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EPA Docket Center
Docket ID No EPA-HQ-OAR-2006-0173
EPA/DC, EPA West Room B102,
1301 Constitution Ave., NW.,
Washington, DC

RE: California State Motor Vehicles Pollution Control Standards; Request for Waiver of Federal Preemption; Opportunity for Public Hearing, Docket ID #EPA-HQ-OAR2006-0173; 72 FR 21260 (April 30, 2007)

Dear Administrator Johnson:

California's Air Resources Board (ARB or Board) presents this letter and documents submitted herewith, as listed in the attached, in support of our December 21, 2005 waiver request ("waiver request" or "request"). As discussed in our May 22 and May 30, 2007 public hearing testimony in Washington, DC and Sacramento, respectively, we are submitting these comments to respond as fully as possible to the limited comments we heard in opposition to it. Where appropriate in the text we have cited to specific documents in the attached listing of enclosed documents, and conversely in that attached listing we have grouped and in some cases parenthetically noted waiver issue(s) to which we suggest that document most relates. The combination of our waiver request, our testimony, this comment letter, and the extensive supporting testimony in the docket, leaves no doubt that California's greenhouse gas emission regulations meet permissible waiver criteria and that U.S. EPA (EPA) must grant our request promptly.

I. Introduction

California began this waiver process like any other, by submitting a request and supporting documents for EPA review and a noticed request for comment. See Document ID Nos. EPA-HQ-OAR2006-0173-0017, 0004, 0004.1, and 0004.2¹. That these regulations target primarily greenhouse gas emission reductions as opposed to previously targeted pollutants was and remains largely irrelevant in the context of waiver law and history. The *Massachusetts et al. v. EPA* opinion (enclosed) essentially vindicates California's approach to greenhouse gases as simply additional pollutants to be regulated under the Clean Air Act, for which California should receive a waiver and for which EPCA/CAFE neither affects ARB's authority nor informs EPA's review. In the nearly 18 months since we submitted our request, its strength has become more

¹ All Document numbers cited hereinafter are to the prefix Docket ID #EPA-HQ-OAR2006-0173- unless otherwise stated.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

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apparent, as the need for action to reduce global warming emissions has become irrefutable and as market trends move manufacturers ever-faster toward implementing the technologies ARB projected in our rulemaking.

II. Protectiveness

The opponent's limited and speculative evidence suggesting that California's standards are less protective than federal standards in the aggregate comes nowhere close to meeting their burden on this issue. California's protectiveness determination was not arbitrary or capricious.

A. Stringency of Aggregate Standards: California versus Federal

At the May 30, 2007 hearing the Alliance representative argued that California failed to make a protectiveness determination regarding California's motor vehicle program as a whole versus federal standards. This is incorrect. The Resolution included with and cited in our December 21, 2005 submittal states:

BE IT FURTHER RESOLVED that the Board hereby determines that the regulations approved herein will not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards. ARB Resolution 04-28, September 22, 2004, Document ID 0010.107. See also Document ID 0004, p.5.

This suffices as the Board's determination unless it acted arbitrarily and capriciously in making it, which is far from the case here. The Board made this determination based on extensive evidence in the administrative record, including the Staff Report: Initial Statement of Reasons (ISOR, Document ID 0010.44) and its Addendum (Document ID 0010.132) and supporting technical documents (e.g. Docket ID Nos. 0010, 0010.3, 0010.11, 0010.41, 0010.43, 0010.115, 0010.158, 0010.191) previously submitted. The Board had more than sufficient information before it to determine that the regulations would achieve substantial greenhouse gas emission reductions and nominal – but net positive – reductions in criteria pollutant emissions. See e.g. ISOR pp. 139-148 and Executive Order G-05-061, Attachment 3 (Document ID 0010.84).

The Alliance representative also argued that California could not now show its program as a whole to be as protective as federal standards. Assuming *arguendo* that California had to make this showing now, this Alliance argument is also incorrect. Figure 6-1 of the enclosed 2006 National Academy of Science (NAS) report shows that California's ozone precursor standards are nearly twice as stringent as the federal standards from now through 2019. See also NAS discussion at pp. 177-184, and 68 FR 19811 (April 22, 2003) (enclosed), Decision Document at pp. 9-11 (upholding ARB's determination that California LEV II is at least as protective as federal Tier II) (enclosed). California standards pack an additional emission reduction punch through zero evaporative emissions requirements on the substantial number of partial zero-emission vehicles (PZEVs) that will be introduced to meet California's ZEV requirements. EPA acknowledged this same rationale in upholding our protectiveness finding in its recent approval of our zero-emission vehicle waiver request. 71 FR 78190 (December 28, 2006), ZEV Decision Document at p. 28, both enclosed. The numerous states opting into the California standards do

so for a reason; California's standards are more protective in the aggregate. See e.g. NACAA Testimony and Comments in the Docket.

B. GHG Regulations' Effect on Aggregate Standards

Manufacturers have argued here, as they did in the recent ZEV Waiver proceeding, that these regulations will produce a combination of fleet turnover and rebound effects that worsen ozone precursor emissions. These issues were fully analyzed in the California rulemaking, at the end of which the Board reasonably concluded that small but important upstream emissions impact benefits of the regulations would outweigh the minimal emissions impacts that ARB's supplemental analysis found might occur from these uncertain fleet turnover and rebound phenomena.

1. Fleet Turnover

Manufacturers argue that these regulations will raise new motor vehicle prices high enough for consumers to delay their purchase, thereby delaying the "fleet turnover" to newer vehicles with lower criteria pollutant emissions and leaving older more polluting vehicles on the road longer. Even more than in the ZEV proceeding – in which EPA acknowledged that ARB had adequately analyzed this issue in its rulemaking (*id.*) – ARB here delved deeply into this issue and concluded that any minimal fleet turnover effect in later years did not result in a net negative impact on criteria pollutant emissions.

ARB anticipated the fleet turnover issue in proposing its greenhouse gas regulations. While the main technological and economic analysis reasonably assumed there would be no substantial reduction in vehicle sales based on ARB's experience and expertise (see ISOR and Addendum, Section 10.2), ARB commissioned a peer-reviewed study using the cutting-edge CARBITS model to take a closer look at consumer response issues, including the fleet turnover effect. See ISOR and Addendum Section 12, and Technical Support Document for Staff Proposal Regarding Reduction of Greenhouse Gas Emissions from Motor Vehicles: Other Considerations, Document ID 0010.3. As Mr. Cackette stated in rebuttal at the May 30 hearing, this supplemental analysis concluded that in the later years of the regulation, fleet turnover may be delayed up to 33 days. Document ID 0421, p. 253. That same supplemental analysis suggested that the potential emissions disbenefit of that delay would be more than offset by faster fleet turnover in the earlier years of the regulation. ISOR Addendum pp. 34-35 and ISOR, p. 179-80. Still, in the Addendum ARB calculated that the minimal later year sales losses could increase ozone precursor emissions statewide by about 2.5 tons per day statewide in 2020. Professor Kenneth A. Small's expert report (enclosed) concluded that not only did this supplemental analysis use sound models likely producing quite accurate results, ARB possibly overstated the fleet turnover effect.

By contrast, manufacturers' fleet turnover analysis used aggregate sales data, no demographic information, and was not peer-reviewed, rendering it inferior to the CARBITS model. See FSOR Comment and Response 431-32 (Document ID 0010.116). ARB's conclusion is supported by Dr. Small, who concluded that the NERA new-vehicle purchase and used-vehicle scrappage models "have severe disadvantages relative to those relied on by the California Air Resources

Board (ARB) in its Initial and Final Statements of Reason.” Supplemental expert report of Kenneth A. Small, enclosed, at p. 2.

In addition, experts including Dr. Dan Sperling (who testified at the May 22nd hearing) have opined that manufacturers employ numerous devices to minimize if not eliminate sales disruptions. The enclosed expert reports of Dr. Sperling and Maryanne Keller support the main rulemaking economic analysis which concluded that these regulations, like previous emission reduction programs, will create modest cost increases that manufacturers will absorb in the early years and apportion creatively over time to avoid substantial consumer cost increases and model unavailability. For a historical discussion of manufacturers’ exaggerated cost claims of the type underlying their fleet turnover analysis here, see also enclosed NRDC September 23, 2004 AB 1493 Hearing Comments and enclosed April 2006 Hwang and Peak cost comparison paper.

2. Rebound

Manufacturers argue that drivers of new greenhouse gas-compliant motor vehicles will use their operating cost savings to drive more than they would have otherwise, thereby increasing criteria pollutants. This is the so-called “rebound effect.” Like the fleet turnover issue, ARB anticipated the rebound issue in proposing its greenhouse gas regulations. See ISOR pp. 182-188 and Other Considerations pp. 13-19. ARB evaluated the issue two ways. One way used results from an ARB-commissioned study that found that when California household income and transportation conditions are accounted for, the rebound effect is small compared to other previous studies; about 4.4% in 2020. See Small and Van Dender, 2005, enclosed. When ARB applied those results using EMFAC, they found an increase of about one-quarter of one ton statewide of reactive organic gases (ROG) + oxides of nitrogen (NOx). ISOR and Addendum Table 12.4-1. As a check on this analysis, another method using a travel demand model and EMFAC found roughly the same results. *Ibid.*, Combined Impact, Method 2.

