So while reducing GHG emissions is a high priority for ARB, there isn’t a programmatic mechanism to recognize those projects in the Program as preferable to projects that achieve the same criteria reductions without GHG reductions. Allowing air districts the ability to recognize GHG benefits under the Carl Moyer Program could provide incentive for applicants to purchase low carbon vehicles and equipment thereby providing the opportunity to get additional GHG emission reductions and help the State meet its climate change reduction goals.

The air agencies are mindful that while the goal of the Program is to achieve SIP creditable emission reductions of NO<sub>x</sub>, ROG and PM, the Program should also incentivize projects that provide GHG co-benefits. The air agencies are exploring options to accomplish this without including GHG emissions directly as a covered pollutant in the current cost-effectiveness calculation. Directly including GHG emissions in the cost-effectiveness calculation would potentially limit the ability of projects to leverage Carl Moyer Program funds with other incentive funding, and could diminish the Program’s focus on criteria and toxic emission reductions.

One alternative being considered would establish a two-tiered approach. Projects that solely provide reductions in criteria pollutants would be subject to the standard cost-effectiveness limit. Projects that achieve not only criteria pollutant reductions, but also provide a significant ancillary benefit of GHG reductions could be eligible for a secondary, higher cost-effectiveness limit. This concept also has the potential to provide a qualitative way for the Program to recognize additional ancillary benefits beyond GHG reductions, such as reductions in public toxic exposure<sup>5</sup>. Under this scenario, Program changes could permit the Board to identify in the Guidelines those ancillary benefits that would allow a project to be considered under the secondary cost-effectiveness cap. The Board could also adjust what qualifies as ancillary

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<sup>5</sup> In 2005, some stakeholders suggested incorporating exposure, particularly to sensitive receptors such as school children, into the cost-effectiveness calculation. After considering the nature of mobile source projects which travel throughout local air districts, and sometimes the entire state, and the potential difficulties associated with assessing the location, timing, and duration of emissions of each individual Carl Moyer Program project, it was decided not to incorporate exposure into the cost-effectiveness calculation at that time. The ancillary benefit concept identified here may be a way to handle such issues in a more qualitative manner.

benefits over time, as technologies and the market evolve, providing a swifter way for the Program to adapt to emerging issues.

Allowing for GHG emission reductions to be considered when determining the funding amount for a Carl Moyer Program project would provide an opportunity to further incentivize participants to purchase more advanced vehicles and equipment that provide both criteria and GHG emissions benefits. However, as mentioned earlier, one of the key principles of the Program is that local air districts have the ability to select projects that reflect the priorities of their own local communities. For some local air districts, the Carl Moyer Program is one of a very limited number of funding sources available, and a requirement that a project provide GHG reductions in addition to the criteria pollutant reductions could limit the ability of a local air district to serve its communities. As such, the Program should allow each local air district the option and discretion to pursue projects with added GHG co-benefits, based on consideration of their local needs and priorities, just as it has to this point allowed the selection of projects that address criteria pollutants or toxics, or both.

#### **D. Expand Eligible Projects**

Currently, under H&SC §44275 the Carl Moyer Program is restricted to reducing emissions from covered sources, defined as: on-road vehicles, off-road non-recreational equipment, locomotives, diesel marine vessels, agricultural sources, and other high emitting engine categories as defined by ARB. While this statutory language provides flexibility to fund engine projects, it excludes the allowance to fund additional non-engine projects such as infrastructure, or other potential new technology projects that fit with the goals of the Program.

Current projects fund repower, replacement, or retrofit of existing equipment. The broad collection of technology types and project types funded through the Program has provided many cost-effective strategies throughout the Program's history. However, a general expansion and increased flexibility of the types of projects that can be funded under the Program will be critical to maximizing the opportunities to support new technologies and new equipment types will support the air quality and climate needs and goals of the State. For example, many advanced technology projects require fueling infrastructure investments (such as for hydrogen, natural gas or electricity). Being able to include funding for such projects could greatly expand their deployment under the Carl Moyer Program.

This expansion has precedent in the Carl Moyer Program's history. Over the years, the types of projects eligible for funding by the program has grown in recognition of evolving needs on the State and local levels. For example, in 2004, AB 923 expanded the program to include light-duty vehicle projects as well as agricultural sources of air pollution, which provided additional funding opportunities to agricultural projects such as portable sprayers. Also in 2004, AB 1394 added the ability to fund heavy-duty fleet modernization projects. This added the opportunity to fund early truck replacements, which meant that the program not only achieved the surplus

emissions reductions, but simultaneously provided a means to support and accelerate implementation of the Truck and Bus Regulation.

