

Comments for AB 32 Scoping Plan Workshop of July 17, 2008¹, relating to the Draft Scoping Plan² (Transportation)

Submitted by Ken Johnson (unaffiliated) to ARB (copy to ETAAC and EJAC) on August 7, 2008

These comments pertain to two transportation measures identified in the Draft Scoping Plan: Pavley II and Feebates. (The February, 2008 ETAAC report³ also identified Feebates as a recommended policy option; and the EJAC will be recommending that Feebates be adopted as a proposed measure⁴.) My primary recommendations are:

- (1) Provide missing information in the final Scoping Plan.
- (2) Base the feebate design on clear policy criteria and economic principles.
- (3) Combine the Pavley II and Feebate program design efforts.
- (4) Consider “zero-cost” feebate options.

Provide missing information in the final Scoping Plan.

The Draft Plan’s projected emission reductions from Pavley II and Feebates are rough estimates, which are likely to be misunderstood or misinterpreted because the Draft Plan provides very little information on the program design or underlying assumptions for these policy options. The following information, which was provided by ARB staff⁵, should be included (with possible corrections and updates) in the final Scoping Plan.

The following table⁶ summarizes light-duty vehicle performance in California in 2002, the Pavley I standards, and the preliminary Pavley II standards upon which the Draft Plan is premised:

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

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

³ [<http://www.arb.ca.gov/cc/etaac/ETAACFinalReport2-11-08.pdf>]

⁴ [http://www.arb.ca.gov/cc/ejac/meetings/080708/ejac_comments_outline.pdf]

⁵ Feebate analysis:

Matt Zaragoza (Executive Office >> Office of Climate Change >> Program Evaluation Branch), (916) 322-7648 mzaragoz@arb.ca.gov

Pavley I & II:

Paul Hughes (Mobile Source Control Division >> Engineering Studies Branch >> LEV Implementation Section, Manager), (626) 575-6977 phughes@arb.ca.gov

Jon Taylor (Planning & Technical Support Division >> Air Quality & Transportation Planning Branch >> Motor Vehicle Assessments Section, Manager), (916) 445-8699 jtaylor@arb.ca.gov

⁶ from “Pavley % Reductions” tab in “California_Benefits_Pavley vs CAFE_Ken Johnson.xls” spreadsheet, 6/24/2008 email from Jon Taylor

Year	PC/LDT1		LDT2	
	CO ₂ (g/mi)	% Red	CO ₂ (g/mi)	% Red
2002	312	-	443	-
2016	205	34.3%	332	25.1%
2020	175	43.9%	265	40.2%

It is not clear what policy criteria the draft 2020 standards are based on, except that they are not based on an analysis of feasibility and cost-effectiveness.⁷ But Pavley II will be revised and will be based on the same AB 1493 policy criteria that were used for Pavley I. (The legislative authority for Pavley II rests with AB 32, not AB 1493, so ARB is implicitly adopting the AB 1493 feasibility and cost-effectiveness criteria for the purpose of regulating passenger vehicle emissions under AB 32.)

Table 22 in the Draft Plan (page 40) indicates that feebates would achieve 2-6 MMT potential emission reductions in 2020. The analysis was performed for a feebate operating as an alternative to (not in conjunction with) Pavley. Also, the 2-6 MMT is additional to Pavley I (not Pavley I & II). The projected 31.7 MMT from Pavley (Table 2, page 11) includes 4 MMT from Pavley II, so the feebate's projected emissions performance would be approximately the same as Pavley I & II.

The feebate projections are based on a single-class, attribute-neutral feebate with an emission price in the range of \$15 to \$20 per gm/mi. This price was based on “no regrets” at an assumed fuel price of \$1.74/gal. (Staff did not specify the fuel emission intensity, lifetime VMT, and discount rate that were assumed in setting the emission price.)

Base the feebate design on clear policy criteria and economic principles.

The Draft Plan contemplates using feebates either to replace and replicate the performance of Pavley (in the event that Pavley cannot be implemented), or to improve upon Pavley (either as an adjunct to, or replacement for, Pavley). The Pavley I regulations were constructed to not only achieve a particular emission performance level, but also to satisfy feasibility and cost-effectiveness criteria; so if a feebate policy is employed to replicate Pavley it should be constructed to preserve the same or similar distributional costs – not just the same emissions. Conversely, if there is a good policy rationale for deviating significantly from Pavley in the feebate design, then similar policy considerations would apply to Pavley II. (For example, if a single-class, attribute-neutral feebate is favored, then a similar policy rationale would favor a single-class Pavley II standard with no LEV class distinctions.)

⁷ “... 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)

Under a tradable standard such as Pavley, a vehicle manufacturer would have to purchase credits to cover emissions in excess of the standard, and would sell credits if emissions are below the standard. Similarly, under a feebate program the manufacturer (or vehicle buyers) would pay fees to cover emissions in excess of the benchmark level, and would accrue rebates if emissions are below the benchmark. Thus, a feebate that is designed to replace and replicate a standard should satisfy the following two conditions if it is applied to a fleet that meets the standard:

- (1) The benchmark emission level should match the standard.
- (2) The feebate price should match the standard's projected trading price.

(If the fleet does not meet the standard, the benchmark would be scaled to maintain revenue-neutrality.)

A feebate employed in conjunction with a tradable standard would not necessarily result in any additional emission reductions. If the feebate did incentivize over-compliance with the standard, then there would be a market excess of trading credits, which would cause the trading price to fall until emissions are again in balance with the standard. But if trading prices fall substantially to zero, then the feebate would induce over-compliance. This would occur if the feebate incentive alone would be sufficient to achieve the standard.

For example, if the trading price is initially \$20 per gm/mi and a feebate is introduced with a \$15 per gm/mi emission price, then the trading price would be expected to fall to \$5 per gm/mi. The feebate plus trading incentive (\$15 plus \$5) would still be at the standard's marginal compliance cost (\$20), and there would be no over-compliance. But if the feebate price is, say, \$25 per gm/mi, then trading prices would collapse and the feebate alone would incentivize emission reductions up to a marginal cost \$25 per gm/mi. Thus, the feebate effectively imposes a *price floor* on the standard, in that it prevents the total market incentive (feebate plus standard) from falling below the feebate's emission price.

Even if the feebate induces no additional emission reductions beyond the standard, it could nevertheless induce huge imbalances in distributional costs if the feebate benchmark is not matched to the standard, as described above.

The Pavley I standards were premised on feasible technologies that all had costs below \$20 per gm/mi.⁸ Consequently, The Pavley I standards would be expected to result in a trading price of about \$20 per gm/mi or less (2004 dollars). A higher marginal incentive would have been justified based on ARB's cost-effectiveness criterion, e.g. the cost-effectiveness threshold would have been over \$26 per gm/mi at a fuel price of \$1.74/gal, and \$35 per gm/mi at \$2.30/gal. Almost all HEV options considered by ARB

⁸ Technologies and technology costs considered by ARB in developing Pavley I are outlined in Tables 5.2-5 to 5.2-9 in the Sept. 10, 2004 Addendum to the Aug. 6, 2005 ISOR [<http://www.arb.ca.gov/regact/grnhsgas/grnhsgas.htm>], and the technologies that were selected as meeting ARB's feasibility criteria are outlined in Tables 6.2-6 and 6.2-7. See also the "TechCost" tab in http://www.arb.ca.gov/cc/scopingplan/submittals/transportation/kenjohnson_feebate.xls (from proposal #5 at <http://www.arb.ca.gov/cc/scopingplan/submittals/transportation/transportation.htm>).

would have met the cost-effectiveness requirement at \$2.30/gal, but they did not satisfy ARB's feasibility criterion, so the Pavley I stringency is only about \$20 per gm/mi.⁹

Under a feebate incentive program, limitations of feasibility would be determined by the market – not by regulators – so the feebate emission price could be based on the cost-effectiveness threshold. The feebate would incentivize mass commercialization of technologies such as HEV's to the extent that they are feasible and cost-effective.

Considering recent fuel prices and price trends¹⁰, the \$1.74/gal fuel price assumed in ARB's feebate analysis indicates a lack of seriousness in addressing transportation policy and a disregard of the statutory requirement for "achieving the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions ...".

Combine the Pavley II and Feebate program design efforts.

ARB's resource allocation to light-duty transportation policy appears to be deficient in relation to the significance of transportation emissions (not to mention energy security risks) and the potential for cost-effective emission reductions from passenger vehicles. The Draft Report is premised on a preliminary Pavley II standard that is apparently at the same stage it was at when the April, 2006 Climate Action Team report¹¹ was released. The feebate analysis is the responsibility of one part-time staffer (in the Office of Climate Change), with no participation or guidance from staff who are responsible for Pavley I & II (LEV Implementation Section and Motor Vehicle Assessments Section). There seems to have been no attempt to maintain consistency and compatibility between the feebate analysis and Pavley, either in terms of program design or analysis methodology.

It would be advantageous to combine resources for the feebate and Pavley II program design efforts. If the feebate study is more than an academic exercise, then staff who have expertise and responsibilities for the Pavley regulations should be involved in the feebate analysis, and Office of Climate Change staff should similarly be involved in developing the Pavley II regulations. This would avoid duplication of effort and would ensure that the Pavley and feebate program designs are compatible and are premised on consistent market data and assumptions.

⁹ Aug., 2006 ISOR (page xi): "... 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."

¹⁰ [http://energyalmanac.ca.gov/gasoline/retail_gasoline_prices.html]

¹¹ [http://climatechange.ca.gov/climate_action_team/reports/index.html]

Consider “zero-cost” feebate options.

The revenue neutrality of feebates helps to minimize costs, although distributional costs can still be significant. Various forms of class-based or attribute-based feebate design approaches can be used to minimize total feebate revenue flows (without reducing marginal technology incentives). But a fundamental problem that ARB will face in crafting a feebate policy is that if the feebate emission price is based on current fuel prices (or possibly higher prices when the regulations are finalized), then there could be huge revenue flows no matter what feebate structure is used. This would make it difficult to devise a politically and economically viable feebate policy that captures the full potential of cost-effective emission reductions.

In principle, there should be no need for any revenue flows between vehicle classes to incentivize maximum feasible and cost-effective emission reductions (in the sense defined by AB 1493). Current fuel prices could suffice to incentivize the most advanced fuel economy technologies, if only vehicle buyers valued the lifecycle fuel-saving potential of such technologies. A feebate-type policy could be employed to at least partially internalize lifecycle fuel costs or savings in vehicle prices so that relative price differences between vehicles are more reflective of their different lifecycle fuel costs.

With this approach, a fee would effectively pre-pay some or all of a vehicle’s excess lifecycle fuel consumption relative to the benchmark level. The fee would be returned to the vehicle owner in annual installments over the vehicle life (e.g., as an adjustment to registration fees), although the refund payments would not be sufficient to offset excess fuel consumption costs. Similarly, rebates would function as low-interest loans, which buyers could (optionally) take advantage of to help finance vehicle purchases. The loan payments would not exceed the annual fuel savings relative to the benchmark level, so the loans would effectively be paid back out of fuel savings.

This type of feebate policy would induce buyers (and manufacturers) to value the full lifecycle costs of vehicles when making investment decisions, but in a way that does not involve revenue transfers between buyers.