Again, Dr. Small concluded that ARB’s rebound assumptions were not only reasonable, but potentially overstated by a factor of two. Small expert report at pp. 3, 29. He concludes that “no reasonable variation in the model estimated in our final [2005] report to ARB, or in ARB’s use of that model, would alter the finding that the greenhouse gas regulations would have only a small impact on motor vehicle travel over the time period considered by ARB.” *Ibid.* at p. 4.

By contrast, manufacturers’ principal rebound analysis in the rulemaking and relied upon in litigation ignores numerous factors that affect vehicle miles traveled in California, and assumes that the cost of gasoline dominates out-of-pocket costs. See FSOR Comment & Response 460-466. This sales data is stale and the automakers omitted to consider current trends, fuel prices, and consumer environmental concerns in predicting future purchase decisions. Dr. Small has also opined that manufacturers’ analysis omits a critical coefficient reflecting the effect of real income on the rebound effect, an important consideration in a relatively high-income state like California. Small Supplemental report at pp. 1, 2, and 12. ARB concluded that the manufacturers’ other rebound analysis also suffered from substantial flaws. FSOR Comment and Responses 443, 458 and 681.

3. Upstream Emission Benefit

In addition to the substantial greenhouse gas reductions projected from these regulations, the Board had before it analyses showing that the regulations would reduce fuel going through the petroleum marketing and distribution infrastructure in and near California. This in turn will reduce the “upstream” emissions of smog precursors NO_x and non-methane organic gases (NMOG), and particulate matter (PM) and carbon monoxide (CO) from transportation, spills, and other events associated with that infrastructure. During the rulemaking ARB projected upstream emission reductions of between 3 and 7 tons per day of ROG + NO_x in 2020 – substantial compared to emission reduction measures now being considered for our SIP – and a marginal positive impact on CO. ISOR Section 8.4, and Addendum pp. 18, 36-37. A more current expert report (enclosed) by Mr. Michael Jackson, who also testified on May 30, produced very similar results he stated are conservative; he also estimated that the standards would reduce toxic air pollutant emissions in California by 26.5 tons per year in 2020.

C. Net Effect and Protectiveness Conclusion

In estimating the net criteria pollutant impact of these regulations, it is important to recognize how many different variables have to occur before criteria pollutant impacts from fleet turnover and rebound even arise as the issues manufacturers claim them to be. First, manufacturers must not be able to achieve the percentage of greenhouse gas reductions ARB projected for each technology and as a whole. Second it assumes no substantial additional penetration of technologies in use or nearly in use today. Third, to achieve necessary greenhouse gas reductions, several manufacturers have to then employ highly expensive technologies, e.g. hybrids, across their fleet. Fourth, manufacturers then cannot pass on this extra cost to consumers. Fifth, this causes manufacturers to pull entire product lines from the market. Sixth, this reduces the total number of vehicles available for purchase. Seventh, people wait longer to purchase remaining vehicles, which are also priced thousands of dollars higher. Eighth, despite this substantially higher cost, causing a delay in fleet turnover, those same new vehicle buyers presumably do not offset those higher costs with reduced operating costs; instead, they spend those savings driving more.

In contrast to this speculative chain of events – most of which rely entirely on technological feasibility and cost issues addressed later herein that to date manufacturers have not addressed in this proceeding – ARB...

determined that it was appropriate in this greenhouse gas rulemaking to rely on the standard EMFAC and E-DRAM tools for the main environmental and economic analyses for both criteria and greenhouse gas emissions, and that these modeling results alone would suffice to support conclusions concerning criteria pollutant impacts. Using the results of these standard, main analyses, with regard to environmental impacts the staff analysis concluded that “[t]he climate change regulation will have a negligible impact on criteria pollutant emissions. However, to the degree that there are upstream benefits associated with reduced petroleum shipping, storage and distribution, emissions will be reduced. See Staff Report/ISOR at Section 11.3, p. 166.” Executive Order G-05-061, Attachment 3, Document ID 0010.84.

However, in our effort to stay at the cutting edge of regulatory agencies' environmental and economic analysis, ARB went further and conducted supplemental analyses of consumer response issues using CARBITS. ARB found a nominal effect of a few days' delay in fleet turnover in the last years of the standards, as Mr. Cackette stated. In combination with a thorough rebound analysis, and with a reduction in upstream emissions that are much less speculative and more easily estimated, this results in a small but clear net reduction in criteria pollutant emissions estimated at about 2.8 tons per day statewide in ROG + NOx. Executive Order G-05-061, Attachment 3 describes this reasonably estimated net effect, contrasted with manufacturers' methodological approach and conclusions.

Using their much less robust modeling technique, and, relying on highly inflated implementation cost estimates, manufacturers' consultants concluded that the net effect of the greenhouse gas regulations ranged from 6.3 to 44.7 tons per day of additional ozone precursors, as their representative testified on May 30th. In the California rulemaking ARB did closely review manufacturers' similar comments (see Executive Order G-05-061, Attachment 3) and FSOR Comment & Response Nos. 418-477 and 680-685), but ultimately concluded that the combination of overestimated technology costs, underestimated operating cost savings, and methodological problems rendered their analyses unreliable, especially in comparison to the CARBITS analysis.

As we stated in note 17 of our December 21, 2005 request, opponents' burden here is to produce clear and compelling evidence that California acted arbitrarily and capriciously in evaluating the risks of various pollutants. *Accord*, 71 FR 78190 (December 28, 2006), ZEV Decision Document at p. 31. Opponents fall far short of a preponderance of evidence, let alone this greater burden. Even without these greenhouse gas regulations, California's passenger vehicle motor vehicle standards clearly remain more protective numerically than applicable federal standards. With these regulations, California now regulates greenhouse gas emissions while applicable federal EPA regulations do not. And Mr. Jackson's and others' comments in the docket support California's estimation that these greenhouse gas regulations will have upstream criteria pollutant benefits that will outweigh any minimal potential criteria pollutant impacts from rebound and fleet turnover. These analyses are the product of ARB's extensive rulemaking process and were subjected to public input, public comment, and peer review (enclosed); they reflect ARB's considered judgment on the issue.

By contrast, opponents' arguments to the contrary rely on rebound and fleet turnover analyses that were not the result of a public process, which were considered and rejected by ARB scientists and engineers, and which contain innumerable speculative links. As elicited in the Vermont trial over these regulations, their rebound and turnover analyses contradict each other to reach preferred results: for example, they deem fuel efficiency insignificant for purchasing decisions affecting turnover, but deem them overly significant once someone has bought that same more efficient vehicle. See enclosed excerpted Vermont trial testimony of Professor Peter Berck, and California deposition testimony and Vermont cross-examination of Plaintiff's expert Harrison. Their analyses are simply not credible, and come nowhere close to meeting opponents' burden to establish by clear and compelling evidence that ARB was arbitrary and capricious in its protectiveness determination. The opposing arguments should sound familiar;

they are virtually a carbon copy of those they submitted in the recent ZEV waiver proceeding as EPA summarized in that decision. 71 FR 78190 (December 28, 2006), ZEV Decision Document at p. 26-31. Here, as there, our rulemaking record and other statements submitted to EPA's record demonstrate that ARB "carefully deliberated this issue and reached a reasonable finding based on an evaluation of available data." *Id.* at p. 31. That is all that is required here as well.

III. Extraordinary and Compelling Conditions

In our December 21, 2005 request and in the May, 2007 hearings, the ARB anticipated and responded to manufacturer arguments that California could not demonstrate a need to implement these greenhouse gas emissions standards to meet extraordinary and compelling conditions in California. In addition to ARB's request documentation and testimony, the Docket is now replete with scientific evidence establishing the current and projected future effects of global warming in California and the severity thereof, and the need for every possible greenhouse gas emission reduction measure targeting such emissions. ARB's summary of that evidence and of our May, 2007 comments follow.

A. Ozone Conditions Alone Sufficient for Separate CA Motor Vehicle Program

ARB testified that EPA's review on this issue is limited to whether California still has a continuing need for its motor vehicle program as a whole, citing three recent EPA decisions finding so. See May 22, 2007 ARB Hearing Presentation, Document ID 0422.11, slides 49-50, and May 30, 2007 ARB Hearing Presentation, slide 11. These recent decisions are included within the enclosed list of 24 times since 1984 that EPA has evaluated individual California regulations in the context of the continuing need for our motor vehicle program as a whole. See enclosed Extraordinary & Compelling Conditions Continuing Need FR List. That continuing need was described in our December 21, 2005 request Basis document (Attachment 2, Document ID 0004.1, pp. 15-16) and was further demonstrated through our reference in slide 50 to the enclosed 8-hour ozone designations and the Final 8-hr Implementation Rule, Phase 1. 69 FR 23858 (April 30, 2004), 69 FR 223951 (April 30, 2004).

