State of California
AIR RESOURCES BOARD

STAFF REPORT: INITIAL STATEMENT OF REASONS FOR RULEMAKING

NOTICE OF PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO NEW PASSENGER MOTOR VEHICLE GREENHOUSE GAS EMISSION STANDARDS FOR MODEL YEARS 2012-2016 TO PERMIT COMPLIANCE BASED ON FEDERAL GREENHOUSE GAS EMISSION STANDARDS

Date of Release: January 7, 2010
Scheduled for Consideration: February 25, 2010

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I. INTRODUCTION AND BACKGROUND

Climate change is critically important to California. If left unchecked, its far-reaching consequences will dramatically affect many aspects of our lives including public health, the economy, and the environment. In 2002, in response to the threat of global warming, California adopted AB 1493 (Pavley (Chap. 200, Stats.2002)), which directed the Air Resources Board (ARB) to develop regulations to reduce greenhouse gas emissions from the new passenger vehicle fleet (passenger vehicles are responsible for approximately 30 percent of the total greenhouse gas emissions in California).

In September 2004, the ARB adopted regulations (known as the "Pavley regulations") requiring significant reductions in greenhouse gas emissions from passenger cars and light-duty trucks (i.e., vehicles less than 8,500 lbs. gross vehicle weight) and sport utility vehicles (i.e., medium-duty passenger vehicles). These requirements went into effect with the 2009 model year, and become increasingly stringent through 2016, at which time emissions from the new vehicle fleet will be reduced by 30 percent..

The Pavley regulations reduce greenhouse gas emissions from new passenger vehicles by requiring that each year between 2009 and 2016, manufacturers meet separate, increasingly stringent fleet average greenhouse gas levels based on the size of the vehicles – a numerically lower level for passenger cars and the smallest of the light-duty trucks (PC + LDT1), and a higher level for larger light-duty trucks and medium-duty passenger vehicles (LDT2 + MDPV). The greenhouse gas emissions included within the scope of the Pavley regulations include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). In addition, a manufacturer may earn credits toward complying with the requirements by equipping vehicles with an advanced "low-leak" air conditioning system or one that uses a refrigerant with a lower global-warming potential than HFC-134a, which is used today.

To demonstrate compliance with the fleet average greenhouse gas requirements, a manufacturer must first group the vehicles in its fleet based on similarities, such as engine, transmission type, or weight, that impact greenhouse gas emissions. A manufacturer must then conduct testing to determine the greenhouse gas emissions from each group of vehicles. Using these data, and applying any emission credits that may be earned for vehicles equipped with advanced air conditioning systems, the average grams per mile of "CO_2–equivalent" emissions is calculated for each vehicle group. A manufacturer must then calculate its overall fleet average greenhouse gas level by calculating the sales–weighted average CO_2–equivalent emissions from its PC + LDT1 fleet and from its LDT2 + MDPV fleet. Manufacturers are required to submit emission testing data and sales data in sufficient detail to allow staff to verify a manufacturer's fleet average greenhouse gas levels for each model year.

II. DESCRIPTION OF PUBLIC PROBLEM, ADMINISTRATIVE CIRCUMSTANCE PROPOSAL IS INTENDED TO ADDRESS; PROPOSED SOLUTIONS AND RATIONALE FOR EACH REGULATORY PROVISION

Since Board approval in 2004, motor vehicle manufacturers and their trade associations have challenged the Pavley regulations in numerous federal and state court proceedings and have opposed California's request to U.S. EPA (or EPA) for a required waiver of preemption under the federal Clean Air Act to allow California to enforce its adopted standards.

