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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
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ANN ARBOR, MICHIGAN 48105-2498

MAR 26 2004

OFFICE OF
AIR AND RADIATION

Kenneth A. Colburn
Executive Director
NESCAUM
101 Merrimack St., 10th Floor
Boston, MA 02114

Dear Mr. Colburn:

I want to share with you Environmental Protection Agency's (EPA's) thoughts on NESCAUM's White Paper "Comparing the Emissions Reductions of the LEV II Program to the Tier 2 Program" (issued in October 2003). We fully support your intent that this type of assessment would assist the Northeast states in determining whether adopting the California LEV program would be beneficial in achieving emissions reductions beyond the federal Tier 2 program. We applaud NESCAUM's commitment to clean air and as always will support and assist your efforts in any way we can. While we appreciate the effort put into the analytical content of the White Paper, we do have some serious concerns regarding certain aspects of the analyses. The concerns detailed below lead us to believe that the White Paper overstates the benefits of a state LEV II program.

In general, we are concerned that NESCAUM did not follow EPA's guidance for modeling the federal Tier 2 program.¹ Unfortunately, it is clear that in some instances the White Paper departs significantly from EPA's approved approach for modeling Tier 2 emissions using the MOBILE6 model, and in ways that overstate the benefits of the California LEV II program relative to the federal Tier 2 program. EPA's technical guidance for use of the Mobile6 model specifies the appropriate methodology for estimating the reductions from the federal Tier 2 program. The result of this is that the emission reductions estimated in the White Paper will tend to exceed the reductions that a state can actually receive credit for in its State Implementation Plan for a LEV II program. Thus, we are concerned that the White Paper may entice States to adopt the California LEV II program with the hope of achieving emission reductions that actually may not be realized when the program is modeled according to our Mobile6 documentation. Moreover, we do not expect the additional benefits projected by the White Paper to be realized as actual improvements to the air quality of a state adopting the LEV II program. We urge NESCAUM to reevaluate its analysis to address our comments so that it provides a more accurate picture of expected benefits for a state LEV II program.

¹ U.S. EPA. "Accounting for the Tier 2 and Heavy-Duty 2005/2007 Requirements in MOBILE6: Final Report M6.EXH.004." EPA420-R-01-057, November 2001. See <http://www.epa.gov/otaq/models/mobile6/m6tech.htm>.



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Aside from issues regarding the magnitude of benefits, the report presents benefits in a way which could misrepresent the benefits of LEV II on overall air quality. First, benefits are quoted for light-duty vehicles only; benefits should also be assessed in the context of the overall on-road and overall mobile source inventory. Second, the benefits of LEV II are expressed in terms of relative additional benefit over Tier 2; when characterized in terms of the absolute benefits relative to a (non-Tier 2) baseline, the differences between the programs are more realistically characterized. Putting benefits in this perspective, we estimate that LEV II will provide about 1 percent additional reduction in mobile source VOC, and about 2 percent reduction in air toxics, over Tier 2 in 2020 with the program starting in the 2004 model year, and lower with a later program start date.

Our specific concerns are detailed in the attachment to this letter. We welcome the opportunity to discuss these comments with you. Please feel free to contact Robin Moran, Center Director for the Light-Duty Onroad Center at (734) 214-4781.

Sincerely,



Chester France

Director

Assessment and Standards Division

cc: Coralie Cooper, Transportation Program Manager
Margo Oge, Director, Office of Transportation and Air Quality

Enclosure(s)

EPA Office of Transportation and Air Quality
Comments on NESCAUM White Paper
March 25, 2004

1. Program Enforcement

The White Paper did not address the fact that a critical element of any state LEV II program is adequate enforcement to ensure that the emission reductions are realized. As stated by EPA in a letter to the Maine Department of Environmental Protection, "a well run, state-implemented California LEV program requires state administrative and enforcement resources, which should ensure that only California LEV vehicles are registered in the State." Sections 110(a)(2)(C) & (E) of the Clean Air Act require a state to provide adequate assurance that they can enforce their SIP. Without such assurance we are unable to approve a State Implementation Plan. For example, California's program is predicated on a registration-based enforcement program that can adequately ensure that all new vehicles registered in the state meet the LEV-II standards. A state that does not exert adequate control over vehicles purchased beyond their borders and brought into the state is not adequately enforcing its program and cannot offer any guarantee that LEV-II emission reductions will actually be achieved, thus calling into question any assurance that the state has offered EPA regarding program enforcement. In California, resources are in place to administer the program within the State environmental agency, and resources are in place to enforce the program requirements within the motor vehicle department. Similar efforts are put forth in Massachusetts and New York.

2. Exclusion of heavy light-duty trucks

The White Paper states that the analysis excludes heavy light-duty trucks (light-duty trucks with a gross vehicle weight greater than 6000 lbs). The exclusion of a significant percentage of the vehicle fleet subject to Tier 2 standards is important to know, yet it is recognized only in a footnote (footnote #3, page ES-2). These vehicles must also certify to the Tier 2 standards, and the magnitude of the difference in emission benefits of the Tier 2 program relative to the LEV II program is closely tied to the emission levels that heavy light-duty trucks are projected to achieve. The White Paper does not explain why these vehicles were omitted, nor what the potential impact of including or excluding these vehicles might be on the analysis. We urge NESCAUM to reevaluate its analysis and incorporate these vehicles, and to incorporate EPA's projections regarding the Tier 2 standards that these vehicles will be meeting. Assumptions regarding implementation schedules and sales mix (see issue #3 below) are not meaningful unless the full fleet of Tier 2 vehicles is considered.