As we testified, since nothing has changed in the few months since EPA last easily made this determination on December 28, 2006 (71 FR 78190), and since California still has the "geographical and climatic conditions that, when combined with large numbers and high concentrations of automobiles, create serious pollution problems," (49 Fed.Reg. at 18890 (citing legislative history)), this is the end of a proper and legal EPA analysis of the extraordinary and compelling conditions waiver prong. But because both EPA and waiver opponents incorrectly suggested California must show more, we and other commenters thoroughly addressed the issue *arguendo*, as described next.

B. Global Warming Impacts to California Also Sufficient Alone

In our May 22, 2007 presentation (slides 22-24) we reminded EPA that the existence of current global warming, its primarily anthropogenic cause, and the likelihood of projected worldwide, North American, and California impacts, is no longer seriously at issue. More than sufficient evidence of this and its current and likely future effects on California was before the Board in its

rulemaking. See e.g. Document ID 0010.43, FSOR Comment & Responses 22-141, and Hayhoe et al. (enclosed). For completeness on these broader detection and attribution issues we are enclosing more recent IPCC 4th Assessment reports, Mr. James Hansen's expert report, a *Proceedings of the National Academy of Science* (PNAS) paper on which Mr. Hansen was lead author, and the expert reports by Timothy Barnett and David Karoly.

1. Ozone Impacts Exacerbated

As ARB, Dr. Stephen Schneider, Dr. Michael Kleeman (Document ID 0421.11), South Coast AQMD's Henry Hugo (Document ID 0421.10), and others testified, global warming is projected to increase the number of days conducive to ozone formation that the South Coast Air Basin and California's rapidly growing San Joaquin Valley experience. These areas already experience the highest ozone concentrations in the U.S.; the April, 2004 US EPA documents above identify California as having the only severe and serious designations for the national 8-hour ozone standard. The conclusion of Dr. Kleeman's expert report (enclosed) is especially instructive:

The weight of scientific evidence suggests that temperature in California will increase in the presence of global and regional climate change and that background ozone concentrations will also increase. These changes will lead to (a) increased emissions of ozone precursors in Los Angeles and the San Joaquin Valley, (b) increased chemical reaction rates that drive local ozone production, and (c) higher total ozone concentrations in Los Angeles and the San Joaquin Valley. Unless the emissions of ozone precursors are reduced in California, the effect of these changes will lead to increased ozone concentrations in Los Angeles and the San Joaquin Valley.

Nothing suggests that this conclusion would not also apply to other ozone nonattainment, marginal, or maintenance areas in California as well. See also Steiner et al (2006), and Motabelli et al (2007), both enclosed. Simply put, global warming emissions are projected to increase temperatures, thereby exacerbating California's ozone concentrations that Congress considered when enacting the original waiver provision in 1967 and when strengthening it in 1977. Targeting the reduction of greenhouse gases that ultimately contribute to ozone formation is clearly within California's power under Clean Air Act Section 209(b).

2. Wildfires Exacerbated

As ARB, Dr. Torn (5-30-07 Transcript pp. 149-154 (Document ID 0421), and Document ID 0421.5) and others testified, global warming is projected to increase the number of wildfires California experiences, including in and near areas affecting the South Coast Air Basin's already compromised air quality. Dr. Westerling's expert report (enclosed) establishes the connection between higher temperatures, drier conditions, and increasing number and severity of wildfires California is experiencing and will continue to experience due to global warming. We have also enclosed an earlier paper that Dr. Westerling co-authored, and an April, 2006 *Science* paper on this subject for which Dr. Westerling was lead author.

Again, as is obvious from our presentation slides (May 22 slide 54 and May 30 slide 15), increasing wildfires will exacerbate existing ozone and particulate matter health impacts. Wildfires affect public safety and have the potential to significantly impact public health through their smoke. For example, a survey of 26% of all tribal households on the Hoopa Valley National Indian Reservation in northern California showed a 52% increase in medical visits for respiratory problems during a large fire in 1999, compared to the same period of 1998. More than 60% of those surveyed reported an increase in respiratory symptoms during the smoke episode, and 20% continued to report increased respiratory symptoms two weeks after the smoke cleared. See enclosed Mott et al., 2002. The projected increases in fire season severity could lead (Westerling and Bryant, 2006) to more “bad air” days. Quantitative estimation of the impacts of future wildfire events is difficult. However, it is clear that in addition to posing additional firefighting costs, such fires in proximity to population centers pose a significant potential health impact for which reducing greenhouse gases will reduce risk.

3. Other Extraordinary & Compelling Conditions

EPA also heard from several others (e.g. 5-30-07 Panel 7) concerning additional extraordinary and compelling conditions that global warming impacts present for California. These impacts include declining snowpack and early snowmelt and resultant impacts on water storage and release, sea level rise, salt water intrusion, agricultural, and wildlife impacts. Many of these impacts overlap in California’s unique San Francisco Bay-Delta, the fresh water from which 25 million Southern Californians depend and which were shut down for several days earlier this month due to endangered species concerns (see enclosed June 9, 2007 SFGate article) we can expect global warming to exacerbate. See enclosed expert reports of Drs. Flick, Kalkstein (heat-related mortality impacts), Maurer (Water Storage and User Impacts), Stewart-Frey (early snowmelt), and Williams (San Francisco Bay-Delta impact). As ARB testified, nothing in the text of Section 209(b)(1)(B) limits the extraordinary and compelling conditions California can address to those more directly resulting in smog. Given the statutory text, the identification of some of these global warming impacts in *Massachusetts et al. v. EPA* as impacts EPA can – and by implication (pp. 18-23) should – address, and EPA’s proper refusal in 1984 to second-guess California’s need for its particulate matter standard on passenger cars, there is no principled reason to limit the impacts California can consider.

4. California’s Conditions Need Not Be Worse, But Are

As ARB pointed out in reference to the 1984 diesel particulate waiver (49 FR 18887), California’s conditions need not be worse or unique among States because if that were the case, only California could be setting its own standards for specific California purposes. The mere existence of Clean Air Act Section 177 proves otherwise; the opt-in states benefit from California’s program regardless of their relative environmental conditions. In addition, Dr. Schneider and others above aptly demonstrated that even if this were a legitimate issue for EPA review in the waiver setting, California’s conditions are unique and arguably more severe: no other state faces the combination of ozone exacerbation, wildfire emissions’ contribution, water system, and coastal system impacts faced by this, the most populated State. And as Dr. Schneider testified based on recent IPCC reports, the temperature impacts from global warming are more certain for Western states like California.

5. No Modeled Temperature Impact Required

Opponents have argued – through the unprecedented use in waiver proceedings of video clips of ARB and other states' officials' depositions taken out of context – that California cannot show that these greenhouse gas regulations will achieve a measurable and specific temperature reduction in California. This provided their litigation counsel with an opportunity to direct some theatre, but it is ultimately unavailing for their argument and unhelpful for EPA's decision. This is because the efficacy of California's standards is not at issue in this proceeding.

As we described in our request (Basis pp. 10 and 16) and our testimony, EPA has numerous times invoked Administrator Train's understanding of the law on this point, as confirmed in *MEMA I* and progeny. Section 209(b) can be given effect only by applying substantial deference to California's balancing of the costs versus the benefits of any particular regulation. And as EPA heard from Cal/EPA Secretary Adams on May 22 and from others here on May 30, here California's balancing of those costs and benefits takes place against the backdrop of its climate change program to meet the State's global warming emission reduction requirements. See e.g. AB 32, Executive Order s-3-05, and Early Action Measures documents, all enclosed. It is well within California's policy prerogative to aggressively but fairly regulate the transportation sector, as the largest single source of California's greenhouse gas emissions, even at potentially substantial cost.

Opponents' argument here is ultimately to demand that EPA create out of whole cloth a new test for waiving greenhouse gas emission reduction regulations. As we testified, the modeled impact they insist upon has never been and cannot now be required. Just as waived California on-road regulations targeting minimal though important tons per day of ozone precursors statewide typically cannot independently show a parts per billion ozone reduction in a particular air basin, it is unsurprising that ARB cannot accurately determine a temperature impact in California from these regulations. IPCC 4th Assessment Report, WG III, Table SPM.5 illustrates both the complexity and the minimum necessary size of emission mitigation approaches needed to elicit a degree-Celsius response in fifty years. This demonstrates why it is nearly impossible to fully develop a single greenhouse gas emission reduction mitigation measure such as AB 1493 into a scenario useful for a complex global climate modeling exercise. As we stated, it takes the accumulation of several countries' worth of such emission reductions to demonstrate a change in temperature or a temperature change avoided. The relevant modeling exercise is not that of the industry's discredited expert (see enclosed cross-examination of Dr. Christy) but is from the IPCC scenarios modeling temperature changes from low, medium, and high emissions scenarios that Dr. Schneider described. See also FSOR Comment and Responses 137, 347, 349, 357-361, and 601-604. Even if EPA chooses to give credence to Mr. Christy's analysis or to Mr. Heuss's from the rulemaking, those analyses show that these regulations will have a small but demonstrable temperature impact.

