

Comments for AB 32 Scoping Plan Workshop of September 26, 2008¹, relating to the Draft Scoping Plan Supplemental Evaluations²

Submitted by Ken Johnson (unaffiliated) to ARB on September 26, 2008

At the September 26 workshop, staff indicated that public comments relating to the Supplemental Evaluations will not be considered in the final Scoping Plan proposal; but comments are nevertheless requested to help staff identify any serious errors or omissions that might need to be addressed in a supplemental evaluation prior to the Board's November meeting. One such omission relates to passenger vehicle regulation.

The Draft Scoping Plan identifies vehicle feebates as a recommended Emission Reduction Measure to supplant the Pavley regulations in the event that the latter cannot be implemented. The fee schedule would "be designed to obtain cumulative emission reductions equivalent to those that would have been achieved under the Pavley regulations".³ The plan also contemplates a broader role for feebates to complement Pavley and create "an incentive for manufacturers to improve vehicles beyond what would be required by Pavley".⁴ However, staff has made no attempt to quantify the additional emission reductions that could be achieved with feebates.

The Supplemental Evaluations only characterize the performance of a feebate system that is designed to be equivalent to the draft Pavley 2 regulation. (Note that the Feebate data in Table I-3 of the Evaluation Supplement is identical to the Pavley 2 data in Table I-2.) Staff has made no attempt to characterize the "maximum technologically feasible and cost-effective reductions in greenhouse gas emissions" from passenger vehicle sources that could be achieved with a feebate program. The feebate incentive assumed in the Supplemental Evaluation (\$15-20 per gm-CO₂/mi) is about a factor of three lower than the cost-effectiveness limit defined by the Pavley criterion. (This will be explained below.) Moreover, the Pavley 2 projections in the Supplemental Evaluation are also not based on any analysis of feasibility and cost effectiveness⁵.

Staff has proposed Pavley 2 as an Emission Reduction Measure, while categorizing feebates (to supplement Pavley) as one of the "Other Measures Under Evaluation". But without any meaningful economic analysis of feebates, staff has no

¹ [<http://www.arb.ca.gov/cc/scopingplan/meetings/meetings.htm>]

² [<http://www.arb.ca.gov/cc/scopingplan/document/draftscopingplan.htm>]

³ Draft Scoping Plan, pages 21 and C-25

⁴ Draft Scoping Plan, page C-37

⁵ "The[Pavley 2 standard] values for 2020 were derived by simply applying a measurable decrease in emissions from 2017-2020 such that a 4 MMT reduction was achieved in 2020. There was no attempt to determine what technology would be needed to meet this 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 communication from Paul Hughes, ARB, LEV Implementation Section).

grounds for favoring Pavley 2 over feebates or for committing to any regulatory strategy for passenger vehicles.

Since feebates are being contemplated to either supplement or supplant Pavley, the feebate analysis should be based on the Pavley cost-effectiveness criterion (i.e., “Economical to an owner or operator of a vehicle, taking into account the full life-cycle costs of a vehicle”⁶). The Supplemental Evaluations quantify the benefits of feebates and Pavley based on a gasoline price of \$3.673/gal (2007 dollars, Table I-1). Assuming that the price stays at this level over the 16-year life of a vehicle purchased in 2020, the fuel consumed by the vehicle will have a discounted present value of \$2.49/gal at the time of purchase (based on a 5% discount rate).⁷ This means a \$2.49 investment in vehicle efficiency technology, to reduce fuel consumption by 1 gallon over the vehicle lifetime, will be cost-effective based on fuel savings alone.

If the vehicle’s lifetime VMT is 200,000 miles, then the \$2.49/gal valuation equates to \$55.7 per gm-CO₂/mi⁸. This represents the feebate incentive level corresponding to the Pavley cost-effectiveness limit (at the assumed \$3.673/gal fuel price). By contrast, the \$15-20 per gm-CO₂/mi assumed in the Supplemental Evaluation would represent the maximum cost-effective incentive if gasoline prices stayed in the range of only \$1.00/gal to \$1.32/gal over the next quarter century.

Since the feebate and Pavley-2 analyses both show the same emission reduction (4 MMT relative to Pavley 1), the same costs (594 \$M), and the same savings (1642 \$M), the Pavley-2 emission market price would also be expected to be the same (\$15-20 per gm-CO₂/mi). Although a much higher price incentive (\$55.7 per gm-CO₂/mi) would be cost-effective, it is not possible to predict in advance what vehicle technologies will be feasible and cost-effective after 2020 or what emission standard would result in a market price at the cost-effectiveness limit, so the 4MMT may be a reasonable estimation of what Pavley 2 could achieve in 2020. All of these estimates are very tentative because there appears to have been no progress on the Pavley 2 program design since the March, 2006 Climate Action Team report⁹.

The Pavley 1 regulations (and lack of progress on Pavley 2) illustrate the difficulty of trying to regulate vehicle emissions with a pure standards-based approach. The Pavley 1 regulatory process began in 2002, took two years to complete, and allowed five years for manufacturer retooling plus another seven years for the regulations to phase

⁶ AB 1492 (Pavley, 2002), § 43018.5 (i)(2)(B)

⁷ The discount factor (0.677) is based on the following formula: $\frac{1 - (1 + i)^{-n}}{i n}$

wherein i is the annualized discount rate (5%) and n is the vehicle lifetime (16 years).

⁸ This is calculated as follows: $\frac{(\$2.49 / \text{gal})(200,000 \text{ mi})}{(8940 \text{ gm} / \text{gal})} = \$55.7 / (\text{gm} / \text{mi})$

⁹ [http://climatechange.ca.gov/climate_action_team/index.html] The report stated (on page 42) that “Assuming that the new standards call for about a 50 percent reduction, phased in beginning in 2017, this measure would achieve about a 4 MMT reduction in 2020.”

in. It will then take about another decade for regulation-compliant technologies to pervade California's vehicle stock; so the total lead time from regulation inception to full deployment of compliant technologies is about a quarter century. Pavley 2 would follow a similar development pattern, but lagging by 4 years (although to keep a similar schedule the Pavley 2 process would have had to start in 2006).

A feebate program could be more effective at inducing early emission reductions before 2020, as well as achieving greater reductions in the long term. Staff should make a reasonable effort to estimate the potential benefits of vehicle feebates and should not bias the Scoping Plan recommendations for Pavley 2 or against feebates when there is no analysis to support the recommendations.