3. Implementation Schedule and Sales Mix Assumptions

Regarding EPA modeling guidance, the White Paper states that "EPA... assumed over-compliance with the emission standards in lighter vehicles to make up for sales of heavier, more polluting vehicles." Characterizing EPA's approach as "over compliance" is not correct. The

EPA guidance reflects compliance with the Tier 2 regulation as a whole, which allows trade-off between higher and lower bins, an integral part of the program which should not be ignored. Innumerable options are available for compliance distributions, and it is difficult to know at this stage how this will play out. The EPA phase-in assumptions were developed based on the assumption that manufacturers will seek to minimize costs of compliance by keeping larger trucks and SUVs in higher emission bins, since they face a larger hurdle in the transition to Tier 2. The compliance strategy used in the report assumes that most vehicles, including these large trucks, will certify in Bin 5 (in fact, if we interpret a footnote to the White Paper correctly as noted above under item #2, NESCAUM actually ignored the large truck and SUV categories). While certainly an allowable strategy, it does make the significant assumption that manufacturers are more likely to reduce tailpipe emissions from most large trucks nearly 90 percent within the span of a year or two. Given the uncertainty in bin certification approaches, it would be more equitable to present the range of compliance options for Tier 2, as was done for the LEV II program. As it stands, the analysis serves to overstate the likely benefit of the LEV II program. As noted above in item #2, we urge NESCAUM to include the heavy light-duty trucks and to make reasonable estimates regarding the Tier 2 bins to which these vehicles will certify, just as it does regarding those vehicles subject to the LEV program.

4. Comparison of LEV II and Tier 2 Evaporative Emission Programs

The executive summary of the White Paper states that "NESCAUM assumed that Tier 2 vehicles will meet regular LEV II vehicle evaporative emission standards, even though the LEV II evaporative emission standards are more stringent than the federal standards." However, the body of the White Paper goes on to describe a methodology for post-processing evaporative emissions from MOBILE6 to attempt to account for differences in evaporative emission standard levels between Tier 2, LEV II and PZEV/ZEV, stating "We assume that cars in the Tier 2 program will be certified to Tier 2 evaporative standards, not LEV II evaporative standards." The approach taken in the analysis is thus unclear. The results quoted in the White Paper appear to be based on the latter approach, which is what our comments are based on.

First, it is not correct that the LEV II evaporative requirements are "more stringent" based solely on the numerical standard, due to differences in the certification test procedures used to judge compliance with the standard. Comparison of numerical standards is not meaningful without the context of the test procedures used to determine compliance with the standards. The Federal evaporative test procedure has a provision requiring that evaporative system durability be demonstrated on fuels containing the maximum allowable alcohol levels, because the permeability of system components is increased with these fuels. Manufacturers are thus held to a tighter standard of durability demonstration, aside from the numerical emission limit. A direct comparison of standards does not account for evaporative system improvements manufacturers are required to make to meet the alcohol provision in the Federal rule. In fact, manufacturers have clearly indicated that the emission control hardware required to meet the federal requirements (with an alcohol requirement) is identical to that needed to meet the California requirements (without an alcohol requirement).

Because of this, it is unlikely manufacturers will put the resources and effort into developing a separate Federal evaporative system. At this point there is no evidence that manufacturers will design and produce separate evaporative emission control systems to take advantage of higher numerical evaporative emission standards. In fact, for model year 2004, the first year of Tier 2 compliance, all vehicles certified to Tier 2 evaporative standards are also certified to the LEV II evaporative standards (i.e., the systems are "50-state" systems), and we fully expect this to continue, based on the stated plans of the manufacturers.

Aside from whether manufacturers will certify to LEV II standards, the specific methodology used in the White Paper to account for differences in evaporative emissions is inaccurate. First, MOBILE6 already assumes that Tier 2 vehicles comply with the LEV II evaporative standards, so unless this was already taken into account, the post-processing adjustment applied to account for LEV II standards would be double-counting these benefits. Second, as noted in the White Paper, applying a direct ratio of standards to in-use emissions does not account for the excess emissions of malfunctioning vehicles. In MOBILE6, the direct application of emission standard ratios is generally only made to non-malfunctioning "normal" emitting vehicles, and scaled back for malfunctioning vehicles. We therefore believe that reducing in-use emissions by applying the ratio of standards to a composite in-use emission factor will overstate benefits of the standard.

5. Estimates of Toxics Benefits

The NESCAUM White Paper estimates toxics reductions by applying a single set of toxic fractions to VOC estimates for Tier II and LEV II. These fractions do not take into account fuel effects, impacts of off-cycle operation or differences among technology groups, as does MOBILE6.2. The White Paper also seems to suggest the same set of fractions were used for exhaust and evaporative benzene emissions. In fact, the benzene fraction in evaporative emissions is typically around 1% versus 3 to 5% in exhaust. The White Paper says the fractions come from a year 2000 DOE report, and that these data are more recent than what is used in MOBILE6.2. In fact, the fractions used in the DOE report come from the Complex Model for Reformulated Gasoline, and are based on the same data used in MOBILE6.2. In addition, these fractions are for vehicles running on conventional gasoline; whereas reformulated gasoline is used in much of the Northeast. Thus, the paper is using the same data as MOBILE6.2, but applying a much more simplified approach and also using the wrong set of fractions. Clearly, using MOBILE6.2 to estimate toxics impacts would have been a much better approach.

6. Program Start Date

The analysis assumed a 2004 model-year start date for the LEV II program. As the start dates for states considering implementation of the LEV II program will be later (New Jersey proposes 2009, for example), the relative benefit of the LEV II program will be lower. It is therefore important to assess the LEV II program when it will actually be implemented, if not in 2004.