As with our motor vehicle emission program in general, ARB's leadership on greenhouse gas mitigation induces others to act and, collectively, the impact is much larger than if only we are involved. The ultimate proof of this is that ten other states are waiting for California's waiver

which collectively will have three times the impact that California would have alone. Moreover, many other states and countries not already at these projected greenhouse gas standard levels will follow as they always have when California leads with environmentally progressive rules. See enclosed expert report of Michael Walsh. As we stated, *Massachusetts et al v EPA* points out the fundamental flaw in such “free rider” and “tragedy of the commons” thinking; incremental emission reductions are the answer.

6. These Greenhouse Gas Reductions Are Needed to Meet CA Conditions

The IPCC 2007 4th Assessment Report, WG I, and Drs. Schneider, Hansen, and numerous others, all independently find that greenhouse gas emissions are currently on a trajectory that, even with climate system uncertainty going our way, would likely increase temperatures by at least 2 degrees Celsius. See also A2 and A1B Scenarios in IPCC 4th Assessment WG I, page 21 (enclosed). These business-as-usual scenarios would continue and exacerbate the global warming impacts that California is already experiencing. See Hansen et al. PNAS 2006, Hayhoe et al. PNAS 2004, Cayan et al., all peer reviewed and all enclosed. To avoid or minimize those impacts, California and other jurisdictions around the world must work toward achieving the IPCC’s alternative scenario B1. See IPCC 4th Assessment Report, WG III, Table SPM.5, page 23. This alternative scenario requires developing nations to arrest and even reduce their emissions growth, and industrialized nations to reduce their emissions by 60-80% See Doniger et al., 2006 (enclosed), see Hansen et al. PNAS 2006, and Schellnhuber et al., 2006 (enclosed).

Pacala and Socolow (2004) (enclosed) show that given the U.S. motor vehicle sector’s high contribution to national totals of greenhouse gas emissions, a substantial portion of the U.S. reduction will have to come from this sector to meet the alternative scenario. The situation is even more compelling for AB 1493, given the greater percentage (41%) of California’s greenhouse gas emissions from passenger cars and light trucks. While all GHG emissions reductions are needed (Pacala and Socolow, 2004), even from measures that get even fewer emission reductions than these regulations, no currently contemplated federal or state transportation sector mitigation measure will achieve equivalent emission reductions in this time frame. See Climate Action Team Report, 2006.

To stabilize the atmosphere at 550 ppb CO₂ equivalent (actually a very high level), EPA has estimated that a cumulative 45,000 MMTCO₂E is needed from light-duty vehicles. See enclosed 2007 US EPA Wedge Analysis. Greenhouse gas reductions from California and the states that have adopted California’s AB 1493 regulations achieves at least 3800 MMTCO₂E, 18% of the estimated reductions needed from light-duty vehicles nationwide. Spreadsheet enclosed. Thus, AB 1493 is an important first step toward achieving the share of greenhouse gas emission reductions needed from the motor vehicle sector if we are to avoid the worst consequences of global warming.

There is also undeniable scientific reasoning for immediate adoption of these greenhouse gas emission reductions. AB 1493 comes into effect in model year 2009 with significant reductions effective between 2009 and 2020. California’s 2020 statewide emission reduction goal is

approximately 174 MMTCO₂E from business as usual. Climate Action Team report 2006. AB 1493 will contribute a 30 MMTCO₂E reduction or approximately 17% of what is needed to meet the 2020 target. NESCAUM has independently confirmed that adoption of the AB 1493 program elsewhere will result in this range of reductions for the Northeast states. See enclosed NESCAUM, 2005.

Changes in atmospheric concentrations of carbon dioxide and other greenhouse gases are directly proportional to the climate forcing and the temperature changes and associated impacts described above. NOAA Annual Greenhouse Gas Index, enclosed. The amount of climate forcing, and in turn the amount of temperature increase, is directly proportional over time to the amount of anthropogenic greenhouse gas emissions. Hansen et al, 2005 and IPCC 4th Assessment Report WGI. As a result, higher greenhouse gas emissions mean more forcing and more temperature change. Hansen et al, 2006 and IPCC 4th Assessment Report WGI. Conversely, lower greenhouse gas emissions mean less forcing and less temperature change Hansen et al, 2006 and IPCC 4th Assessment Report WGI. Along with reductions in non-CO₂ greenhouse gases, reducing heat-trapping CO₂ and CH₄ emissions is the most important way to slow the rate of global warming. Hansen et al. PNAS 2006. To have any chance of stabilizing global concentrations of greenhouse gases in the atmosphere and to avoid the severe consequences from the medium and higher warming ranges, emissions of all greenhouse gases but, in particular, CO₂ and CH₄ need to peak and decline by 2030. IPCC 4th Assessment WG III, p. 22. Thus early action mitigation efforts, such as AB 1493, have a disproportionately large impact on opportunities to avoid the most severe consequences of climate change.

Even the industry's expert in the Vermont trial agreed with this basic premise that is sufficient for California to seek to reduce its greenhouse gas emission reductions: more greenhouse gases means more forcing and more warming, less greenhouse gases mean less forcing and less warming, and any level of greenhouse gas emission reductions are going to have some effect on the radiative forcing and consequent warming of the planet. See enclosed cross-examination of Dr. John R. Christy at p. 174. The relationship between reducing emissions and lower warming and consequent impacts is a scientific fact. Therefore the projected greenhouse gas emission reductions from these regulations are clearly one of many measures needed to meet California's portion of the reductions needed to minimize the extraordinary and compelling conditions in California from global warming.

7. Deference is Also Required Here

In its June 5, 2007 letter (enclosed) the Alliance had the audacity to state that California has no particular expertise in the field of climate change regulation, and that this would be sufficient for EPA to reconsider its traditional deference to California on the issue of extraordinary and compelling conditions. As EPA heard from Cal/EPA Secretary Adams and others, California is once again at the forefront of combating emissions, here of greenhouse gases. That history was provided in the ISOR at pp. ii., 27-38 and Document ID 0010.43, and was amplified by the May 30, 2007 Panel 1 speakers. We here also enclose "Our Changing Climate," our "Climate Action Team Report," and numerous other reports demonstrating the leadership role that California has taken on global warming issues generally, and on vehicular greenhouse gases in

particular. Simply put, no other State has committed the administrative, scientific, legal, and other resources and the public policy focus to global warming issues as California has. While as a legal matter we believe III.A. resolves the matter, should EPA further analyze extraordinary and compelling conditions, deference to California on this issue is not only appropriate but mandated, and therefore any doubt must be resolved in California's favor.

C. Conclusion on Extraordinary and Compelling Conditions

That California continues to experience a significant public health problem from ozone in combination with our high vehicle and human population is the end of the story as a legal matter; no further demonstration is needed. But as many commenters indicated at the hearings, and as we have demonstrated unequivocally, measures such as these regulations are also needed to address conditions – both existing air quality problems and other resources – in California due to global warming. All such measures are necessary, though no one measure in isolation in California or elsewhere is likely to have a demonstrable impact given current modeling sensitivity. Perhaps the President's top environmental advisor described the situation best in reference to the recent G8 summit:

The President has emphasized we actually need more of everything. We need more renewable fuel, we need more domestic supplies of oil and gas for energy security, we need a strategic petroleum reserve that gives us the security against a major supply disruption, and we need more efficient vehicles, and we need to alleviate traffic congestion that massively wastes fuel. We need to work on every aspect. There's no silver bullet to the energy security equation, just like there's no silver bullet to the climate change equation. We need it all. And those who suggest there's one approach versus another, they're not facing reality. (Emphasis added.) *James Connaughton, Chairman, Council on Environmental Quality, May 31, 2007 (enclosed), p. 4.*

IV. Clean Air Act Section 202(a) Consistency

As stated in our December 21, 2005 submittal, EPA's review here is limited to technological feasibility and lead time with consideration of costs, and consistency of test procedures. These standards meet those limited criteria.

A. Lead Time & Costs

While California projected several technology packages manufacturers could apply to meet the greenhouse gas performance standards, it is important here to note here the substantial progress manufacturers have made on most of the component technologies.

1. Technologies (Singular)

a. Valve Control (variable valve timing & lift)

Variable valve control is becoming increasingly prevalent in the vehicle fleet. Variable valve timing alone has penetrated 54.5% of the light duty fleet and variable valve lift use is expanding as shown in the enclosed lists of 2007 and 2008 model year vehicles with GHG technologies.

b. Cylinder deactivation

Three manufacturers are currently marketing cylinder activation on both OHV and OHC engines across a wide variety of applications in the U.S.

c. Gasoline direct injection – stoichiometric

General Motors currently markets two vehicle models with direct injection and projects that by the end of 2010, one in every six GM vehicles will be equipped with a direct injection engine. Ford Motor Company has also announced plans to apply this technology widely in the very near future. See enclosed article. Furthermore, Ford has announced that it will incorporate direct injection with turbocharging on several vehicles currently under development; Mazda currently produces a 2.3 liter, turbocharged, direct injected engine for the Mazda6 and routinely shares technology with its majority shareholder Ford. See enclosed article. Similarly, Mitsubishi has several GDI-equipped vehicles available for the Japanese and European markets and a long history of sharing technology with Chrysler. Both BMW, Volkswagon (VW), and Audi have incorporated gasoline direct injection with turbocharging in their vehicles for several years.

d. Turbocharging

Turbocharging is widely employed on manufacturers' European vehicles and currently available on several models in the U.S. Historically, turbocharging has been used to improve vehicle performance. More recently, however, engine charging is considered a key enabling technology for GHG reduction. See enclosed "Boosting the Future" article. Saab continues to successfully apply turbochargers without requiring more expensive premium fuel that opponents may claim is needed.

e. Transmissions: 6-speed automatic, automated manual, and continuously variable transmission

6-speed automatic transmissions are currently used by almost all manufacturers marketing vehicles in the U.S. Automated manual transmissions can be found in BMW and VW vehicles today and Ford is planning to use these transmissions in their European vehicles. Several manufacturers, most notably Nissan, Toyota, Ford and Chrysler, are currently offering passenger cars and SUVs using continuously variable transmissions.

f. Electrohydraulic and electric power steering

Most if not all auto manufacturers are applying one of these technologies to their mild or strong hybrid vehicles, including for example, GM's line of full size hybrid trucks. Honda, Toyota and Mazda have several non-hybrid vehicles using these technologies.

g. More efficient, low-leak air conditioning

The development of more efficient, low-leak mobile air conditioning systems and the use of a low global warming potential refrigerant has already been mandated by the European Union under Directive 2006/40/EC (enclosed) that essentially mirrors the technology and phase-in requirements of ARB's motor vehicle regulations. Therefore, transfer of improved air conditioning technology developed for European applications to manufacturers' U.S. vehicles should not provide a significant challenge to the manufacturers. Concerning cost for development of the technology, manufacturers will incur these costs anyway absent California GHG regulations. Additional cost to incorporate the technology on vehicles marketed in the U.S. should therefore be minimal. This will allow manufacturers to obtain a substantial percentage of their required greenhouse gas reductions through other than drivetrain CO₂ reduction technologies.

h. Improved aerodynamics

Aerodynamic improvements are easily incorporated into vehicle design either during model updates or initial vehicle design. According to the manufacturers, aerodynamic improvements are relatively easy to accomplish and according to at least one major manufacturer, relatively cost-free. See enclosed Edmunds.com article.

i. Camless Valve Actuation

Valeo, a major component supplier, anticipates commercialization of this technology by 2010 and is working with several manufacturers to bring it to market. See enclosed Automotive News article.

j. Homogeneous Charge Compression Ignition

All of the major vehicle manufacturers are pursuing this technology due to its potential to significantly reduce both criteria and GHG emissions at a relatively lower cost, and its application across a wide variety of fuels. GM is expected to demonstrate this technology in a vehicle this year and Ford has announced that it could be in production within four years. See enclosed Autoweek article. Regarding manufacturers' concerns that HCCI operation over an engine's full speed and load range has not yet been demonstrated, the system modeled by AVL reflected limited HCCI operation, consistent with the current state of HCCI development. See enclosed NESCCAF September 2004 Report.

k. Alternatively Fueled Vehicles (e.g. E85)

Alternative fuel vehicles are the current mantra of domestic manufacturers and efforts to mandate the use of alternative fuels by state and federal governments are ongoing. See e.g. President's Twenty in Ten plan (enclosed) and California's recently adopted Low Carbon Fuel Standard (LCFS Executive Order enclosed). To the extent manufacturers deliver on their promises to build millions of these vehicles and to cooperate on supporting fueling infrastructure, this will provide an additional significant compliance mechanism. Ford's Alan

Mulally has stated that the best and most cost effective way to address energy security needs and climate change must be a combination of new technologies and biofuels. And acknowledging the potential for greenhouse gas emission reductions from other than gasoline-fueled vehicles, Mr. Mulally stated, "Today's ethanol made from corn has the ability to reduce CO2 emissions by approximately 25 percent - tomorrow's cellulosic ethanol can increase this percentage to 85 percent." March 14, 2007 Statement enclosed. In fact, the three domestic manufacturer CEO's have committed to make up to half of their 2012 and later model year production capable of running on alternative fuels. DaimlerChrysler's LaSorda: "We stand ready to make, by 2012, 50 percent of our production as either FFVs or vehicles capable of running on biodiesel." March 14, 2007 Testimony. See also White House March 26, 2007 press release, enclosed. Likewise, increasing diesel penetration can provide another compliance avenue.

As the Alliance testified on May 30, manufacturers are investing heavily to put millions of "advanced technology" vehicles on the roads, including hydrogen fuel cells, hydrogen ICEs, E85, hybrids, plug-in HEVs, and clean diesels. See also Beth Lowery (GM) January 30, 2007 Testimony, enclosed. Many of these vehicles are already in the market, and many more are planned; all will help manufacturers take advantage of the alternative compliance mechanisms in the regulation that give credit for introduction and use of non-gasoline vehicles and for their associated upstream emission reductions. See also enclosed Expert Report of Mike Jackson, and exhibits used with Mr. Jackson in the Vermont trial (demonstrating how fuels at different levels of fuel economy and with air conditioning credits can contribute toward and potentially achieve compliance.)

I. Integrated Starter Generator

Vehicles using this technology are considered, at minimum, to be mild hybrids. A current example of this is the Saturn Vue Green Line, which utilizes a relatively low cost, belt driven starter/generator system that shuts off the engine at idle and assists during acceleration. See enclosed article and brochure.

m. Improved Alternator

This technology reduces greenhouse gases by improving the charging efficiency of the alternator. BMW and Mercedes-Benz currently use the technology on some models. See enclosed Autonews article.

2. Technologies (Combined)

To meet both the near- and mid-term fleet average standards, manufacturers will almost certainly be combining several of the technologies identified above. Current examples of their ability to do so include VW and Audi combining direct injection, turbocharging, engine downsizing, and continuously variable transmissions in several models. See enclosed article. Ford has announced that it too will be combining direct injection and turbocharging with engine downsizing on multiple vehicle models. See enclosed article. The Lexus LS 460 incorporates dual overhead camshafts, variable valve timing, 8-speed automatic transmission, electric power steering, and low aerodynamic drag (0.26). See enclosed article. GM's full size hybrid trucks

have an integrated starter/generator, electrohydraulic power steering, a 42 volt electrical system, cylinder deactivation, E85 compatibility, and an improved alternator (for efficient battery charging). See enclosed GM pickup brochure. The Saturn Vue (2007 brochure enclosed) combines all technologies mentioned above and the additional "green" technology of low rolling resistance tires. It is also noteworthy that manufacturers are aggressively introducing new hybrid vehicles well ahead of these standards – for which ARB projected no significant additional penetration needed – despite their own analyses showing high hybrid costs.

3. Others' Views

EPA's Interim Powertrain Report found that even the highest-cost diesel-hybrid option for reducing greenhouse gases was cost-effective based on consumer payback period calculated on \$2.25/gallon gasoline and diesel fuel; payback for the gasoline technologies was two to four years. In addition, we are enclosing reports of K.G. Duleep, a nationally-recognized expert on automotive vehicle efficiency and consultant to numerous U.S. government agencies and private sector clients for decades. Mr. Duleep concludes that while the PC/LDT1 standard presents a greater challenge than the LDT2/MDV standard, together the fleet average standards are technically feasible within the lead time provided. Mr. Duleep's supplemental report in the *Green Mountain* matter (enclosed) also provides several additional references on the development of individual and combined technologies. Congressman Markey's NHTSA materials (enclosed) also indicate that similar significant year after year percentage greenhouse gas reductions that would occur under the President's Twenty in Ten plan are achievable.

4. A Changing World

These technological feasibility and lead time issues all occur against the backdrop of a world increasingly focused on global warming, energy security, and volatile, increasing fuel prices. See enclosed market research cited May 22, 2007 in slide 94, "Money in the Bank...", the President's "Twenty in Ten" plan, and Executive Order 13432. Note that when ARB analyzed potential payback periods for projected technologies, we found nearly all would payback within a few years at an assumed gasoline price of \$1.74 per gallon. A recent trip to the pump, let alone the enclosed statement by Mr. Page, shows that like many of ARB's assumptions in the rulemaking, this one was very conservative. As Van Jollisaint, DaimlerChrysler's chief economist and director of economic and market intelligence, succinctly explained, "The price of fuel isn't the only thing; it's everything." See enclosed trial testimony excerpt.

The automakers' March 14, 2007 testimony to Congress acknowledges this changing world, as do their near-daily announcements of vehicles with the very technologies ARB projected for compliance with these regulations. GM's Wagoner: "Since 2001, a series of geopolitical, natural, and economic realities have combined to drive home the fact that we face an increasingly uncertain energy future on a global basis. For the global auto industry, this means that we must as a business necessity develop alternative sources of propulsion, based on diverse sources of energy, in order to meet the world's growing demand for our products." March 14 testimony at 1. Simply put, pressures to reduce greenhouse gas emissions are here to stay, and are now forcing manufacturers to accelerate implementing the technologies these standards projected. While there is plenty of evidence in ARB's record to support the allowed

lead time, these events ensure that prudent manufacturers will now focus their efforts on achieving rather than fighting the greenhouse gas reductions ARB projected.

B. Test Procedures

ARB continues to be unaware of any arguments suggesting that these greenhouse gas regulations create test procedures inconsistent with applicable federal test procedures. If such arguments are raised, we welcome the opportunity to respond.

C. Manufacturers' Arguments

1. AVL/NESCCAF Engine/Vehicle Modeling Flawed

a. Launch (including ARB-tested vehicle)

Concerning manufacturers' claims that the launch characteristics of some technology combinations modeled by AVL for the NESCCAF study were inadequate for commercial vehicles, ARB tested two 2007 model year vehicles that demonstrated launch times and distance similar to those modeled by AVL. See enclosed ARB's launch test data for a Caliber and a Caravan. It is difficult to reconcile the manufacturer experts' testimony that the launch times identified in the AVL modeling are inadequate when one of these manufacturers is producing vehicles today with the same allegedly inadequate launch time performance. If manufacturers wish to improve such launch times, at the May 30 waiver hearing we listed several simple technology approaches that they could use that would minimally impact greenhouse gas emissions performance.

b. Gradeability & 50-70 MPH Passing Times

Regarding manufacturers' complaints that gradeability and 50-70 passing times were not maintained in the vehicle modeling, AVL modeling data clearly demonstrates that if the modeled vehicles were allowed to downshift, typical in normal vehicle operation, both gradeability and 50-70 passing times were equivalent to and in some cases exceeded that of the baseline vehicles. See FSOR Comment & Response 158.

c. Premium v. Regular Fuel

Manufacturers' claims that premium grade gasoline is required to maintain the vehicle performance modeled by AVL for those technology combinations that incorporated direct injection and turbocharging are also without merit. AVL, which has considerable experience in the modeling and development of direct injection, turbocharged applications, responded in no uncertain terms that vehicle performance of the modeled vehicles would be undiminished when using regular grade gasoline. See enclosed e-mail from AVL to ARB.

d. Modeling Conclusion

What is clear from the manufacturers' modeling arguments is that they must focus heavily on, and distort the importance of certain inputs to, AVL's modeling because the superiority of the AVL/CRUISE model to their consultant's VEHSIM model is manifest. See ISOR FSOR Comment & Response 254, Declaration of Steve Albu, Document ID 0010.123. CRUISE is used for industry-wide applications, while VEHSIM is for small-scale applications. CRUISE is used by manufacturers, while VEHSIM is used by no one other than opponent's consultant. CRUISE uses actual engine maps, whereas VEHSIM uses approximations of such maps with multiple embedded assumptions. CRUISE avoids the double-counting that was a concern of the 2002 NAS study, whereas it is unclear how VEHSIM does this. Additional problems with the VEHSIM model are discussed in the enclosed Supplemental Expert report of Mr. K.G. Duleep at pp. 3-5. In short, NESCCAF and ARB had good reason to rely on AVL and its CRUISE model, despite manufacturers' contrary analysis using VEHSIM.

2. ARB's Costs Too Low

While component costs supplied by Martec for the NESCCAF study used by ARB are generally not disputed by the manufacturers, they maintain that the retail price equivalent factor of 1.4 used by ARB is too low. As noted at the May 30 waiver hearing, the 1.4 factor is fully consistent with factors used by other agencies such as the U.S. EPA, Argonne National Laboratories, NAS, and the European Union for CO₂ abatement technologies. See e.g. EPA Interim Powertrain Report 1.4.2 (citing 1.26 as RPE EPA typically uses in regulatory analyses).

Manufacturers also claim that the 30 percent reduction in component costs that we assigned to select emerging technologies was inappropriate. This ignores the fact that the history of technology development is rife with examples of innovative designs that reduce both complexity and cost. Two such recent examples were cited at the May 30 hearing; Nissan's continuously variable valve timing and lift system that can sustain higher engine RPM (see enclosed article), and is lighter and uses fewer parts than BMW's Valvetronic system, and Honda's variable flow turbocharger with a simpler design than conventional variable vane turbochargers. See enclosed article. Another example worth mentioning is the 6-speed automatic transmission costed in the NESCCAF study incorporating the LePeletier design that is lighter, smaller, and has fewer parts than conventional 5-speed automatic transmissions.

Because ARB's costs estimates are usually fairly accurate, and even conservative, manufacturers have understandably tried to focus on ARB's original underestimate in one discrete area: zero-emission vehicles. But the proper analysis – if EPA should even do one, given the expansive deference to California's costs estimates that the Alliance itself argues applies here (June 5 Alliance letter section I.A.) – is to LEV, not ZEV. ZEV required a single breakthrough technology (batteries) far in the future; LEV and these greenhouse gas regulations assume a phase-in of multiple technologies. In ZEV, the principal (battery) technology was unavailable at adoption; for LEV and these standards most technologies are available before and in the first model year. In ZEV, manufacturers at adoption had not announced plans for production; in LEV and here multiple manufacturers have announced plans for applying all near- and mid-term technologies. And even with ZEV, as EPA heard just last year, ARB closely

monitored manufacturers' progress toward meeting that standard and took appropriate steps to amend it as needed.

3. Lead time too short

Lead time should not be an issue here. Manufacturers have had ample notice of the requirements since they were adopted in August of 2005, six years before full implementation of near-term requirements and ten years before full implementation of the mid-term requirements. All of the technologies identified for the near-term are "off-the-shelf" technologies that could be readily incorporated into manufacturers' vehicles by 2012. Only three emerging technologies were projected as additional technologies needed for the mid-term; camless valve actuation, HCCI, and Integrated starter/generator (ISG). ISG has already been developed to commercial status, and as noted above, HCCI and camless valve actuation are projected to be commercially viable before, and widely so within, the 2013-2016 timeframe.

4. Safety

ARB is aware that the manufacturers have raised two safety issues, one based on the theory that the standards will cause a downweighting of the vehicle fleet and one based on the theory that the standards will cause excess vehicle miles traveled (VMT) through a combination of the rebound and fleet turnover effects. The manufacturers have not met their burden as to either of these issues. The downweighting theory holds that: 1) manufacturers will reduce the size and weight of the vehicle fleet to comply with the regulations; and 2) the smaller, lighter vehicle fleet will be less crashworthy. As to the first point, in addition to the AB 1493 legislation precluding ARB from requiring downweighting, ARB determined it was not likely as a compliance method; no evidence to the contrary was provided in the Vermont trial. As to the second point, ARB encloses here an expert report by Dr. David L. Greene demonstrating that any weight reduction that may be made to comply with these standards need not adversely affect safety. See also enclosed ICCT and DRI reports.

Under the manufacturers' rebound/fleet turnover safety theory, they have calculated increased deaths and injuries on California roads base on their projection that the standards will lead to measurably more VMT than would occur absent the standards. For the same reasons discussed above in the Protectiveness section regarding fleet turnover and rebound, the manufacturers have clearly not met their burden on this issue. ARB's analysis and understanding of this issue is, again, the result of the agency's expertise, study, and the public process used to develop the regulations.

D. Lead Time and Cost Conclusion

Improved engine, transmission, and powertrain technologies continue to penetrate the new light-duty vehicle fleet. See EPA Trends report, enclosed. As Dr. Sperling testified, the trend over the last three decades has been to apply these innovative technologies to accommodate increases in average new vehicle weight, power, and performance in lieu of reducing greenhouse gas emissions. More aggressive application of the aforementioned technologies will simultaneously reduce component costs and the production of green house gases while

maintaining performance. GM and DCC, the manufacturers ARB's modeling showed would need to apply technologies the most aggressively, conceded in their Vermont federal court trial that there is no compliance issue through at least MY 2010 for GM and through at least MY 2011 for DCC. See enclosed VT Trial excerpts. Substantial time remains to continue refining projected technologies and applying them across manufacturers' fleets. ARB has clearly met both *NRDC* and *International Harvester* lead time tests as EPA has applied them in the waiver setting.

In any event, section I.A. of the Alliance's June 5, 2007 letter succinctly reviews the very limited consideration that EPA can give to reduced model availability (and related fleet turnover concerns) and projected new vehicle cost increases, focusing on the "1977 Standards" decision as generally approved in *MEMA I* and the LEV I decision document. It would be very strange indeed for opponents to now argue that their cost estimates of several times ARB's are somehow entitled to greater weight than the extensive analyses in the ARB rulemaking.

V. Supplemental Questions Noticed April 30, 2007

Our May, 2007 hearing presentations addressed the three supplemental questions EPA raised in its April 30, 2007 (72 FR 21260) notice. The following summarizes our responses.

A. Relevance of *Massachusetts et al. v. EPA*, 127 S.Ct. 1438 (2007)

EPA asked "(2) whether the United States Supreme Court's decision, issued on April 2, 2007 (549 U.S. _____ (2007)), regarding the regulation of emissions of greenhouse gases from new motor vehicles under Title II of the Clean Air Act, is relevant to EPA's evaluation of the three criteria, and if so, in what manner." ARB, as well as numerous other commenters, responded that the decision is very relevant, since it eliminated a potential consistency argument, i.e., that California cannot regulate greenhouse gases if EPA cannot. The decision also reinforced the need for EPA to consider only statutory factors in exercising its regulatory authority, and by extension, to consider only 209(b) factors in reviewing this request. On a broader note, the decision vigorously dispels the notion that other government agency action, or other countries' actions, must come first; it leaves no doubt that it is incumbent upon EPA to take this and its own incremental steps to reduce greenhouse gas emissions. We also testified that nothing in the decision supports delaying action on this request. EPA need not first make an endangerment finding to grant this request, and even if believes it must, the overwhelming, voluminous, well-developed, and readily available scientific evidence makes mandatory a finding concurrent with action on this request.²

Opponents' June 5, 2007 letter instead presents EPA with two false choices that the opinion does not present or allow. Page 9, bottom. First, EPA cannot now find the subject greenhouse gas regulations inconsistent with 202(a), both because 202(a) consistency concerns only

² As we answered in response to EPA's question at the May 22nd hearing, that EPA action must occur before the end of October, 2007, the 180-day expiration of California's notice of intent to sue for unreasonable delay. In case that notice is not in the docket, it is enclosed again here. See also Governor Schwarzenegger's June 13, 2007 letter on this subject.

technological feasibility and lead time with consideration of costs, and because there is no question that California can and does regulate emissions or substances before they are identified as pollutants under the Act or before EPA chooses to regulate such pollutants. See ARB May 22, 2007 Presentation, Slide 11. For the same reason, EPA cannot hold our request in abeyance for a later “considered judgment” on consistency. Even if EPA ultimately chooses not to regulate vehicular greenhouse gases for whatever reason, California’s standards are unaffected because they would not be inconsistent with technological and lead time considerations, which must be liberally construed in California’s favor as the manufacturers point out in I.A. of their letter.

B. Does It Matter that the Regulations Concern Global Warming Emissions?

EPA asked “(1) Given that the regulations referenced in the December 21, 2005, request letter relate to global climate change, should that have any effect on EPA’s evaluation of the criteria, and if so, in what manner.” ARB and others responded simply “NO.” Greenhouse gases are pollutants under the Act, and California is regulating new motor vehicle emissions thereof first, as it has for other pollutants. See also Clean Air Act Section 209(e) (authorizing California to regulate non-road emissions before EPA completed its endangerment study or issued regulations under Section 213(a).) And as we discussed above in III.B.7, the Alliance’s June 5, 2007 assertion that California’s leadership position on greenhouse gas emissions is somehow different from its historical leadership role, warranting less EPA deference, is misguided and wrong.

C. Is EPCA/CAFE Relevant to ARB’s Authority or EPA’s Consideration?

EPA asked “(3) whether the Energy Policy and Conservation Act (EPCA) fuel economy provisions are relevant to EPA’s consideration of this petition or to ARB’s authority to implement its vehicle GHG regulations.” ARB, as well as numerous other commenters, responded that EPCA neither diminishes California’s authority to adopt vehicular emissions standards under the Act (and by extension, EPA’s authority to waive preemption thereof), nor is it relevant to EPA’s consideration of our request given the three limited and exclusive waiver criteria in Section 209(b). We did concede, though, that compliance with any future EPCA/CAFE standard may make compliance with California – and hopefully federal EPA motor vehicle greenhouse gas emission standards – that much easier.

As we stated in the hearings, and contrary to the Alliance’s June 5, 2007 letter discussion (pp. 10-11), NHTSA’s views on this subject are entitled to no deference. In the same 9th Circuit action the Alliance quotes, NHTSA has admitted that the preamble discussion for the challenged light truck CAFE rulemaking is not final agency action, has no legal effect, and will ultimately be decided by other courts. Brief for Respondents, *Center for Biological Diversity v. NHTSA*, No. 06-71891 (9th Cir argued May 14, 2007) (enclosed), pp. 117-133. NHTSA itself argued that the issue of preemption is not ripe until EPA decides the waiver issue. *Ibid.* Thus NHTSA recognized, as ARB argued in its December 21, 2005 submittal, that EPA acts independently to make the ultimate decision about the waiver under the Clean Air Act, separate and apart from EPCA. Until that decision is made, there is no issue of preemption or conflict that even arises under EPCA since there is no standard at issue. And once EPA issues this

waiver and the issue becomes ripe, the foundation for NHTSA's analysis – that EPA does not have authority to regulate vehicular greenhouse gas emissions – immediately crumbles under the weight of *Massachusetts et al v. EPA*. Thus, there is nothing in NHTSA's preamble discussion that provides any guidance on the issue of the preemption under EPCA. Instead, EPA can and must move forward on its own to act on this request.

The opponents correctly state that Executive Order 13,432 requires EPA to coordinate with NHTSA and other Executive Branch agencies on motor vehicle greenhouse gas regulations “within current statutory limitations” and that it “does not on its face control such waiver proceedings.” June 5, 2007 Alliance letter at pp. 12-13. The obvious import of these observations is that EPCA/CAFE and NHTSA continue to have no bearing on EPA's waiver review criteria. So, rather than open the door to some new kind of many-headed quasi-judicial proceeding to opponents' liking, neither *Massachusetts et al v. EPA* nor this Executive Order provide any support for changing mid-stream the procedures that EPA noticed April 30, 2007 and upon which the public, ARB, and thousands of supportive commenters have relied upon.

In the Vermont trial waiver opponents appeared to recognize the limited nature of this waiver proceeding:

“The EPA waiver process is itself “modest in scope,” *Motor and Equip. Mfrs. Ass'n, Inc. v. EPA*, 627 F.2d 1095, 1119 (D.C. Cir. 1979) (“*MEMA*”), and the only question before EPA in that process is whether the standards under consideration meet the specific criteria enumerated in section 209(b)(1)(A), (B) and (C) of the Clean Air Act...” Plaintiffs' Pretrial Memorandum, *Green Mountain Chrysler Plymouth Dodge Jeep, et al. v. Crombie*, Case 2:05-cv-00302-wks, Document 364, Filed 04/06/2007. See also Alliance June 5, 2007 letter section I.A

The ARB agrees, and as shown in our comments, California's standards do indeed meet those criteria.

Additional arguments on the relevancy of EPCA/CAFE are provided in the attached briefing (Document #562) in the manufacturers' California federal court challenge.

VI. Procedural Issues

A. Manufacturer Participation in California Rulemaking

As noted in our waiver request, the manufacturers did not meaningfully participate in the California rulemaking, as the Board's Chairman indicated. See September 24, 2004 Transcript (submitted December 21, 2005 as Attachment 3, item 8) at pp. 188-121, and FSOR Comment & Response Nos. 179, 273, 274, 296, and 539. Evidence in the industry's litigation challenge to the regulation confirms what the Board at the time suspected: manufacturers' plan all along, effected at least in part by their trade group's consultant, has been to withhold information from ARB rather than to engage in a dialogue and mutually engineer solutions to greenhouse gas emission reduction. Litigation has been, and remains, their strategy. See e.g. attached Austin VT Trial Exhibit at pp. 6-7 (advising minimal participation in rulemaking technology workshop to

better position for later court challenges). Similarly, rather than moving forward with plans to meet California's standards, their compliance plan has been to gamble on a favorable decision in *Massachusetts et al. v. EPA*, a sympathetic federal district court, and a creative – but what would ultimately prove illegal reinterpretation of – applicable waiver provisions by EPA. To date, their gamble has failed. To the extent the industry seeks to engage in a procedural challenge to ARB's rulemaking, the proper venue for that challenge is their state court *Fresno Dodge* action for which we have enclosed here the extensive administrative record index.

B. Sufficiency of EPA Comment Period and Manufacturer Participation

As in the California rulemaking (see September 23, 2004 Transcript at pp. i-vii and September 24, 2004 Transcript at pp. i-v.), and here despite two chances, no manufacturer has independently addressed the waiver provisions at issue in person. And the manufacturers' representative provided no substantive discussion of what is historically the focus of these waiver proceedings; technological feasibility and lead time. Instead, they argued for EPA to apply dramatically different waiver criteria, stated their wish that only NHTSA address technological feasibility issues (see 5-22-07 Transcript at pp. 97-100), and misleadingly described a "patchwork" of state-level standards (*ibid.* at p. 101) that would ensue despite what they know to be a two-car emission control system at issue here, as Congress intended. Given that level of participation and the need for a timely decision as we stated in opposing an extension, EPA wisely left the comment period as is.

C. Alliance June 4, 2007 Public Records Act request

Despite the sufficiency of the EPA comment period, the ARB anticipates that waiver opponents will continue to argue (as in their June 5, 2007 letter) that they did not have enough time to analyze California's arguments for a waiver and did not know the bases for California's request. The enclosed California Public Records Act request, to which ARB has already partially responded and will respond further as required, simply continues this tiresome refrain from the California rulemaking.

The Alliance and its thus far silent members are certainly entitled to dispute ARB's comments to date, but they are not entitled to turn this routine administrative hearing into a federal court case like those in which they have already embroiled California and other states. Given that the Alliance had over 17 months to make this records request of ARB – during which they quoted the same waiver request document in court no later than July of last year (Document 281, Case 1:04-cv-06663-AWI-LJO, excerpt enclosed) – it is more than curious that they chose the end of EPA's comment period to make it. But they could afford themselves the luxury of waiting without affecting their ability to comment because the supposed "omissions" of the types they have cited have been fully explored in the extensive civil discovery in the California and Vermont federal court cases and in the unprecedented 400+ page Final Statement of Reasons for the rulemaking. More importantly for waiver purposes, these issues have simply been overtaken by technological innovations and other market and world events in the nearly three years since the bulk of ARB's rulemaking analysis occurred. So instead, this tactic is clearly intended to stymie the waiver process despite acknowledging its narrow standard of review.

VII. Conclusion

In our December 21, 2005 request we anticipated the opposing arguments you've heard to date in this proceeding: I urge you to carefully re-review that document and all citations therein. Developments since that time make our case for a waiver that much stronger. None of opponents' arguments meet their burden of proof, and to the extent they even come close, our responses in this proceeding more than suffice to preclude EPA from making any of the negative findings EPA would need to deny our request. Our standards in the aggregate are as protective as federal standards, they are needed to meet the extraordinary and compelling conditions global warming poses for California, and they are technologically feasible within the lead time provided, with consideration to costs. That is all that has ever been and can now be required of California to obtain a waiver and implement our standards.

By contrast, and as apparent from the Alliance's June 5, 2007 letter, manufacturers want to have it both ways, on many fronts. They at once want EPA to signal Vermont's District Court that EPA's review is narrow on some grounds – e.g. technological feasibility and lead time – while insisting here that EPA's review is broad and probing on extraordinary and compelling conditions. They at once want to tell Congress and the watching world that the industry is capable of rapidly improving greenhouse gas emissions from their products (see enclosed March 14, 2007 testimony of Mulally, Wagoner, Press, and LaSorda), while fighting every step on that road in every possible venue. Clean Air Act Section 209(b) cares not about and does not permit such inconsistencies; it must be broadly read to further Congressional intent that California continue to serve as a "laboratory for innovation." California is honored to continue serving in that role as Congress intended and respectfully requests that EPA grant this waiver so that it may continue to do so.

Please enter this letter and all items listed in the attached and provided herewith into the subject docket.

Sincerely,

/s

Catherine Witherspoon
Executive Officer

Attch: List of Enclosures

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cc: (via FED EX OVERNIGHT TRACKING NO. 7996-5772-2416)

Mr. David Dickinson
Compliance and Innovative Strategies Division
US EPA,
1310 L Street, NW - Room 644
Washington, DC 20005

**ENCLOSURES: ADDITIONAL DOCUMENTATION TRANSMITTED TO
U.S. EPA ON DVD REGARDING REQUEST FOR WAIVER ACTION ON CALIFORNIA'S NEW
MOTOR VEHICLE GREENHOUSE GAS EMISSIONS RULEMAKING**

NOTES:

- Numbering continues consecutively from December 21, 2005 Waiver Request.
- Files on DVD are listed with the item number below in the file name where possible.
- DVD contains additional files not listed and not numbered.

Protectiveness

26. State and Federal Standards for Mobile Source Emissions, National Academy of Sciences, 2006.
27. California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption—Notice of Decision, (LEV II Waiver) 68 FR 19811 (April 22, 2003).
28. California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption—Notice of Decision, (LEV II Waiver) 68 FR 19811 (April 22, 2003), Decision Document.
29. California State Motor Vehicle Pollution Control Standards; Notice of Within-the-Scope Determination for Amendments To California's Zero-Emission Vehicle (ZEV) Standards and Notice of Waiver of Federal Preemption, 71 FR 7890 (December 28, 2006).
30. California State Motor Vehicle Pollution Control Standards; Notice of Within-the-Scope Determination for Amendments To California's Zero-Emission Vehicle (ZEV) Standards and Notice of Waiver of Federal Preemption, 71 FR 7890 (December 28, 2006), Decision Document.
31. Small, K.A., and Van Dender, K., 2005: A Study to Evaluate the Effect of Reduced Greenhouse Gas Emissions on Vehicle Miles Traveled, Final Report ARB Contract Number 02-336.
32. Expert Report of Kenneth A. Small, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April 19, 2006.
33. Supplemental Expert Report of Kenneth A. Small, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, September 6, 2006.
34. Upstream Emission Benefits Associated with Reductions in Greenhouse Gases from Light-Duty Vehicles, Expert Report of Michael Jackson, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 2, 2006.
35. ISOR Peer Review Comments and Responses, ARB, September, 2004.

Extraordinary & Compelling Conditions

36. Extraordinary & Compelling Conditions Continuing Need FR List. Westlaw 2007.
37. Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas With Deferred Effective Dates, 69 FR 23858 (April 30, 2004).

38. Final Rule To Implement the 8-Hour Ozone National Ambient Air Quality Standard—Phase 1, 69 FR 223951 (April 30, 2004).
39. Technical Support for State and Tribal Air Quality Designations and Classifications, April 2004, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Ozone Policy and Strategies Group, Research Triangle Park, NC 27711, Chapter 2 (County specific designations: <http://www.epa.gov/ozonedesignations/documents/tsd/ch2.pdf>).
40. Climate Change 2007: The Physical Science Basis, Summary for Policymakers, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, February, 2007.
41. Climate Change 2007: Impacts, Adaptation and Vulnerability, Working Group II Contribution to the Intergovernmental Panel on Climate Change, Fourth Assessment Report, Summary for Policymakers, April 2007 (as corrected 13 April 2007).
42. Emissions pathways, climate change, and impacts on California, Hayhoe et al., PNAS, Vol 101. No. 34 , pp. 12422–12427 (2004).
43. Dan Cayan, Amy Lynd Luers, Michael Hanemann, Guido Franco, and Bart Croes, Scenarios of Climate Change in California: An Overview. Final report from California Energy Commission, Public Interest Energy Research (PIER) Program, California Climate Change Center, publication # CEC-500-2005-186-SF, posted: February 27, 2006.
44. Declaration of Timothy Barnett, Central Valley Chrysler-Jeep, Inc. v. Witherspoon, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 1, 2006.
45. Declaration of David J. Karoly, Ph.D., *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 2, 2006.
46. Declaration of James E. Hansen, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 5, 2006.
47. “Global temperature change,” Hansen et al., PNAS 2006, Volume 103, pp. 14288-14293 (2006).
48. Hegerl, G.C., F. W. Zwiers, P. Braconnot, N.P. Gillett, Y. Luo, J.A. Marengo Orsini, N. Nicholls, J.E. Penner and P.A. Stott, 2007: Understanding and Attributing Climate Change. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
49. Solomon, S., D. Qin, M. Manning, R.B. Alley, T. Berntsen, N.L. Bindoff, Z. Chen, A. Chidthaisong, J.M. Gregory, G.C. Hegerl, M. Heimann, B. Hewitson, B.J. Hoskins, F. Joos, J. Jouzel, V. Kattsov, U. Lohmann, T. Matsuno, M. Molina, N. Nicholls, J. