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STAFF REPORT:

ENHANCED FLEET MODERNIZATION PROGRAM ASSESSMENT

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

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Enhanced Fleet Modernization Program Update

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Executive Summary

The Enhanced Fleet Modernization Program (EFMP) is a vehicle retirement and replacement program authorized by Assembly Bill (AB) 118 (Nunez, Chapter 750, Statutes of 2007, California Health and Safety Code Section 44125, amended 2010, 2013). EFMP is funded by a \$1 surcharge on motor vehicle registration, translating into about \$30 million every fiscal year.

The purpose of the program is to retire high polluting passenger vehicles and light-duty and medium-duty trucks by voluntary means. Statute directs that the program should be focused on the areas with the greatest air quality impact, and considers cost-effectiveness and impacts on disadvantaged and low-income populations. EFMP is designed to help people move into newer, cleaner vehicles through the retirement and/or replacement of older, dirtier vehicles.

The Air Resources Board (ARB or Board), in consultation with the Bureau of Automotive Repair (BAR), adopted guidelines to administer two separate elements of the program: *Retirement-Only* and *Retirement plus Replacement Voucher*. The EFMP retirement-only element is extremely popular with motorists; over 70,000 vehicles have been purchased and retired since inception and funds are typically exhausted within the first 8 months of the year. The program offers \$1000 (\$1500 for low-income) to retire a vehicle. In addition about \$3 million (10 percent of total annual funds) was allocated for a pilot retirement plus replacement voucher element which has solicited over 11,000 motorists in the South Coast Air Basin with vehicles either known or suspected to be the highest emitters with an offer of \$3000 (\$4000 for low-income) to retire their vehicle and replace it with a newer vehicle less than four years old (less than eight years old, if low-income). However, the voucher program has had limited success and as of November 1, 2013, only 21 people have taken advantage of this offer of additional funds towards vehicle replacement.

During the course of administering the program, ARB staff encountered substantial anecdotal evidence suggesting consumers participating in vehicle retirement intended to scrap their vehicles even without the EFMP incentive. As the emissions reductions achieved by the program are dependent on the useful life remaining on the retired vehicle being taken off the road sooner than would otherwise happen, staff decided it should conduct an assessment of a sample of the vehicles being retired. Similarly, the low participation in the pilot voucher program prompted an examination of that aspect of the program.

In order to evaluate the benefits and performance of the program, ARB and BAR jointly conducted an assessment of 164 vehicles retired at two approved dismantlers in Southern California. All of the vehicles were assessed qualitatively to determine their remaining useful life, and 140 were assessed quantitatively and for operational functionality using the standard acceleration simulation mode (ASM) dynamometer emissions test for roadside Smog Check inspections.

The key findings from the field assessment confirm that the vehicles entering EFMP retirement are generally high emitters, but also generally at the end of their useful life. While emission inventory models show vehicles in the age range of EFMP participants have on average about three years of remaining useful life, the physical condition of the tested vehicles suggests imminent retirement was likely anyway, even without State assistance. The majority of vehicles tested exhibited mechanical problems that inhibited proper operation and/or would cause them to fail Smog Check, preventing them from being registered; in either case, the vehicle's owners elected to retire the vehicles in lieu of repair. The overall conclusion of the assessment of the sample of participating vehicles is that while EFMP is meeting program goals by purchasing and retiring high emitting vehicles, the cost-effectiveness and emission benefits of the program could be substantially improved by ensuring that only vehicles with significant remaining useful life are allowed to participate.

Staff also assessed the retirement plus replacement element under the voucher program with respect to participation rates and economics. The key findings suggest that the program is overly complicated, highly bureaucratic, and the monetary incentives offered are too low. Participation requires interaction of the motorist with two government agencies and two private businesses. This leads to multiple points in the process where participants drop out from either frustration or confusion, even if the program incentives are attractive. Staff investigation of the value of solicited vehicles suggests the current incentives for replacement are approximately equal to or slightly less than the private market value of the vehicles solicited for participation and, therefore, do not provide sufficient financial motivation for a prospective participant to engage in a complex, bureaucratic process.

The conclusions of this study identify key areas for potential program improvement, which can inform program changes to the existing EFMP guidelines. In addition, two recent acts of legislation adopted this year, Assembly Bill (AB) 8 and Senate Bill (SB) 459, directly address this program and require ARB adopt new program guidelines by June 30, 2015. The first piece of legislation, AB 8, extends funding until January 1, 2024. The second piece of legislation, SB 459, specifically targets changes to EFMP that:

- establish compensation for replacement vehicles for low-income vehicle owners to no less than \$2500,
- make replacement an option for all motor vehicle owners,
- make replacement compensation available to an owner in addition to the compensation for the retired vehicle,
- prohibit compensation for all other vehicle owners from exceeding the compensation for low-income vehicle owners, and
- authorize an increase in the compensation for low-income vehicle owners as necessary to balance maximizing air quality benefits while ensuring participation.

Staff believes that the key areas identified by this study can be effectively utilized to inform changes to the program that are consistent with the legislative direction.

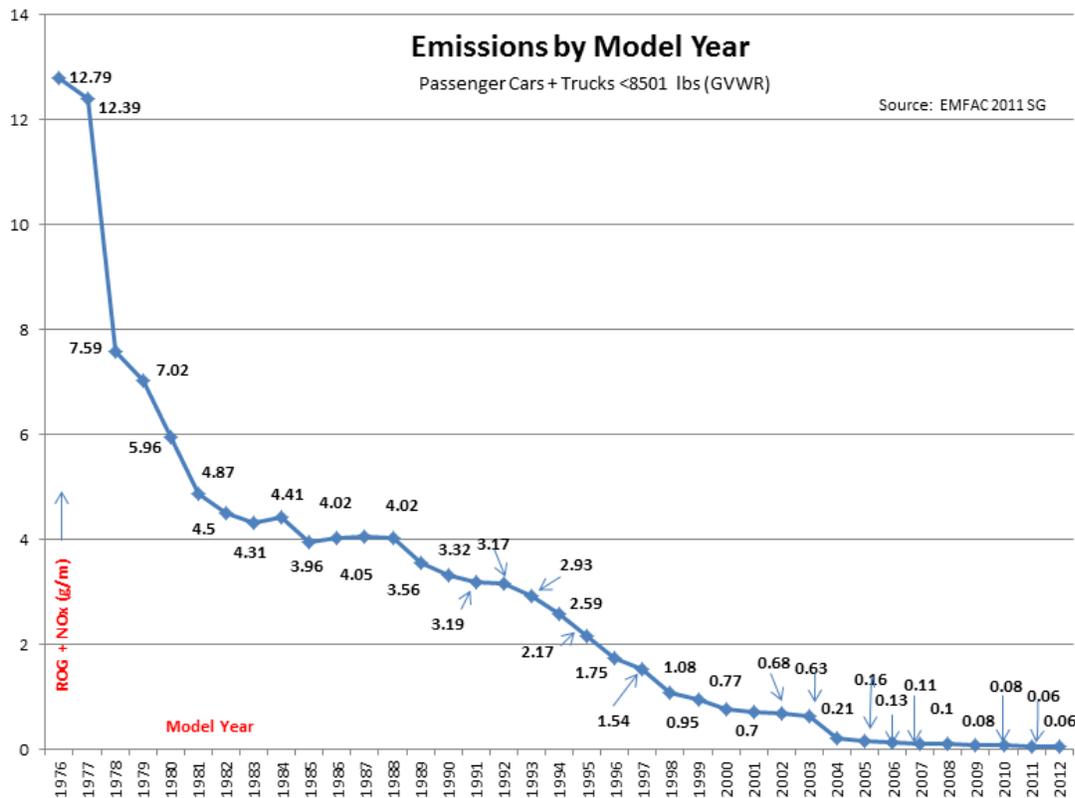
In response to this legislative direction and to address the findings of this study, ARB staff will develop and implement program improvements in coordination with BAR, local air districts, and other interested parties. Emphasis will be placed on community outreach and in developing partnerships with stakeholders in targeted communities. Staff will present the proposal for program improvements through new guidelines to the Board in mid-2014.

I. Introduction and Background

Although California has been the nation's leader in efforts to reduce air and climate pollution, the State -- and in particular the South Coast air basin and the San Joaquin Valley air basin, home to nearly 50 percent of the State's passenger vehicles¹ -- continues to struggle with air quality problems. California's 23 million passenger cars and light- and medium-duty trucks, which travel close to 865 million miles per day, contribute significantly to the problem². Older vehicles, which are certified at higher emission levels, account for a larger share of these emissions than newer models that comply with more stringent emission standards.

Estimated smog-forming emission rates by model year are shown in Figure 1. Note that the emission rate of a 20 year old vehicle, in terms of grams per mile of oxides of nitrogen (NOx) plus reactive organic gases (ROG), is about 30 times that of a late model vehicle. Vehicles that are 20 years old and older account for only 5 percent of all miles traveled, but are responsible for 40 percent of daily smog forming emissions from motor vehicles³. These facts make retirement of older vehicles an attractive strategy to combat excess emission of pollutants from on-road motor vehicles.

Figure 1: Vehicle Emission Rate by Model Year



¹ EMFAC2011 (<http://www.arb.ca.gov/emfac/>)

² Ibid

³ Ibid

A. EFMP Vehicle Retirement and Replacement Program

EFMP is a vehicle retirement and replacement program authorized by AB 118 (Nunez, Chapter 750, Statutes of 2007, California Health and Safety Code Section 44125, amended 2010, 2013). EFMP is funded by a \$1 surcharge on motor vehicle registration, translating into about \$30 million each fiscal year.

The purpose of the program is to retire high polluting passenger vehicles and light-duty and medium-duty trucks by voluntary means. Statute directs that the program should be focused on the areas with the greatest air quality impact and considers cost-effectiveness and impacts on disadvantaged and low-income populations. Low-income is defined in statute as 225 percent of the federal poverty level. The authorizing statute also directs that compensation should take into account the age, emission benefits of retirement, and the impact of any replacement vehicle.

ARB, in consultation with BAR, has adopted guidelines to administer two separate elements of the program:

- The *Retirement-only element* was implemented starting in August 2010 and is administered by BAR. Motorists are offered \$1000 (\$1500 for low-income) to permanently retire their vehicle. The EFMP retirement-only element is extremely popular with motorists. BAR has retired over 70,000 vehicles (62 percent low-income) since inception and funds are typically exhausted within the first eight months of the year.
- The *Retirement plus replacement voucher element* was first implemented in June 2012 in the South Coast Air Quality Management District (SCAQMD)⁴. About \$3 million (10 percent of total annual funds) was allocated for a pilot voucher program which has solicited over 11,000 motorists in the SCAQMD with vehicles either known or suspected to be the highest emitters with an offer of \$3000 (\$4000 for low-income) to retire their vehicle and replace it with a newer vehicle less than 4 years old (less than 8 years old, if low-income). The intention at time of adoption was that replacement vehicles would be the newest and cleanest vehicles meeting ARB's Low Emission Vehicle II standards; however, given financial considerations of low-income participants, an older replacement vehicle was allowed. As of November 1, 2013, only 21 people had taken advantage of this offer of additional funds towards vehicle replacement.

⁴ The San Joaquin Valley Unified Air Pollution Control District has also expressed interest in the Retirement plus Replacement Voucher element, but has not yet taken steps to implement the program in their area.

The popularity of the retirement-only element has developed spontaneously without any formal advertising or promotion. This grassroots popularity is a stark contrast to the very limited participation in the retirement plus replacement voucher element which offers a larger incentive, but is only available to high polluters identified by ARB and BAR based on existing vehicle Smog Check emissions data.

B. Other Existing Retirement Programs

There are seven other publicly funded vehicle retirement programs either planned or currently operating within the State. Six of the seven are local programs operated by air districts using Carl Moyer Program, AB 923, or other local funds. These local programs have been in operation three to seven years and are collectively much smaller than EFMP in terms of total funding, with approximately \$21 million expended to date:

- Antelope Valley Air Quality Management District \$ 350,000
- Bay Area Air Quality Management District \$16,000,000
- Mojave Desert Air Quality Management District \$ 475,000
- San Luis Obispo Air Pollution Control District \$ 200,000
- Santa Barbara Air Pollution Control District \$ 1,200,000
- South Coast Air Quality Management District \$ 2,780,000⁵

These local programs, along with EFMP, are designed to reduce fleet emissions by accelerating the turnover of the existing fleet and the consequent replacement with newer, cleaner vehicles. Reducing emissions from the existing fleet is a critical part of California's State Implementation Plan, which outlines the State's overall clean air strategy to meet federal ambient air quality standards.

The other statewide retirement program is the vehicle retirement element of the Consumer Assistance Program (CAP), which is also administered by BAR and receives roughly the same annual funding as EFMP. CAP is designed to assist motorists to comply with the Smog Check vehicle inspection program. Because vehicles cannot legally be operated or re-registered in the State without passing the Smog Check test, the emission benefits from repair assistance and vehicle retirement are attributed to the Smog Check program.

CAP provides qualified consumers who fail a Smog Check test the option to retire a vehicle and receive \$1000. As with EFMP, consumers meeting low income eligibility requirements (i.e., that are below 225 percent of the federal poverty level) may receive \$1500. Alternatively, CAP provides qualified consumers who own a vehicle that cannot pass its biennial (every other year) Smog Check inspection up to \$500 in financial assistance toward emissions-related repairs.

⁵ South Coast Air Quality Management District's High Emitter Repair or Scrap voluntary pilot program to detect "gross-polluting" cars, pickups SUVs and vans using remote sensing, and to provide incentives to repair them or scrap and replace them may continue depending on the direction of EFMP.

Although CAP and EFMP have different mandates and goals, the two programs are generally perceived by the public as a single program because EFMP is administered by BAR under the CAP label using the existing CAP application. The objective of CAP is to provide options for Californians facing difficulties in registering their vehicles resulting from failing Smog Check, while EFMP is to improve air quality through the voluntary retirement of light- and medium-vehicles. Many consumers are familiar with the CAP name, but the name EFMP exists only in statute and regulation.

II. Program Assessment and Analysis

A. Retirement-Only Element

The primary goal of voluntary vehicle retirement is to take older, still operational vehicles off the road sooner than they would normally be retired. (i.e., while they still have “useful life” left in them). A vehicle may have no remaining useful life due to mechanical failures, or it may have no remaining useful life due to emission control system failures. Mechanical failures may physically prevent operation, while the Smog Check program blocks registration of those vehicles that do not have functioning emissions controls.

During the course of answering thousands of calls with questions about the EFMP, ARB staff has collected substantial anecdotal evidence suggesting there may be very little remaining useful life in the vehicles entering the program. The program assumes three years of remaining useful life for calculating benefits. Most callers/applicants have either just experienced an expensive mechanical failure and/or cannot pass the Smog Check test for re-registration without costly repairs. Callers typically describe their vehicles as “not worth repairing,” or “the repairs cost more than the car is worth.” In either situation, the potential participant has already made the decision to dispose of the vehicle and is simply shopping for the best option. A vehicle that is not worth repairing has ostensibly little or no resale value, and EFMP may be an attractive option because dismantlers typically offer substantially less for junk vehicles, typically between \$200 and \$600⁶. Retirement of these end-of-life vehicles using EFMP funds does not offer any emission benefit when the owner has already made the decision to scrap the vehicle.