On May 19, 2009, challenging parties, automakers, California, and the federal government committed to a series of actions that would resolve these current and potential future disputes over the standards through model year 2016. In summary, the U. S. Environmental Protection Agency and the U. S. Department of

Transportation committed to adopt a federal program to reduce greenhouse gases and improve fuel economy, respectively, from passenger vehicles, to achieve equivalent or greater greenhouse gas benefits as the Pavley regulations for the 2012–2016 model years. (The Notice of Proposed Rulemaking (NPRM) on the national program was issued on September 28, 2009. 74 Fed.Reg. 49454 (September 28, 2009).) Manufacturers committed to ultimately drop current, and forego similar future legal challenges for the 2009 through 2016 model years, including challenging a waiver subsequently granted by EPA on June 30, 2009. 74 Fed.Reg. 32744 (July 8, 2009). For its part, California committed to: (1) revise its standards to allow manufacturers to demonstrate compliance with the fleet average greenhouse gas emission standard by "pooling" California and Section 177 State vehicle sales; (2) revise its regulations for 2012 through 2016 model year vehicles such that compliance with equivalent EPA-adopted greenhouse gas standards would serve as compliance with California's standards; and (3) revise its standards as necessary to allow manufacturers to use emission data from the federal Corporate Average Fuel Economy (CAFE) program to demonstrate compliance with the Pavley regulations. Regulatory changes that implement the first and third commitments made by California were approved by the Board at a public hearing on September 24, 2009. The current proposed amendments to California's passenger motor vehicle regulations, which are discussed in greater detail below, address the second commitment made by California.

III. SUMMARY OF RECOMMENDED ACTION

California committed to accept national program compliance for model years 2012 through 2016 with the understanding that it would provide equivalent or better overall greenhouse gas reductions nationwide than California's program (which has been adopted by 13 other states and the District of Columbia) standing alone. Consistent with this understanding, ARB submitted comments to EPA on the NPRM that express concerns that the proposed National Program might not meet these expectations. Specifically, two issues need to be addressed by U.S. EPA in the Final Rule to ensure California's continued support for the National Program. These concerns are discussed in greater detail below. It should also be noted that adoption of this proposal does not eliminate the reporting requirements for California that have already been adopted by the Board prior to this hearing. Specifically, a manufacturer will still be required to submit emission testing data and sales data for California each of the Section 177 states in sufficient detail to allow staff to verify the manufacturer's average greenhouse gas levels for each model year.

In this rulemaking, staff is proposing adoption of the proposed national passenger motor vehicle greenhouse gas regulations for the 2012 through 2016 model years, as an alternative compliance option to the Pavley regulations, on the assumption that U.S. EPA will address ARB's concerns in the Final Rule for the National Program, due to be released in March, 2010. Upon release of the Final Rule, Board staff will issue 15-day changes, which will finalize California's adoption of this rule. If U.S. EPA does not address ARB's concerns in their Final Rule, staff will return to the Board to ask direction as to how to proceed.

Issues of Concern with the Proposed National Greenhouse Gas Program

U.S. EPA Must Maintain the Stringency of the Greenhouse Gas Standards Proposed in the NPRM in the Final Rule

As previously mentioned, back in May, when California made a commitment to allow manufacturers to demonstrate compliance with the Pavley regulations for the 2012 through 2016 model years by demonstrating compliance with a national greenhouse gas program, it was with the full expectation that the emission benefits of our program would be maintained. This was part of the commitment made by EPA to California, otherwise, we would not have agreed to accept the National Program. The greenhouse gas emission standards currently contained in the NPRM are consistent with our understanding. Thus it is critical to the agreement that EPA upholds its commitment to California and does not weaken the proposed standards and the program's reduction in GHG emissions in the Final Rule.

National Advanced Technology Vehicle Credit Provisions for Electric Vehicles, Plug-in Hybrid Electric Vehicles, and Fuel Cell Vehicles

EPA believes that electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCVs) have the potential to reduce greenhouse gases more significantly than any commercially-available technologies, and ARB fully agrees with this. EPA is, therefore, proposing that additional credits be given to these advanced technologies in the 2012 through 2016 model years, in order to encourage their development.

These advanced technology credits would take the form of multipliers in the range of 1.2 to 2.0, allowing an EV, PHEV, or FCV to count as more than one vehicle during the calculation of a manufacturer's fleet average CO_2 level to determine compliance with the applicable footprint-based standard. These multipliers would not be applied when calculating the actual footprint-based CO_2 standard to which a manufacturer must comply. (Footprint is determined by multiplying the vehicle's wheelbase by the vehicle's average track width. The greenhouse gas standards being proposed by EPA are expressed as mathematical functions that depend on vehicle footprint.)

