

ARB's strategy for passenger vehicle regulation under AB 32

by Kenneth C. Johnson

Passenger vehicles account for about one-quarter of California's greenhouse gas emissions, and represent one of the greatest opportunities for cost-effective emission reductions. This is evidenced by ARB's Scoping Plan analysis, which indicates that the established Pavley regulations ("Pavley 1") would achieve 27.7 MMT CO₂E reduction in 2020 at a projected cost of \$50/MT, while yielding savings of \$411/MT. The net savings would be \$361/MT. New regulatory measures proposed in the Scoping Plan ("Pavley 2" or vehicle feebates) are expected to achieve an additional 4 MMT reduction over Pavley 1 at an incremental cost of \$149/MT, with savings also of \$411/MT, resulting in incremental net savings of \$262/MT.¹

These projections indicate that there is a substantial potential for further emission reductions that would be cost-effective according to the AB 1493 cost-effectiveness criterion ("Economical to an owner or operator of a vehicle, taking into account the full life-cycle costs of a vehicle"). The savings projections are premised on a \$3.673/gallon fuel price (2007 dollars) in 2020² and a 5 percent discount rate³. Based on the AB 1493 criterion, further emission reductions beyond the Scoping Plan projections would be cost-effective at a fuel price in excess of \$1.33/gallon in 2020.

The Pavley 1 regulations were constructed to be feasible and cost-effective at a fuel price of \$1.74/gallon, but would not have changed even at a higher price of \$2.30/gallon because ARB's feasibility criteria were more constraining than cost effectiveness.⁴ Almost all hybrid vehicle options considered would have been within the cost-effectiveness threshold at \$2.30/gallon⁵, but were not deemed to be feasible within

¹ based on the Draft Scoping Plan, Economic Analysis Supplement, Appendix 1, Table I-2 (Pavley 1 and 2) and Table I-3 (feebates) [http://www.arb.ca.gov/cc/scopingplan/document/economic_appendix1.pdf]

² Draft Scoping Plan, Economic Analysis Supplement, Appendix 1, Table I-1 [http://www.arb.ca.gov/cc/scopingplan/document/economic_appendix1.pdf]

³ "A uniform real discount rate of five percent was used for all measures ...", Draft Scoping Plan, Economic Analysis Supplement, Appendix 1, page I-3 [http://www.arb.ca.gov/cc/scopingplan/document/economic_appendix1.pdf]

⁴ "Almost all of the technology packages evaluated by staff paid for themselves over the lifecycle of the vehicle at the assumed fuel price of \$1.74 per gallon. The choice of the technology packages to use for setting the near term and mid term standards was driven more by technical lead time and developmental constraints rather than by payback concerns. Thus although using a fuel price of \$2.30 per gallon reduces the payback period and increases the net present value for all technology packages, this change by itself would not allow staff to set a more stringent standard. Rather, the limiting factor on the standard is the availability of technology packages for widespread deployment." [from August, 2004 ISOR, page xi, <http://www.arb.ca.gov/regact/grnhsgas/isor.pdf>]

⁵ based on Tables 5.2-5 through 5.2-9 in the September, 2004 ISOR Addendum, pages 3-8 [<http://www.arb.ca.gov/regact/grnhsgas/addendum.pdf>] This data is replicated in the Excel spreadsheet

the time frame of the regulation⁶. However, a feebate program could more effectively incentivize advanced technologies such as hybrids because feebate regulations would not rely on predetermination of feasibility limits.

ARB staff has stated that the Pavley 1 feasibility and cost-effectiveness criteria will also be applied to Pavley 2⁷. However, the Scoping Plan's 4 MMT reduction estimate for Pavley 2 was apparently not based on any analysis of feasibility and cost effectiveness⁸ and the feebate analysis simply replicated the Pavley 2 projections⁹.

In December, 2008, ARB initiated an \$800,000 research project to investigate the potential of vehicle feebates to either supplant or supplement the Pavley regulations¹⁰, and public workshops on Pavley 2 are expected to start in July, 2009. In view of the substantial cost savings that can accrue from vehicle efficiency technologies, either or both of these programs could potentially achieve emission reductions well beyond the 4 MMT projected in the Scoping Plan. However, there is little incentive to seek such further reductions because they would simply result in a transfer of emission allowances to other capped sectors without affecting statewide emissions. The only benefit would be reduced CO2 trading prices below the currently-projected \$10/MT¹¹.

There is a fundamental policy inconsistency between the Pavley regulations and ARB's planned cap-and-trade system. The Pavley regulations were developed under the AB 1493 mandate requiring "the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles" (Sec. 43018.5), and AB 32 contains similar language requiring "the maximum technologically feasible and cost-effective greenhouse gas emission reductions from sources or categories of sources ..." (Sec.

accompanying the Scoping Plan solicitation response #5, *Attribute-Based Vehicle Feebate* [<http://www.arb.ca.gov/cc/scopingplan/submittals/transportation/transportation.htm>]

⁶ "At this time, staff is projecting that high volume production of advanced hybrids will not be accomplished before the 2017 timeframe. The complexity of these vehicles and the significant increase in resources to engineer and fully develop them will require a more gradual roll out than for more conventional technologies. ..." [ISOR, page 56, <http://www.arb.ca.gov/regact/grnhsgas/isor.pdf>]

⁷ "Concerning the policy criteria for Pavley 2, we plan to apply essentially the same criteria for Pavley 2 (technical feasibility and cost-effectiveness) that was used in drafting the Pavley 1." [7/29/2008 email from Paul Hughes (ARB, Manager, LEV Implementation Section) to Ken Johnson]

⁸ "... There was no attempt to determine what technology would be needed to meet this [preliminary Pavley II] goal (other than a general acknowledgment that HEVs are a promising technology for that timeframe), what rate of technology implementation would be required and could be accomplished, and what cost would be accrued to the manufacturer and the consumer. Determination of these factors is the process we are now beginning ..." [7/31/2008 email from Paul Hughes to Ken Johnson]

⁹ Compare Table I-2 (Pavley 2) and Table I-3 (Feebates) in the Draft Scoping Plan, Economic Analysis Supplement, Appendix 1. [http://www.arb.ca.gov/cc/scopingplan/document/economic_appendix1.pdf]

¹⁰ *Potential Design, Implementation, and Benefits of a Feebate Program for New Passenger Vehicles in California* [<http://www.arb.ca.gov/research/econprog/feebates/feebates.htm>]

¹¹ Scoping Plan, page 75 [<http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>]

38560). But the cap-and-trade system, as currently envisioned in the Scoping Plan, is constructed to only achieve the minimum reductions needed to achieve the 2020 limit. As a result of this inconsistency, any further emission reductions that are achieved with motor vehicles pursuant to Sec. 38560 would be neutralized by greater emission allowances in other sectors.

At this stage, legislative oversight is needed to ensure that ARB's AB 32 implementation conforms to the statute as intended, particularly with respect to passenger vehicle regulation. ARB's response to the following questions will help the legislature understand the current direction ARB is pursuing. (These issues have been raised with individual staff members, but not with the Board or ARB's legal counsel.)

- (1) Will the new passenger vehicle regulations (Pavley 2 and/or feebates) be constructed to achieve maximum technologically feasible and cost-effective greenhouse gas emission reductions according to some defined feasibility and cost-effectiveness criterion?
- (2) If so, will the regulations be based on, or consistent with, the feasibility and cost-effectiveness criteria defined in AB 1493 (and if not, what criteria will apply)?
- (3) The Scoping Plan projected a 4 MMT incremental emission reduction from Pavley 2 or feebates (additional to Pavley 1). Was this projection based on an analysis of feasibility and cost effectiveness, and if so, according to what criteria?
- (4) If passenger vehicle emission reductions significantly beyond the 4 MMT projection can be achieved, would such reductions translate into reduced statewide emissions, or would they only result in a transfer of emission allowances from transportation to other sectors without affecting statewide emissions?

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