As noted above, the Update to the AB 32 Scoping Plan highlights the importance that incentive funding has in accelerating fleet turnover and developing advanced technologies. While the Carl Moyer Program originally supported the development and demonstration of advanced technologies, as well as the installation of fueling or electrification infrastructure, the statutory language governing advanced technology and infrastructure project categories reference programs implemented by the California Energy Commission that are no longer funded. Therefore, although statute language provides some flexibility for ARB to define categories for funding, statutory clarity is needed on the ability to use Carl Moyer Program funding for infrastructure and various other projects.

In addition, as the air agencies look at what is needed to meet the AB 32 Scoping Plan, the flexibility to support this effort with Carl Moyer Program funds could yield substantial co-benefits. For example, although local AB 923 funds can be spent on locomotives, marine vessels, and agricultural sources, H&SC §44287(j) prevents air districts from using funds used on those projects towards their Carl Moyer match requirement. This restriction can act as a disincentive for those types of projects, which would otherwise be extremely beneficial in helping districts address local air quality and toxic priorities, while also serving the needs of disadvantaged communities such as those near railyards and ports.

Clarifying and reinforcing the authority of the Program to support varied types of projects will enable more project synergies in the future. Stakeholders have indicated that this would not only achieve additional emission reductions, but improve the Program's ability to foster wider deployment of new technologies. Clarification of the discretion currently in statute should explicitly include the ability for the program to fund projects that bring advanced technology vehicles/equipment into the market place. Additionally, expanding eligible project types should also explicitly provide an opportunity for State program funds to go towards the installation of infrastructure for alternative fuel or electric vehicles/equipment with the ability to provide reductions of both criteria and GHG emissions.

The air agencies' expectations are that affording for the ability to fund marketplace adoption of advanced technologies as well as infrastructure will not only provide short-term emission reductions, but will help the State and local air districts move towards zero and near-zero technologies that provide longer-term reductions of criteria and climate change pollutants. Although long-term emission reductions are essential for meeting clean air goals, it is important to recognize there is still a need for near-term benefits and that existing project categories should be augmented, not replaced, by these new categories.

### **E. Additional Modifications to Improve Implementation Efficiency**

ARB staff is continuing to work with CAPCOA, as well as the local air districts' staff who implement the Program and work one-on-one daily with industry and applicants, to identify Program areas that could be modified to improve the ability to meet State and local air quality goals, while streamlining the process. These include increasing resources to enhance the ability of districts to reach out to disadvantaged communities and modifying requirements to ensure that a district will have sufficient time to expend funds in its area, eliminating the need to return them to ARB for redistribution.

Specifically, H&SC §44275 – §44299.2, which guide the Program, codify requirements for eligible equipment and fuel types, specify match percentages, qualify sources of match funding, describe fund management, and set forth statewide allocation formulas. Statute also provides details about project life, grant timelines, pollutants addressed, oversight requirements, allowable costs, application requirements, reporting requirements and cost-effectiveness criteria. Through the successful implementation of the Program over the last 16 years, the air agencies have learned that the rigidity of some of these provisions have hampered efforts to be more responsive to applicants and maximize efficiency in administering the Program. In particular, the Program can be overly burdensome on applicants, impeding the ability of the program to achieve its goal of better air quality. By working cooperatively with the local air districts and stakeholders, staff will be able to address these issues and position the Program to be successful into the future.

## VI. NEXT STEPS AND CONCLUSION

The five pillars identified in this report are the foundation established by the air agencies to enhance the Program to meet near- and long-term air quality goals. In order to implement these pillars and ensure a successful future for the Program, ARB and CAPCOA will continue to work together to develop statutory language to incorporate these pillars into legislation. Once completed, the language will be shared with interested stakeholders to receive comments and gather support for the statutory changes, with those changes eventually being considered by the Legislature. If statute is ultimately modified under this action, the details for implementing these new provisions will be included in revised Program Guidelines that will be presented to the Board for approval, in accordance with H&SC §44287(b), including making those revisions available for public comment prior to final adoption.

The Carl Moyer Program has proven itself to be the model of success for air quality incentive program. It has successfully helped regions all across the state make significant progress in attaining and maintain State and federal air quality standards, and reducing localized risk. Since its inception, the scope of the Program has grown and evolved with statutory changes to address new and expanded priorities, both by adding new covered pollutants and new source categories. Building on these changes, and on the Program's significant track record of success, it is now time to position the Program for the next generation of State and local priorities. By working with CAPCOA and stakeholders, staff will work to develop new Program elements that will ensure its continued success as one of California's premier emission reduction incentive programs.

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