

Supplementary notes and rebuttals to the FSOR

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On August 6, 2004 the California Air Resources Board (CARB) published its Initial Statement of Reasons (ISOR, Ref. 1) for regulations implementing AB 1493. On Sept. 10, an Addendum to the ISOR was published (Ref. 2), and a public hearing on the proposed regulations was held on Sept. 23 and 24 (Ref. 3). On August 4, 2005, CARB published its Final Statement of Reasons (FSOR, Ref. 4), which addressed public comments relating to the ISOR.

The FSOR included responses to commentaries submitted by this author on Aug. 11, 2004 (Ref. 5), Sept. 5, 2004 (Ref. 6), and May 11, 2005 (Ref. 7). Ref's 5 and 6 contained some errors that were subsequently corrected in Ref. 7 and in a report that the author provided to the California Assembly Transportation Committee in April, 2005 (Ref. 8). The analysis and data in Ref's 7 and 8 is based on spreadsheets and information that CARB provided the author in March, 2005 (Ref's 9, 10, 11), and the author's calculations based on this information are included in Ref. 12.

Comment #312 in the FSOR is excerpted from the author's public testimony at the Sept. 24, 2004 public hearing (Ref. 3, p. 10-17). Comments #313-322 are excerpted from Ref. 5; comment #546 is excerpted from Ref. 6; and comment #698 is excerpted from Ref. 7. Following are the author's supplementary notes and rebuttals to the Agency Responses to these comments:

#312

The sloped "regression lines" illustrated in Figures 6-1 and 6-2 in Ref. 2 are described as representing "the maximum feasible reduction levels" (Ref. 1, p. 112), and as such represent CARB's best estimate of the "maximum feasible and cost-effective" reduction level specified by the AB 1493 mandate. The bilevel, LEV-type standard adopted by CARB (i.e., the horizontal lines in Figures 6-1 and 6-2) represents an intermediate policy option between a "regression standard" defined by the regression lines and a flat, uniform standard that applies equally to all weights. Generally, a policy rationale that favors the bilevel standard over the regression standard will also favor the flat standard over the bilevel standard; conversely, a rationale that favors the bilevel standard over the flat standard will be more favorable to the regression standard. (An exception to this rule is that an LEV-type standard has the advantage of familiarity and established precedent.) In the Sept. 24, 2004 public hearing (Ref. 3, p. 16) the CARB staff Executive Officer testified in response to comment #312 that "in the final statement of reasons we will clearly articulate why we selected the LEV II over the other methods," but the Agency Response in the FSOR only alludes to "other practical and competitive issues the staff had to wrestle with ...". (The Agency Response does briefly touch on the issue of upweighting incentives – see #322 below.)

#313

The Agency Response asserts that setting the standard according to the heaviest-weight manufacturer “is a necessary constraint to ensure that the regulation is *feasible to all manufacturers*”, but this misses the point. The constraint is necessary, but only because of the imposed LEV compatibility requirement, which has no basis in AB 1493. (Actually, even with LEV compatibility the constraint can be relaxed – see #698.) A standard defined by the regression lines (Figures 6-1 and 6-2 in Ref. 2) would, according to CARB’s characterization, achieve the mandated “maximum feasible and cost-effective” emissions reduction for all six manufacturers, not just GM, and not just on a sales-average basis.

(Note: The FSOR replicates Table 1 from Ref. 5, which is in error. See Ref. 8, Table 3 for the correct data. The table data is calculated in Ref. 12.)

#314

The comment is in error, and the Agency Response correctly diagnoses the error as resulting from a misunderstanding of the vehicle class categories.

The ISOR defines the PC/LDT1 class as "passenger cars and light duty trucks under 3751 lbs loaded vehicle weight" (ISOR, p. 104), but the 3751-lb limit does not apply to cars. A more concise definition is "passenger cars up to 6000 lbs loaded vehicle weight and light duty trucks up to 3750 lbs loaded vehicle weight" (Ref. 11). In March, 2005, CARB provided the commenter the LEV classification data upon which the AB 1493 regulations are based (Ref. 10), and the analysis in Ref. 5 has been replicated and corrected in Ref’s. 7, 8, and 12 on the basis of CARB’s classification data.

#315

The Agency Response asserts that “The linear programming optimization method employed by the commenter results in standards that could not feasibly be achieved by the heaviest overall manufacturer, General Motors.” The second part of this statement is true (there would be an emissions deficit of approximately 5 g/mi for GM), but this is due to the error in the vehicle classification (see #314 above), and not a result of the linear programming methodology (see #698). The response indicates that staff either did not understand or did not make an effort to independently evaluate the method.

#316

The Agency Response states, “The ARB staff does estimate the 2009 California baseline CO2 equivalent emissions levels and average vehicle weights as equivalent to the 2002 California baselines. Predicting, with any accuracy, the extent to which automaker-specific average weight, sales-average CO2 emissions, and market share will change would be nearly impossible.” And yet the assumption of no change *is* a prediction, and CARB uses the 2002 baseline to predict fleet characteristics not just to

2009, but to 2030 and beyond. This predictive uncertainty results only from imposing LEV compatibility on the standard. (The regression lines, which are characterized as representing the “maximum feasible reduction levels”, have inherent uncertainties due to technology assumptions, etc., but they have no dependence on an assumed vehicle fleet.)

#317

The Agency Response appears to be speculative and not based on quantitative analysis. The standard is constructed to be at the threshold of feasibility for GM’s MY 2002 California fleet (even at a fuel price of at least \$2.30/gal), implying that any perturbation of the assumed fleet mix could make the standard infeasible for GM. (Trading might give GM some flexibility to accommodate changes in fleet mix. However, the standard’s definition criteria assume that GM cannot rely on trading with other manufacturers to achieve cost-effective compliance. If trading between manufacturers can be relied on, a more stringent standard could be adopted.)