Increasing evidence that a substantial number of end-of-life vehicles were entering the program prompted ARB and BAR staff to launch an assessment of the condition of vehicles participating in the retirement-only element. Appendix A contains the testing roles and responsibilities by agency.

⁶ <http://www.pickapartauto.com> (participating dismantler) and <http://www.junkmycar.com/>

1. Quantitative and Qualitative Assessment

The EFMP Quantitative and Qualitative Assessment was a “proof of concept” effort which was designed to capture a sample of 120 to 160 vehicles retired through the program and to assess the condition of those vehicles at the time of voluntary retirement. The quantitative assessment consisted of subjecting the participating vehicles to a standard Smog Check test using an approved dynamometer and the ASM driving cycle. The purpose of the qualitative assessment of vehicle condition, which included completion of a Checklist (Appendix B) and taking digital interior and exterior photos, was to facilitate an assessment of the value of the vehicle and the likelihood that it could have remained operable if it had not been retired. Assessment was based on a number of indicators of vehicle mechanical functionality and general road-worthiness condition as determined by an expert ARB staff.

Two auto dismantlers – one in Ontario and the other in Rialto – agreed to facilitate the assessment of the EFMP vehicle retirement program. Only dismantlers in the South Coast air basin were considered for this study due to weather and cost considerations.

BAR was responsible for securing dismantler participation and providing roadside team staffing, CAP oversight, and CAP field representative participation. BAR provided technical assistance and support for the project and all equipment normally supplied for roadside ASM testing.

ARB provided equipment necessary to start-up EFMP vehicles, including jump start equipment, tire inflation, and sufficient fuel to keep it idling and/or driving 12 to 15 minutes prior to testing (preconditioning), operating through the ASM test cycle, and driving back to the place where it is stored.

BAR’s roadside teams conducted ASM testing and ARB field representatives conducted inspections and photographed vehicles at the dismantler sites on three consecutive Fridays, beginning Friday, January 18, 2013. Staff conducted the first day of testing at the Ontario facility and the remaining two days at the Rialto facility.

Two BAR CAP field representatives were on-site each Friday to interface with the dismantler and to assist with pre-conditioning of vehicles and transporting them to and from the ASM testing area. The BAR CAP Lead field representative acted as on-site project lead and served as the point of contact for the dismantler. ARB’s on-site project lead facilitated the qualitative assessment, ensured proper vehicle preconditioning, and coordinated driving the vehicles to and from the ASM test site. The BAR roadside team performed ASM testing.

2. Testing Conducted at the Dismantlers

One hundred and sixty-four vehicles in Southern California were assessed as a part of the study. All of the vehicles were assessed qualitatively, and 140 were assessed quantitatively using the standard ASM (roadside Smog Check) dynamometer test. The key findings from this study confirm that the vehicles entering the EFMP are generally high emitters, but are also generally at end-of-life. Sixty percent of the vehicles tested failed the Smog Check test, with 21 percent failing as gross polluters. The emission level at which a vehicle fails as a Gross Polluter varies according to the vehicle type and year. Specific test limits for gross polluters can be found in 16 CCR § 3340.42. For comparison, on average, 25 percent of similarly aged vehicles across the entire statewide fleet fail the Smog Check test, with only six percent failing as gross polluters⁷. The prevalence of high emitters in the sample population is encouraging, but a majority of vehicles tested exhibited some type of mechanical problem that inhibited proper operation and/or prevented them from re-registration due to Smog Check. The lack of remaining useful life in retired vehicles seriously limits the program's effectiveness for reducing pollution.

a. Qualitative Results

The majority of vehicles inspected for this assessment required significant effort to be started and prepared for testing on the dynamometer. After sitting for less than one week, most required jump starting and/or battery replacement. Many required starting fluid or other starting assistance, and many required transmission fluid or coolant in order to function for the duration of the Smog Check test. Five vehicles simply would not start without component replacement which was beyond the scope of this testing.

Results from the Checklists reveal the majority of vehicles could not be used without repairs. Nearly every vehicle required either mechanical and/or emission control repairs to pass Smog Check and re-register, or required mechanical repairs to be functional. Some required both. Roughly 60 percent of the vehicles had expired registration and could not legally be used without repairs to pass the Smog Check test and re-register, and about 30 percent of the vehicles could not physically be used without mechanical repairs⁸. None of the vehicles were evaluated for safety.

Fifty-three of the 164 vehicles tested were 1996 and newer vehicles equipped with On-Board Diagnostic II (OBDII) systems. Of all the 1996 and newer model year vehicles assessed, 53 percent had their "check engine" light on, and an additional 10 percent had a malfunctioning light. These vehicles

⁷ BAR Random Roadside data, 2010-2012

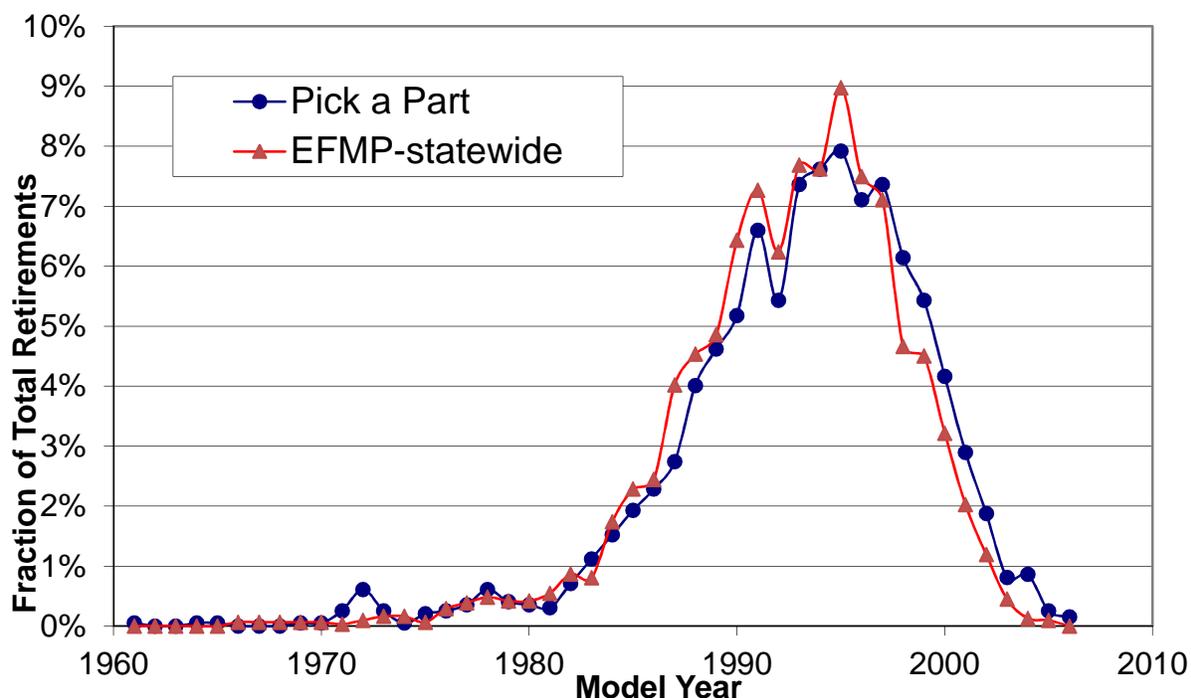
⁸ This analysis conducted for vehicles still displaying license plates and vehicle test histories from <http://www.bar.ca.gov/pubwebquery/vehicle/pubtstqry.aspx>

would have automatically failed a Smog Check inspection and denied registration.

About 60 percent of the vehicles did not display current registration tags, with the majority of the registrations having expired within the last 6 months. Retirement of these vehicles is presumed to provide minimal emission benefits because presumably they would have either been repaired or scrapped anyway when they could not pass their Smog Check test. Although some of these vehicles could have conceivably remained on the road unregistered for some period of time, enforcement of registration and Smog Check requirements is highly effective, particularly in urban areas.

In addition to mechanical and emission control failures that suggest the vehicles have reached end-of-life, the model year profile of vehicles entering the program also suggests high rates of participation by end-of-life vehicles because it is almost exactly the same as vehicles retired naturally during the same time period at the dismantlers where the study was conducted. Figure 2 shows the model year distribution of vehicles retired in December 2012 by EFMP statewide and non-EFMP vehicles naturally retired at the Ontario dismantler (Pick-A-Part) during approximately the same period (dismantler data is based on vehicle inventory on January 18, 2013--vehicles are held for 6 weeks prior to destruction). Appendix C contains summary tables for the qualitative testing.

Figure 2: Distribution by Model Year of Vehicles Retired by EFMP vs. Natural Retirement



Note: the mean age of the EFMP vehicles computed using data from the chart above was 21 years which is nearly the same as the 20 year mean age of naturally retired vehicles.⁹ On average, the program purchased slightly older vehicles that were nearly identical to those naturally scrapped during the same time period.

b. Quantitative Results

Twenty-six of the 140 vehicles experienced difficulty driving at 25 miles per hour (mph) during the ASM (roadside smog check) dynamometer test, an additional 17 vehicles were physically unable to complete the test (could not drive 25 mph), and some vehicles even suffered catastrophic engine or transmission failure during the test.

Sixty percent of the vehicles tested failed the Smog Check test, with 21 percent failing as gross polluters. The emission level at which a vehicle fails as a Gross Polluter varies according the vehicle type and year. Specific test limits for gross polluters can be found in 16 CCR § 3340.42. For comparison,

⁹ Posted vehicle inventory at <http://www.pickapartauto.com/inventory/ontinv.html> on 1/18/13 compared to EFMP participating vehicles during December 2012

25 percent of similarly aged vehicles in the fleet fail, with only 6 percent failing as gross polluters.¹⁰ Appendix D shows pass/fail results by model year.

3. Phone Survey Results

In addition to the physical inspection and testing, staff conducted a brief phone survey, successfully reaching 50 percent of the 164 vehicle owners. The phone survey was intended to inform us about the owner's use of the retired vehicle prior to replacement, why the owner decided to retire the vehicle, what mode of transportation the owner replaced the vehicle with, and how the owner learned about the program.

The phone survey confirmed that the majority of vehicles had either major mechanical problems or could not pass Smog Check without extensive repairs; two-thirds of respondents indicated that the vehicle had problems they judged not worth repairing. About half of participants reached in the survey purchased a replacement vehicle, and the majority of remaining respondents used another vehicle they already owned to replace the retired vehicle. Of those that did purchase a replacement, about 60 percent purchased a vehicle older than the fleet average, almost 20 percent purchased a used vehicle newer than the fleet average, and about 15 percent purchased a new vehicle. Participants typically learned about the program through friends, relatives, a smog check technician, or the Department of Motor Vehicles (DMV). Appendix E contains summary tabulated results of the phone survey.

4. Areas for Further Study and Potential Program Improvement

Annually, more than 1 million vehicles reach end-of-life and are scrapped in California naturally without public assistance.¹¹ The direct emission benefits of this program result from driving that figure higher by permanently removing older vehicles from service early. Emission benefits from vehicle retirement are limited to the relatively short period between when the vehicle is actually retired and when it would have been retired anyway without public assistance. While the EFMP is meeting program goals by purchasing and retiring high emitting vehicles, the emission benefits and cost-effectiveness could be substantially improved by purchasing only vehicles with significant remaining useful life.

Programs designed to generate emission reduction benefits by purchasing older, higher emitting vehicles must balance the emission benefits (remaining useful life) and incentive amount (value of target vehicles). Previously published cost-effectiveness estimates for the EFMP retirement-only element are based on 2 critical assumptions: fleet average emissions by model year and 3 years average

¹⁰ BAR Random Roadside Data 2010-2012

¹¹ EMFAC2011 (<http://www.arb.ca.gov/emfac/>) difference between new model year population and total population growth

remaining useful life¹². Data from the assessment of 164 vehicles raises questions about both of these assumptions. The retired fleet average emissions may be higher than previously estimated and the useful remaining life may be near zero. Although the higher emissions rates imply that the program achieves greater reductions and better cost-effectiveness than estimated, the nearly non-existing remaining life that the car would have been operated implies the opposite. Figure 2 shows that because the distribution of EFMP and normal vehicle retirement ages is nearly identical, the remaining life of an EFMP vehicle approaches zero. This effect overpowers the effect of a higher emissions rate. Thus, based on the findings from this study, EFMP is likely less cost-effective than previously estimated.

The overall benefits of the EFMP retirement-only element could be improved significantly by shifting the program towards vehicles with demonstrable remaining useful life as the program assumes, which may require a higher incentive to match the vehicle's commercial value. However, the program design must avoid simply paying more for the same vehicles.

a. Limit Acceptance of End-of-Life Vehicles

For any vehicle, at some point the cost of repair will exceed the value of the vehicle (for all but a few collector, or special interest vehicles) and it will naturally be retired. Necessary repairs may be mechanical, affecting the physical ability to use the vehicle or they may be emission related, affecting the legal ability to use the vehicle. EFMP purchase of end-of life vehicles offers no direct emission benefit because these vehicles would have been retired anyway. These benefits are therefore not in excess to a baseline without the program. However, there may be some very small ancillary emission benefits due to the fact that vehicles retired in the program are completely destroyed, thereby removing the ability to recycle any of parts to be reused in similar vintage vehicles currently in operation. This could result in the accelerated retirement of similar vehicles due to the limited availability of used replacement parts. Vehicles at end-of life due to emission control system failures should be directed to BAR's CAP program, which is designed to purchase end-of-life vehicles; vehicles at end-of-life due to mechanical failure need to be culled from the program.

A more sophisticated acceptance inspection could mitigate the end-of-life concern in EFMP. While the current acceptance inspection requires the participant to drive the vehicle to the dismantler and demonstrate starting the vehicle engine and 30 feet of forward motion upon arrival, there is no practicable way for the dismantler to verify the vehicle was actually driven to the facility. In addition, and the requirement for 30 feet of forward motion is

¹² Initial Statement of Reasons for Proposed Rulemaking (EFMP) May 8, 2009
[<http://www.arb.ca.gov/regact/2009/carscrap09/carscrapisor.pdf>]

simply too lenient. The 164 vehicle study shows vehicles that barely run and could not reasonably be driven anywhere are being accepted into the program. An improved and objective acceptance test could enhance the quality of participating vehicles, and significantly increase the benefits of the program. The ASM dynamometer test is a good candidate for a universally available, widely accepted, and objective operating test.

Requirement of a Smog Check test would automatically exclude the approximately 10-15 percent of today's participants that cannot at least drive 25 mph for 90 seconds. It might also deter a larger, but unknown, number of owners who know their vehicles do not run properly. Test results would also allow the vehicles to be directed to the appropriate funding source for retirement: CAP or EFMP funds, depending on whether they pass or fail the test. Requirement of any objective drivability test would improve the quality of participating vehicles, but it likely could not be comprehensive enough to completely block end-of-life vehicles. For this reason, an actual Smog Check test is proposed, rather than simply a new drivability requirement.

b. Appropriate Incentive to Attract Desired Vehicles

In addition to blocking unwanted end-of-life vehicles, the program can be improved to better attract high-polluting vehicles that are not end-of-life vehicles, but rather vehicles still in use and, hence, offer the potential for reduction of truly excess emissions. Staff reviews of vehicle classified ads show 99 percent of similar vehicles advertised for sale in running condition are listed above the current incentive of \$1000/\$1500 and have a median price over \$4000¹³. This evidence suggests the current level of incentive is significantly below commercial values and, hence, less likely to attract the desired operational vehicles with remaining useful life. An increase in the incentive amount may be warranted to better reflect the actual value of vehicles intended to be captured by the program. Considering a larger incentive that reflects both the recognition of actual used vehicle market value of an operating vehicle and the added cost of a Smog Check ASM test would improve the current program by providing a better balance between remaining useful life, vehicle value, and cost-effectiveness. Both of these measures should be taken together; an increase in the incentive amount may attract the desired vehicles, but a simple increase in incentive without a mechanism to restrict the quality of participating vehicles would simply result in paying more with little to no additional benefit.

Increasing the basic incentive for retirement may affect other existing retirement programs, in particular, CAP. Thus, BAR and ARB are coordinating efforts on EMFP program improvement to ensure the program

¹³ www.autotrader.com and www.craigslist.com (multiple access dates May to July 2013) for vehicles advertised for sale in the SCAQMD

remain complimentary. It must be recognized that at present, administration of CAP and EFMP is generally indistinguishable to the consumer, and an increase in the incentive amount for EFMP alone could generate some confusion. However, the goals and mandates of CAP and EFMP are different: CAP is designed to purchase end-of-life vehicles, while EFMP is designed to purchase vehicles before end-of-life. Marketplace data indicate a difference in price between these types of vehicles and suggest the incentives should differ. Changes in the eligibility requirements for CAP and/or EFMP will be considered in coordination by the overseeing agencies.

B. Pilot Retirement plus Replacement Voucher Element

The need for cleaner vehicles in the areas of the State hardest hit by air pollution prompted staff to design the pilot voucher program to assist motorists operating the worst polluting vehicles in replacing that vehicle with a newer, cleaner vehicle. The basic concept is to take the existing popular retirement-only element and offer additional funding to owners of known or highly probable gross polluters to retire and replace sooner than it would otherwise occur. The initial funding allocation for this pilot program was roughly \$3 million (approximately 10 percent of available EFMP funds) for the fiscal year. However, few people have taken advantage of the offer of \$3000 (\$4000 low income) to retire their cars and purchase newer, cleaner ones.

Of the 11,372 vehicle owners contacted by mail for participation specifically in the Voucher program, 1,436 responded expressing interest by returning a postage-paid card. Each respondent was subsequently contacted via phone by BAR staff, which then mailed 211 applications to the most interested responders. Ninety-five of those vehicle owners received approval prior to the end of Fiscal Year 2012-2013 and BAR staff provided them with direction how to purchase a vehicle and claim the additional Voucher incentive. Of those 95 approved to participate, 72 elected for retirement only without a replacement voucher, and, as of November 1 2013, only 21 opted to claim the full retirement and replacement incentive. Several factors are at played for resulting in this low participation rate and the staff's analysis of these factors will inform changes for program improvement.

1. Economic Assessment of Program Design

The low response rate led staff to investigate whether the incentives offered were appropriate for the target audiences and vehicles—specifically whether the retirement value was sufficient to cover the value of the retired vehicle that could be received elsewhere, and whether the replacement amount was sufficient to enable low-income participants to purchase a replacement, cleaner vehicle.

a. Incentive Amount Compared to Retired Vehicle Value

As mentioned earlier when discussing the retirement-only element incentive amount, staff review of classified ads indicate the mean advertised price of

vehicles offered for sale in running condition and similar to those solicited for participation in the EFMP retirement plus replacement voucher element range from \$4000 listed by a dealer and \$5000 listed by a private party.¹⁴ That value is approximately equal to, and perhaps slightly less than, the \$3000 to \$4000 total retirement plus voucher incentive amount offered by the program. This generally means the pilot program has, on average, not offered motorists an incentive above the current value of their vehicle to retire it and upgrade in the EFMP program. Considering this, likely program participants were those people who had coincidentally already decided to replace their vehicle and/or outliers at the lower end of the value distribution.

b. Low-Income Motorist Participation

Staff analysis of DMV data suggest that older vehicles tend to be registered in lower income areas. Staff reviewed existing economic data to estimate what resources low-income participants would require to purchase a replacement vehicle, because the overall participation rate in the retirement plus replacement voucher program raises questions of how well the incentives offered correspond with the needs of potential participants.

According to the Bureau of Labor Statistics, the average household expenditure on transportation is approximately 15 percent of gross income¹⁵. This is a fairly constant figure across all income groups, but some individual households spend more, and some spend less. Table 7 shows an estimate of how transportation expenses for a newer, cleaner car might fit into the 15 percent budget for various household sizes at the low-income threshold. Income is shown at the top of the table, followed by an estimate of expenses for a newer, cleaner car in the middle of the table. In the bottom half of the table, the 'fixed' expenses associated with vehicle ownership are subtracted from the 15 percent budget to arrive at a potential amount which could be put towards a monthly car payment. The very bottom of the table shows estimated borrowing ability based on that potential amount followed by the incremental cost beyond that required to purchase newer, cleaner vehicles.

For low-income households of 1 and 2 people, 15 percent of their income does not even cover expenses for gas, insurance, maintenance, etc.; these households either do not own a vehicle, are likely not paying for essential costs such as insurance, registration, and maintenance, or are doing without other household necessities. For a family of 3, low-income is at or below \$42,953. Fifteen percent of that figure is virtually equivalent to the costs of gasoline, insurance, registration, repairs, and maintenance, leaving essentially no remaining income left for a loan payment towards a newer,

¹⁴ www.autotrader.com and www.craigslist.com (multiple access dates May to July 2013) for vehicles advertised for sale in the SCAQMD

¹⁵ www.bls.gov/news.release/cesan.nr0.htm

more expensive vehicle. Larger households have a higher income eligibility limit and, on average, may have some resources to purchase a new vehicle with a loan. Using the assumptions stated here, a household of 4 could theoretically assume a loan for a \$7500 vehicle and a household of 5 could theoretically assume a loan for a \$13,500 vehicle.

These figures suggest that the current incentive amounts are only appropriate for larger households of five or more people. Assistance to smaller households would require substantially larger incentives.

A further confounding issue is that many other public assistance programs such as the Supplemental Nutrition Assistance Program¹⁶ (popularly known as the food stamp program) include an asset test, and some households could be denied benefits from other programs where they currently receive benefits, if they were to participate in the vehicle replacement program that placed a high-value asset (a newer car) in the household.

Obviously, some households may elect to spend more than the average household expenditure on transportation and may choose to participate in the program as currently constituted. However, calculations suggest that low-income participants in the replacement purchase program will generally be outliers. Experience in other states, such as the current “Drive a Clean Machine” program in Texas, also indicates few low income participants have taken advantage of replacement programs¹⁷.

¹⁶ www.snap-step1.usda.gov/fns/tool/tutorial/vehicle_states_chart/states_chart.html

¹⁷ Personal communication on 7/9/13 with Santos Oliveros, Texas Commission on Environmental Quality

Table 7. Estimate of Additional Funds Required for Low-Income Households by Household size and Replacement Vehicle Technology

Household Identification	Household Size	1	2	3	4	5
	Annual Gross Income ¹		\$ 25,133	\$ 34,043	\$ 42,953	\$ 51,863
Monthly Income	Monthly Gross Income	\$ 2,094	\$ 2,837	\$ 3,579	\$ 4,322	\$ 5,064
	15% for Transportation ²	\$ 314	\$ 426	\$ 537	\$ 648	\$ 760

Monthly Transportation Expenses for Newer Vehicle	Liability Insurance ³	\$ 45	\$ 45	\$ 45	\$ 45	\$ 45
	Collision Insurance ^{3,4}	\$ 110	\$ 110	\$ 110	\$ 110	\$ 110
	Registration ^{5,6}	\$ 13	\$ 13	\$ 13	\$ 13	\$ 13
	Maintenance and Repair ^{7,8}	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150
	Fuel ⁹	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200
	Potential Monthly Car Payment (15% of monthly gross, less all other vehicle expenses)	--	--	\$ 19	\$ 131	\$ 242

Loan	Potential Car Loan Amount ¹⁰ (based on potential payment above)	--	--	\$ 1,000	\$ 7,500	\$ 13,500
Potential Incentive Amount Required in Addition to Loan	ULEV (MY 2006) ¹¹ \$15,000	Full Cost	Full Cost	\$14,000	\$7,500	\$1,500
	SULEV (MY 2010) ¹¹ \$18,000	Full Cost	Full Cost	\$17,000	\$10,500	\$4,500
	Hybrid (used) ¹¹ \$19,000	Full Cost	Full Cost	\$18,000	\$11,500	\$5,500
	AT PZEV (Leaf) ¹² \$21,300	Full Cost	Full Cost	\$20,300	\$13,800	\$7,800

¹225% of federal poverty level

²U.S. Bureau of Labor Statistics: Consumer Expenditures Report 9/25/12

³June 2013 Quote from State Farm Automobile Insurance Company for good driver with 15 years' experience

⁴Additional \$60 per month for new vehicle

⁵CA Department of Motor Vehicles Vehicle Registration Fee Calculator website model year 2005 representative vehicle

⁶Additional \$10 per year for each model year newer than 2005, e.g. additional \$80 per year (\$6.67/month) for 2013 vehicle

⁷Edmunds.com True Cost to Own for 8 year old representative vehicle

⁸Costs may be lower for newer vehicles

⁹Assumes 12,000 miles annually at 20 mpg and \$4.00/gal

¹⁰Prime Borrower (credit score >800) at 3% (Bankrate 2.67% average on 6/28/13) for 60 months

¹¹CARMAX mean web advertised price in LA area on 6/28/13

¹²Base model MSRP on Nissan.com on 6/28/13 (after maximum federal incentives)

2. Areas for Further Study and Potential Program Improvement

Staff's initial evaluation has concluded that factors such as low incentive amounts, program complexity throughout the transaction process, and limited outreach may be important contributors to the lack of success of the voucher program.

To address the barriers to low-income participation identified above, staff suggests incentive amounts should be revised upwards. As noted previously, surveys have consistently shown that the total retirement plus voucher incentive amount is approximately equal to the mean and median advertised price of vehicles similar to those being solicited. This generally means the pilot program has on average offered motorists the value of their vehicle to retire it and upgrade, which may not be much of an incentive for most motorists. Likely the only participants were people who had coincidentally already decided to replace their vehicle and/or outliers at the lower end of the value distribution, and thus their participation provided little or no emission benefit. The program must not only offer sufficient financial incentive to overcome the inertia or hassle of making a change and mitigate the added financial burden of an upgrade; it must also overcome hurdles that are not always strictly financial, such as participant distress over the thought of crushing what may be a beloved car.

The current model of direct solicitation in the pilot voucher retirement plus replacement program has proven to be inefficient both in terms of administrative costs and participation rates. The program is effectively making cold calls to offer motorists approximately the value of their vehicles in exchange for scrapping their car and buying a more expensive upgrade.

Instead of simply increasing the replacement incentive, and thus decreasing the cost-effectiveness, and adding additional resources to expand existing outreach efforts, staff is evaluating a structural change where the outreach and function of the program is moved to an arena where people are already motivated to make a change: the vehicle dealership. The current model is limited to inviting an owner of a likely high polluter vehicle (who may not be interested in replacing a vehicle at all) to retire the vehicle and then go to a dealership to replace it; the proposed model would incentivize everyone at the dealership with an older vehicle to make a cleaner replacement choice. All older vehicles could be eligible for retirement with an additional tiered incentive for purchase of more environmentally friendly replacement vehicles. This approach could be coordinated with other programs such as the Clean Vehicle Rebate Project (CVRP) to maximize opportunity for low-income participants.

Many vehicles sold to dealerships as trade-ins are excellent candidates for EFMP retirement. Many trade-ins are relatively high emitters due to age and also have significant useful life remaining. The dealership typically purchases

these vehicles for less than retail resale value and the vehicle is subsequently sold into another household. Those vehicles could potentially be intercepted at a price that is advantageous to both the dealer and the consumer and retired instead of eventually returning to the road under new ownership.

If the program was to be transitioned to one that is implemented at the dealer to leverage car dealers' resources and existing motivation, the program would no longer be necessarily restricted to the highest polluters. Instead, this approach would rely on the proven fact that older vehicles generally pollute more and the replacement program focus would shift from the difficult task of convincing owners of gross polluters to crush their cars to focusing on influencing people who have already decided to make a change towards making a cleaner choice. A significant increase in efficiency could be gained by purchasing vehicles whose owners have already decided to sell, rather than increase the incentive amount sufficiently to convince other owners to sell.

Besides simply leveraging dealer outreach resources, additional benefits from a dealer/EFMP relationship may be possible. BAR could mine the very large data from statewide Smog Check test results, the Vehicle Information Database, to create a 'want list' of specific vehicles, or vehicle types wanted for purchase. The list could be distributed among the participating dealerships for additional targeting of higher emitting vehicles. Every time a vehicle matching the characteristics of vehicles on the list arrived as a trade-in, it could be diverted from the usual auction route or other resale path towards EFMP retirement instead. A sophisticated targeted list could even include mileage, in addition to age, make and model. Additional outreach beyond the dealer could be added to increase the likelihood of reach the owners of those vehicles.

III. Conclusion

EFMP has been successful in retiring high polluting vehicles, but less so in providing incentives for replacement vehicles. Staff has identified aspects of both elements of the program that warrant additional study and can improve the program's ability to reduce emissions and serve low-income consumers.

However, it must be recognized that the issue of incentivizing vehicle retirement and replacement is complex, with many confounding factors. To determine a sensible retirement and replacement vehicle solution, it is recommended that different approaches be evaluated and tested. Course corrections may be necessary, if the initial approach does not prove fruitful.

IV. Next Steps

The conclusions of this study identify key areas for potential program improvement, which can inform program changes to the existing EFMP guidelines. This assessment yielded useful information that played a role in recent legislation which paves the way

for improving the program. Two recent acts of legislation adopted this year, Assembly Bill (AB) 8 and Senate Bill (SB) 459, directly address this program and require ARB adopt new program guidelines by June 30, 2015. The first piece of legislation, AB 8, extends funding until January 1, 2024. The second piece of legislation, SB 459, specifies, among other items, that vehicles should not be eligible for retirement unless they have sufficient remaining useful life. And in addition to a directive that outreach should be increased, the bill provides options to ensure the program adequately serves persons of low- and moderate-income, such as by granting the ability to limit eligibility on the basis of income.

Moving forward, ARB staff will work closely with BAR staff to develop strategies to improve the program and to ensure that all changes are complementary to the Consumer Assistance Program. Development and implementation of the program modifications will require coordination with local air districts, engagement with stakeholders and outreach to interested parties. Consistent with SB 459, staff will emphasize community outreach and developing partnerships with stakeholders in targeted communities. ARB staff will work with stakeholders to develop a draft proposal that will be the subject of public workshops scheduled for early spring 2014 and return to the Board with a proposal for program changes and improvements in mid-2014.

Appendix A: Testing Roles and Responsibilities by Agency

On-site leads were as follows:

On-site Leads	Name
BAR CAP Lead	Howard Pittman
BAR Roadside Lead	Paul Thomas
ARB On-Site Lead	John Ellis
ARB Point of Contact	Gene Seto

The participating dismantlers' names, addresses, and phone numbers are as follows:

Dismantler	Address	Phone Number(s)
Pick-A-Part	2025A South Milliken Avenue Ontario, California 91761	(800) 600-5865 (909) 390-5270
Ecology Auto Parts	221 East Santa Ana Avenue Rialto, California 92316	(909) 877-8707

Agency Roles and Responsibilities:

- I. *BAR roadside team (the quantitative assessment team) responsible for:*
 1. Setting up the mobile ASM unit, calibrating the equipment.
 2. Establishing a queuing area for vehicles waiting in line to be tested.
 3. Ensuring vehicles have been appropriately pre-conditioned prior to testing.
 4. Performing an ASM test on all testable EFMP vehicles stored at the dismantler site and entering test information using the vehicle license plate or vehicle identification number (VIN).
 5. Performing equipment calibration in the morning and at lunch.
 6. Printing two Vehicle Inspection Reports and providing one to ARB at the end of the test.
 7. Notifying ARB's Representative and informing him of the reason if a vehicle arrives in the staging area that the BAR roadside team determines is unsafe to test:
 - a. Unsafe vehicles or vehicles that cannot be tested due to the vehicle's condition marked on the Checklist as "vehicle could NOT be tested due to _____."
 8. Taking down the equipment following testing and ensuring the testing and queuing areas are left in the same condition as they were found.
 9. Informing the CAP Field Representative if an issue requires dismantler clarification or resolution.
 10. Ensuring that all areas impacted by the roadside team are left in the same condition as they were found.

- II. *CAP field representative responsible for:*
1. Establishing and maintaining rapport with the dismantler, including all interface activity on the day of testing.
 2. Securing adequate space for queuing and testing vehicles, and establishing the procedure for moving EFMP vehicles from the yard to the staging area (queue) and returning the vehicles to the yard.
 3. Securing the keys for all EFMP vehicles.
 4. Assisting in the process of starting and warming up EFMP vehicles for testing and driving them to and from the staging area.
 5. Ensuring all areas impacted by the project (BAR roadside testing and ARB qualitative assessment) left in the same condition as they were found.
- III. *ARB Representatives (the qualitative assessment team) responsible for:*
1. Identifying each EFMP vehicle and accurately recording its VIN, CAP ID, make, model, and model year (Checklist).
 2. Checking the vehicle tires (for safety) and windows (Checklist).
 3. Starting the vehicle to begin the warm-up (pre-conditioning) process, recording the odometer reading, and checking the fuel gauge (Checklist):
 - a. If needed, re-charge the battery.
 - b. If needed, add gas to enable vehicle to be tested.
 4. Determining if the vehicle is untestable, i.e., unsafe to test or unable to be started and driven to the staging area (record on checklist if not testable).
NOTE: ARB staff check with BAR roadside before deciding if a vehicle is not testable:
 - a. Check for obvious leaks that could render the vehicle untestable
 - b. Mark vehicle as “vehicle could NOT be tested due to _____” (Checklist).
 5. (While the vehicle is warming up) recording on the checklist the non-mechanical interior and exterior condition of the vehicle (Checklist).
 6. Taking interior and exterior digital photos to visually display – in the best possible manner -- the condition of the vehicle (Checklist):
 - a. Take at least two photos of the interior, including one of the dash and a second that shows the general condition of the seats and flooring
 - i. If severe damage is present, take a photo of the damaged area.
 - b. Take at least four photos of the exterior, including a frontal photo, a photo from the rear end of the vehicle, and a photo of each sides
 - i. If severe damage is present, take a photo of the damaged area(s).
 7. Checking that the vehicle’s emissions control systems is not missing, modified, or tampered (Checklist). An ASM test performed regardless of findings if vehicle is determined to be testable.
 8. Working in tandem with the CAP Field Representative be sure all vehicles are properly pre-conditioned prior to driving the vehicle to the staging area:
 - a. Idled the vehicle for a minimum of 10 minutes at normal idling speed
 - b. At “fast idle,” idle the vehicle for one minute.
 9. Driving all testable vehicles to and from the staging area:
 - a. Check that the MIL (Engine Check Light) is not on (Checklist)

- b. Check that there is no obvious problem with the engine while driving (Checklist)
 - c. Check vehicle transmission while driving (Checklist)
 - d. Check that there is no obvious frontend problem while driving (Checklist)
 - e. Check that the brakes are working while driving (Checklist)
 - f. Check the coolant system (Checklist).
10. Checking if vehicle is smoking when it arrives at staging area (Checklist).
 11. Marking the overall condition of the vehicle (Checklist).
 12. If the roadside test team determines the vehicle is untestable, marking vehicle as "vehicle could NOT be tested due to _____-" (Checklist).
 13. Informing the CAP Field Representative if an issue requires dismantler clarification or resolution.
 14. Ensuring that all areas impacted by ARB are left in the same condition as they were found.
 15. Following the assessment at the dismantlers, combining the Checklist with the printed photos for each vehicle.

Appendix B: Qualitative Inspection Checklist

EFMP Vehicles -- Qualitative Assessment Checklist

Dismantler: _____ Date: _____
 VIN: CAP ID: _____
 Make: _____ Model: _____

Model Year: Odometer Reading: Check if 5 digit odometer

Circle the appropriate description:

1 Tire Condition:	Good-No major defects	Fair - some tread left	Poor - unserviceable
2 Windshield & Glass:	Good-serviceable	Fair - cracks/chips/pitting	Poor - needs replacement
Non-Mechanical:	Good - Minor blemishes- Normal wear	Fair-Substantial wear - cosmetic defects	Poor - Needs major repair or replacement
3 Interior Condition:	<input type="text"/>	<input type="text"/>	<input type="text"/>
4 Exterior Condition:	<input type="text"/>	<input type="text"/>	<input type="text"/>
5 Pictures:	Interior: <input type="checkbox"/>	Exterior: <input type="checkbox"/>	

Mechanical:

Please check the box and circle the applicable issue(s):

Emissions Control

6 Systems: Okay Missing, Modified, Tampered

7 Check Engine Light: Off On Is MIL operational (key "on", engine starts "off")

8 Engine: Okay Problem: won't start, smokes, noise, other

9 Transmission: Okay Problem: won't engage, bad shift, clutch, other

10 Front end: Okay Problem: irregular tire wear, excessive steering play, other

11 Brakes: Okay Malfunctioning

12 Coolant System: Okay Leaks: radiator, hoses, engine

13 Overall Condition: *Good* *Fair* *Poor*

14 Vehicle Testability: *Vehicle was tested* *Vehicle could NOT be tested due to:*

Additional
 15 Observations, if any:

Signature(s): _____

Revised 1/10/13

Appendix C: Summary Tables for Qualitative Testing

Vehicle's Overall Mechanical Condition (as rated by ARB field technician)

Overall Vehicle Condition			
	Good	Fair	Poor
All Vehicles	12%	63%	25%
By location			
Ontario	16%	71%	13%
Rialto	10%	60%	30%

Status of the On-Board Diagnostic Malfunction Indicator Light (MIL) for 1994 and Newer Model Year Vehicles

Status of Malfunction Indicator Light (MIL)			
	ON"	"OFF"	Malfunctioning
1994 and newer model-year vehicles	55%	37%	8%
1996 and newer model-year vehicles	53%	37%	10%

The Top 12 Mechanical Problems

Top 12 Mechanical Problems		
1	Catalytic Convertor (aftermarket part, not certified for vehicle)	26
2	Transmission Problem	14
3	Engine Misfire	11
4	Power Steering	7
5	Vacuum Hose	6
6	Smoking	6
7	Overheating	5
8	Rough Idle	3
9	Engine Noise	3
10	Engine Knocking	3
11	Other disconnect or modified	6
12	Leaking oil or fluids	5

Note: Some vehicles had more than one mechanical problem identified at the time of visual inspection.

Non-Mechanical Condition (as rated by ARB field technician)

Non-Mechanical Condition of the Vehicle			
	Good	Fair	Poor
Interior Condition	16%	37%	47%
Exterior Condition	22%	52%	26%

Appendix D: Summary Table for Quantitative Testing

ROADSIDE EFMP TESTS									
1/18/2013 AND 1/25/2013 AND 02/01/2013									
Vehicle	Odometer Reading				Gross Polluter				
MODEL YEAR	AVERAGE	HIGH	LOW	TESTED	FAILED NON-GP	FAILED GP	FAILED TOTAL	PASS	FAIL RATE
1973	66,914	88,784	28,704	3	0	1	1	2	33%
1975	27,237	27,237	27,237	1	0	0	0	1	0%
1978	46,213	46,213	46,213	1	0	1	1	0	100%
1979	74,635	74,635	74,635	1	0	1	1	0	100%
1981	994	994	994	1	0	1	1	0	100%
1983	2,262	2,262	2,262	1	0	1	1	0	100%
1986	92,864	133,304	52,424	2	1	1	2	0	100%
1987	193,928	310,695	93,710	5	2	0	2	3	40%
1988	203,371	393,443	80,981	4	1	0	1	3	25%
1989	190,512	303,849	3,502	10	8	1	9	1	90%
1990	253,734	253,734	253,734	1	1	0	1	0	100%
1991	186,396	241,034	92,195	11	5	3	8	3	73%
1992	172,470	263,903	15,688	8	4	1	5	3	63%
1993	224,891	322,347	142,883	10	5	3	8	2	80%
1994	189,107	331,410	79,743	9	3	2	5	4	56%
1995	210,168	325,054	114,878	11	4	2	6	5	55%
1996	202,565	285,535	0	10	6	2	8	2	80%
1997	200,153	326,133	89,520	13	2	3	5	8	38%
1998	213,651	294,593	176,743	4	2	0	2	2	50%
1999	167,063	216,093	93,728	4	1	1	2	2	50%
2000	154,842	217,080	0	6	2	0	2	4	33%
2001	112,798	123,195	102,400	2	0	1	1	1	50%
2002	113,040	113,040	113,040	1	0	0	0	1	0%
2003	252,078	252,078	252,078	1	0	0	0	1	0%
TOTAL	182,024			120	47	25	72	48	60%

An odometer reading was collected for each vehicle tested and data is shown in the table above for all vehicles by age group. Data from 1992 and older model year vehicles that have 5-digit odometers may not reflect total mileage, and without the vehicle history might not show the real picture. In the same manner, at least 2 of the newer vehicles (one in model year 1996 and the other in model year 2000) had inoperable odometers. Therefore, in only a few years do the odometer readings reflect the actual mileage driven.

Appendix E: Summary Tables for Phone Survey

At the time you retired your vehicle was it registered with DMV? (The responses to this question do not agree with staff observations; about 60 percent of the vehicles displayed expired tags during testing and inspection.)

#	%	"Yes" or "No"
80	98%	Yes (the vehicle was registered)
2	2%	No (the vehicle was not registered)

What would you have done with your vehicle if you did not retire it through the State program?

#	%	Response
38	46%	Keep it, drive it, and/or fix it to drive
30	37%	Sell it
6	7%	Scrap it
4	5%	Donate it
3	4%	Don't know
1	1%	Register it as "Non-Op"

At the time you retired your vehicle, what did you think it was worth? While 13 percent did not know or did not want to guess, 71 participants stated what they thought their vehicle was worth. (87 percent of these vehicles were purchased by EFMP for \$1500 and 13 percent for \$1000). The following table summarizes the results:

#	%	The owner thought the vehicle was worth:
1	1%	Less than \$200
2	2%	Between \$200 to \$399
3	4%	Between \$400 to \$599
2	2%	Between \$600 to \$799
4	5%	Between \$800 to \$999
23	28%	\$1,000
4	5%	\$1,001 to \$1,299
3	4%	\$1,300 to \$1,499
10	12%	\$1,500
2	2%	\$1,501 to \$1,799
1	1%	\$1,800 to \$1,999
9	11%	\$2,000
3	4%	\$2,001 to \$2,499
1	1%	\$2,500
		Between \$2,501 to \$2,999
1	1%	\$3,000 to \$3,999
		\$4,000 to \$4,999
2	2%	\$5,000 or over
11	13%	Did not know

Was the retired vehicle used to commute to work or school?

#	%	Response
39	48%	Vehicle used to commute to work
21	26%	Vehicle was not used to commute
16	20%	Vehicle used for both work and school
6	7%	Vehicle used to commute to school

How many miles did you commute each way?

Answers to this question suggested that many respondents may not have known or been able to realistically estimate how many miles they drove their [retired] vehicle each way to work.

Was the retired vehicle driven during the morning commute time (7:00 to 9:00 a.m.) or the evening commute time (5:00 to 7:00 p.m.)?

#	%	Response
38	46%	Used during both commute times
31	38%	Not used during either commute time
9	11%	Used during morning commute, only
4	5%	Used during afternoon commute, only

Over the last year before the vehicle was retired, about how many miles per week was the vehicle driven?

Answers to this question suggested that many respondents may not have known the mileage, may have combined the round trip mileage, or guessed in a manner that could not be substantiated by their response to the question, "about how many miles did they commute each way?"

Why did you decide to retire the vehicle?

#	%	Primary Reason
34	41%	The vehicle had major mechanical problems that would be too expensive to repair
19	23%	Owner thought it couldn't pass the Smog Check
12	15%	The vehicle was no longer needed
9	11%	The vehicle was no longer as reliable and you wanted a newer vehicle
4	4%	Other
2	2%	Owner recognized it was time to retire the vehicle
1	1%	Unavailability of replacement parts

Did you purchase a replacement vehicle?

#	%	"Yes" or "No"
43	52%	No (a replacement vehicle was NOT purchased)
39	48%	Yes (a replacement vehicle was purchased)

If you purchase a replacement vehicle, how old was the vehicle you purchased?

#	%	Age in model years
23	59%	<i>Purchased a vehicle 9 model years or older</i>
7	18%	<i>Purchased a vehicle 8 model years old or newer</i>
6	16%	<i>Purchased a new vehicle</i>
3	8%	<i>Did not answer</i>

If you purchased a replacement vehicle, about what was the odometer reading of the replacement vehicle?

What is the estimated average odometer reading for the (non-new) replacement vehicles?	Average Odometer reading
<i>For vehicles that are 8 model years old or newer (if entered)</i>	128,000
<i>For vehicles that are 9 model years old or older (if entered)</i>	120,667
<i>For new vehicles</i>	0

What method of travel do you currently use?

#	%	Primary Reason
39	48%	<i>Used replacement vehicle you purchased</i>
32	39%	<i>Use another car you already owned</i>
5	6%	<i>Carpool or get a ride with someone else</i>
3	4%	<i>Other</i>
1	1%	<i>Use public transit</i>
--	--	<i>Walk or ride a bike</i>

How did the participant learn about the State vehicle retirement program?

#	%	Primary Reason
24	29%	<i>Friends or family</i>
15	18%	<i>Smog Station</i>
13	16%	<i>Internet or Website</i>
12	15%	<i>DMV</i>
4	5%	<i>Repair shop or parts store</i>
4	5%	<i>Dismantler</i>
4	5%	<i>Other</i>
3	4%	<i>You or others you know participated before</i>