In addition, EPA is proposing to assign a value of zero grams per mile of CO_2 for EVs and for the electric portion of PHEV operation, when including these vehicles in a manufacturer's average. EPA acknowledges that there are upstream CO_2 emissions from electricity generation, which are produced during EV and PHEV charging. Similarly there are upstream emissions from hydrogen production for FCVs. However, EPA feels that the significant greenhouse gas emission reductions that may be achieved from this technology outweighs the dis-benefits of ignoring these emissions within this timeframe.

Staff agrees with EPA's goal of encouraging the early development and production of advanced technology vehicles. However, staff believes that the

approach proposed by EPA could allow manufacturers to earn unreasonably high numbers of credits, thereby potentially reducing the overall GHG reductions achieved by the national program and delaying the implementation of improved greenhouse gas technologies on conventional vehicles.

Consequently, staff believes that EPA's Final Rule must strike a better balance between advanced vehicle development and protecting greenhouse gas reductions by assigning average lifecycle emissions to these vehicles, and restricting credits to EVs and FCVs only.

Other Issues

Other issues of concern to ARB include our belief that it is important that EPA's Final Rule include a backstop measure to guarantee that emission reductions are achieved, regardless of any unforeseen changes in the fleet mix. Also, ARB does not support the provisions for allowing manufacturers to earn early credits prior to implementation of the National Program that are currently proposed in the NPRM unless such credits are accrued by exceeding California's requirements in California and the Section 177 states. Restricting a manufacturer's ability to earn early credits in this way will assure that credits earned in the early years do not provide a windfall for vehicle manufacturers and that the emission reductions envisioned for the National Program are realized. We expect that EPA will carefully consider California's concerns when they finalize their greenhouse gas rulemaking.

Offsetting Greenhouse Gas Debits from the California Program

Staff does not anticipate that any manufacturer will accumulate compliance debits from California's greenhouse gas regulations in the 2009 and 2010 model years, and for most manufacturers, none will be incurred in the 2011 model year either. However, in the unlikely event that debits are incurred they must be equalized within the five model years provided in the regulation, at which time we expect all or most manufacturers to participating in the federal program with its own scheme for the generation of credits and debits. In order to ensure that debits incurred in the 2009 through 2011 model years are equalized, staff is proposing that a manufacturer be required to either carry a zero greenhouse gas debit balance at the end of the 2011 model year or submit a plan for offsetting any greenhouse debits incurred in California, the Section 177 states, and the District of Columbia using credits earned under the National greenhouse gas program before it may opt into the federal program. Upon approval of the plan by the Executive Officer, the manufacturer will be allowed to opt into the National greenhouse gas program.

IV. AIR QUALITY, ENVIRONMENTAL, AND ECONOMIC IMPACTS

A. Air Quality

While the proposed national passenger motor vehicle greenhouse gas standards are of equal stringency to the Pavley regulations in the 2016 model year, they are less stringent than the Pavley standards in the 2011 through 2015 model years. Consequently, allowing manufacturers to comply with the Pavley regulations in the 2012 through 2015 model years by demonstrating compliance with the national regulations in these model years will result in slightly less reduction in greenhouse gas reductions within California and the individual states that have adopted California's program. However, staff believes that nationwide, greenhouse gas emission reductions from the proposed national GHG program – assuming California's comments on the proposed rulemaking are affirmatively addressed – will be greater than if the Pavley program were implemented without the national GHG program. This occurs because although the proposed national standards are less stringent than California's in model years 2012 through 2015, the national standards apply to more than twice as many vehicles than are subject to the Pavley regulations.

Staff calculated the comparative GHG benefits of the Pavley rules and the federal program in calendar years 2016 and 2020 relative to a baseline year of 2002. ARB's approach was to employ GHG emissions rates that are the basis of California's Pavley regulation and the proposed federal program. For the federal program, staff used the values from table 1.D.2-5, "Projected Fleet-wide Emission Levels Under the Proposed Footprint-Based Standards (g/mi)," in the NPRM. 74 FR at 49470 (September 28, 2009). This table lists the projected national fleet emission levels taking into account the impact of credits available under the national program for flex-fuel vehicles and the temporary lead time allowance standards. The estimated federal GHG emission rates could then be compared to those established by California's Pavley rules for new vehicles sold between 2012 and 2016. The effectiveness of the Pavley and the federal program was determined by calculating the percent reduction in GHGs achieved for each new model year relative to the 2002 baseline.

ARB staff then calculated the tons of greenhouse gases reduced in California under the proposed federal program compared to those that occur under the Pavley rules by applying the new vehicle model year-specific GHG reductions to CO_2 tons per day emission estimates output from the EMFAC on-road emissions inventory model. The EMFAC model reflects the current and projected vehicle fleet in California, based on data from the Department of Motor Vehicles, the Smog Check inspection and maintenance program, and local and regional transportation planning agencies. The emission rates in the EMFAC model are derived from testing of in-use vehicles. Documentation and downloadable copies of the EMFAC model are available at http://www.arb.ca.gov/msei/onroad/latest_version.htm.

To develop estimates of GHG reductions for the other 49 states, staff scaled California ton reductions from EMFAC using state-specific motor vehicle gasoline consumption data as a surrogate. For the federal fleet mix, staff used the fleet mix

shown for model years 2012-2016 in the spreadsheet EPA-HQ-OAR-2009-0472-0085 from the Public Docket for the national program. Table 1 compares the annual benefits of the Pavley program in California and California and the 177 states with the proposed national GHG program in these states for model years 2016 and 2020.

Table 2 compares the annual benefits of the Pavley program in California, California and the 177 states, and national fuel economy requirements for 2012 through 2016 in the rest of the states with the proposed national GHG program applied nationwide for model years 2016 and 2020. The national fuel economy requirements were derived from projecting a linear increase in fuel economy from 2011 to 2020 in order to meet the 35 miles per gallon requirement of H.R. 6, the Energy Independence and Security Act of 2007.

Table 3 compares the cumulative benefits of the Pavley program in California and California and the 177 states with the proposed national GHG program in these states for model years 2016 and 2020.

Table 4 compares the cumulative benefits of the Pavley program in California, California and the 177 states, and national fuel economy requirements for 2012 through 2016 in the rest of the states with the proposed national GHG program applied nationwide for model years 2016 and 2020. The national fuel economy requirements were derived from projecting a linear increase in fuel economy from 2011 to 2020 in order to meet the 35 miles per gallon requirement of H.R. 6, the Energy Independence and Security Act of 2007.

As expected, due to the slightly relaxed federal standards for model years 2012-2015, the benefits of the proposed national program are slightly lower in California and the other states that have adopted the Pavley program. However, as shown in Tables 2 and 4, when the proposed national GHG standards are applied nationwide, greater reductions are achieved.

Table 1 – Annual Greenhouse Gases Reduced (MMT[a])
California and 177 States

Region	Year	***Scenario 1*** CA + 13 177 States Pavley Standard	***Scenario 2*** Proposed National GHG Standard
California	2016	15	12
	2020	26	23
California and 13 177 States[b]	2016	45	36
	2020	79	68

[a] Million Metric Tons

[b] Includes states that have adopted California's standards (Arizona, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and the District of Columbia).

Table 2 – Annual Greenhouse Gases Reduced (MMT[a])
Nationwide

Region	Year	***Scenario 1*** CA + 13 177 States:Pavley Standard Other States: National Fuel Economy Program	***Scenario 2*** Proposed National GHG Standard
Nationwide	2016	81	103
	2020	155	197

[a] Million Metric Tons

Table 3 – Cumulative Greenhouse Gases Reduced (MMT[a])
California and 177 States

Region	Year	***Scenario 1*** CA + 13 177 States: Pavley Standard	***Scenario 2*** Proposed National GHG Standard
California	2016	44	33
	2020	132	109
California and 13 177 States[b]	2016	133	99
	2020	401	325

[a] Million Metric Tons
[b] Includes states that have adopted California's standards (Arizona, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and the District of Columbia).

Table 4 – Cumulative Greenhouse Gases Reduced (MMT[a])
Nationwide

Region	Year	***Scenario 1*** CA + 13 177 States:Pavley Standard Other States: National Fuel Economy Program	***Scenario 2*** Proposed National GHG Standard
Nationwide	2016	241	286
	2020	793	941

[a] Million Metric Tons

B. Economic Impact

There are no additional costs due to this amendment. The proposed amendments will provide the approximately thirty vehicle manufacturers subject to the Pavley regulations with an optional method for complying with them. Staff expects that the proposed amendments could reduce the cost of compliance for vehicle manufacturers that choose to meet the alternative requirements. A manufacturer may also choose to comply with the regulations as they currently are written, in which case there would still be no economic impact from these amendments on that manufacturer.

There will be no fiscal impacts to the State from the proposed amendments, either in terms of tax revenue or personnel requirements. These amendments are not expected to change vehicle prices in a way that would alter vehicle purchase decisions. The inclusion of alternative compliance options does not substantially increase the volume of data to review or the enforcement burden to the ARB that would justify hiring additional staff.

C. Alternatives

1. Evaluation of alternatives considered and reasons for rejecting them

Staff considered the following regulatory alternative to the proposed amendments.

Do not amend current Pavley regulations. This alternative would require vehicle manufacturers to produce lower emitting vehicles for California and its partner states, and could result in different, higher emitting vehicles being sold in the remaining states, depending on if or how the final EPA standards are adopted.

This alternative was rejected because California committed to making the proposed amendments as part of the commitments made by California, the federal government, and other parties on May 19, 2009, as discussed in Section II. These commitments were based on the belief that the national program would result in greater nationwide GHG emission reductions, and possibly lower compliance costs to vehicle manufacturers due to a single nationwide regulation.

2. Description of reasonable alternatives considered that would lessen impact on small business

No alternatives were considered to lessen the impact on small business, because small businesses will not be impacted by these proposed amendments.

3. Evidence relied upon to support initial determination in the notice that the regulation will not have a significant adverse economic impact on business

The proposed amendments will not significantly affect businesses, since vehicle purchase price and model availability will not be adversely impacted. Vehicle manufacturers will not be required to expend any money to comply with the new requirements. Rather, this proposal could save them money.

4. Justification for adoption of regulations different from federal regulations contained in the Code of Federal Regulations

The proposed amendments do not adopt regulations that are substantively different than federal regulations. Climate change threatens California's public health, water resources, agricultural industry, ecology, and economy. Due to these and other threats, AB 1493 (Chapter 200, Statutes of 2002 (Pavley)) specifically directed the Air Resources Board to adopt regulations to control greenhouse gas emissions from

motor vehicles. At that time, there were no federal regulations to reduce greenhouse gas emissions from passenger vehicles. In September, 2004, the ARB approved the nation's first passenger vehicle greenhouse gas regulations (Pavley regulations). While as discussed above EPA has proposed a National greenhouse gas program there currently is no federal GHG emission standard for motor vehicles.

These proposed amendments do not replace California's own passenger motor vehicle greenhouse gas regulations. (Historically, California has maintained a separate and distinct program for controlling emissions from motor vehicles, which is consistent with the intent of Congress in their adoption of the Clean Air Act.) Rather, these proposed amendments will allow a manufacturer to demonstrate compliance with our greenhouse gas regulations in the 2012 through 2016 model years by demonstrating compliance with the national passenger motor vehicle greenhouse gas regulations. (The final rule for the national program is expected to be released in March, 2010.) For any manufacturer that elects to comply with the national program within this timeframe, there are no substantive differences between the California requirements and the National Program. For any manufacturer that elects to comply with the original Pavley regulations within this timeframe, the proposed amendments will have no effect.

V. ENVIRONMENTAL JUSTICE

"Environmental Justice" is defined as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Government Code §65040.12(c).

Staff does not believe that this proposal will have any adverse environmental justice impacts because the stringency of California's passenger vehicle greenhouse gas requirements is not affected by the proposed changes to the regulations. Furthermore, since the criteria pollutant regulations must still be met on an individual state-by-state basis, there will be no increase in criteria pollutants in California due to mix shifting of vehicles between California and other states.

VI. LIST OF APPENDICES

Appendix A: Proposed Regulation Order

Appendix B: Proposed Amendments to the California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles

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