#318

The Agency Response states, “Whether and to what extent auto manufacturers use alternative pricing to maximize profitability is not of chief concern to the AB 1493 ... such an approach would only be chosen if it was deemed more cost-effective to each automaker ...”. But the pricing method *is* a chief concern because the regulations would not be cost-effective to consumers unless manufacturers pass on compliance costs in the manner assumed by CARB. Note that AB 1493 requires that the regulations be economical “to an owner or operator of a vehicle”, not to the automaker. Manufacturers would likely optimize economic efficiency by passing the cost of complying with the mandated standard (including the cost for emission allowances) to consumers; but CARB assumes that the cost of emission allowances for under-compliant vehicles will be subsidized by over-compliant vehicle owners.

#319

The regulation-induced competitiveness imbalance between manufacturers can be quantified in terms of the excess fleet-average emissions allowed each manufacturer relative the maximum feasible emissions reduction level. These excess emissions allowances are tabulated below for the manufacturers’ 2002, California fleets:

DCC:	10 g/mi
Ford:	5 g/mi
GM:	0
Honda:	11 g/mi
Nissan:	17 g/mi
Toyota:	13 g/mi

(from Ref. 12). These disparities are not “a necessary consequence of moving from an unregulated industry characteristic toward regulation,” as stated in the Agency Response; they are a consequence of imposing LEV compatibility on the standard. CARB has not quantitatively or logically substantiated its assertion that the chosen two-category LEV II

form of the standard would “best manage the criteria of automaker competitiveness, consumer choice, and total climate change emission reductions over time”.

#320

The Agency Response may be correct in its assertion that the standard would not significantly incentivize upweighting; but with an LDT2 emission limit 62% higher than the PC/LDT1 limit, there could be a significant incentive for manufacturers and consumers to favor LDT2 vehicles over cars.

#321

A weight-based characterization of “maximum feasibility” is reasonable not just for the reason stated in the Agency Response, but also because AB 1493 specifically prohibits regulations imposing a reduction in vehicle weight. The regression lines represent such a characterization, but CARB does not provide any measure or estimate of the regression’s statistical robustness.

#322

Upweighting incentives notwithstanding, an emission standard based on the regression lines would, by CARB’s characterization, achieve maximum feasible and cost-effective emissions reduction, as required by the legislative mandate. Moreover, a standard that is constructed to satisfy the literal AB 1493 mandate, as interpreted by CARB, would not significantly affect vehicles’ net lifetime costs, and would hence not create a significant upweighting or downweighting incentive. (The standard’s less stringency at higher weights would be counterbalanced by the tendency of vehicle emissions and costs – including basic manufacturing costs, regulatory compliance costs, and operating costs – to increase with weight. The emission standard would be approximately weight-proportionate, but more significantly, the required emission reduction from the baseline level would also be approximately weight-proportionate.)

#546

The following paragraph pertains to the comment, not the Agency Response:

This commentary is based on an erroneous interpretation of the proposed section 1961.1 regulatory language. The commentary interpreted the regulation as imposing a noncompliance penalty of \$24.39 per g/mi debit for PC/LDT1 and \$15.06 per g/mi debit for LDT2, whereas the penalty actually appears to be $\$24.39 + \$15.06 = \$39.45$ per g/mi debit for both weight classes. Thus, contrary to points (2) and (3) in the commentary, there is no disparity between weight classes and the penalty may be sufficient to deter noncompliance. But points (1) and (4) are valid. The penalty formula changes the meaning of the Health and Safety Code section 43211 in a manner that is confusing and without a clear policy rationale. Furthermore, the policy intent of AB 1493 would be better served if the penalty charge were applied to the purchase of emission credits to

offset the excess emissions represented by the noncompliance. (Section 43211 stipulates that the penalty charge shall simply be deposited into the General Fund.)

Regarding the General Fund stipulation, the Agency Response states that “The specificity of this language clearly precludes the Air Resources Board from using these penalty charges for other purposes”. But this use conflicts with the specific AB 1493 mandate requiring maximum feasible and cost-effective emissions reduction, because greater emissions reduction could be achieved by purchasing emission credits. If CARB has the authority to establish a CO2 emissions trading system, it should also have the authority (without invoking section 43211) to act as a broker of emission credits and to offer non-compliant manufacturers the option of purchasing emission credits directly from CARB.

#698

The Agency Response states that “Mr. Johnson adjusted his analysis when presented with the correct definitions in March 2004.” CARB actually presented Mr. Johnson the correct definitions in March 2005, in response to a Public Records Act request submitted by Mr. Johnson to CARB’s Office of Legal Affairs in December 2004.

The implication of the Agency Response is that with the revised analysis, the standard would be infeasible for GM. The spreadsheet containing the corrected calculations (Ref. 12) shows that with the correct calculation method the fleet-average emissions limit for GM (and also Honda) would exactly match the calculated feasible emissions limit. (This is indicated by the zero values in cells AO22 and AO23.) Moreover, the standard would be feasible for all six manufacturers (as indicated by the non-negative values in cells AO20:AO25). The fleet-average excess emissions for the entire model year 2002, California fleet (all six manufacturers) is 4.4 g/mi with the correction (cell AO26), compared to the adopted standard’s excess of 7.6 g/mi (cell AN26), thus demonstrating that CARB’s calculation methodology does not yield the mandated maximum feasible and cost-effective emissions reduction.

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10. Corporate Fleet Average Weights (2002).xls

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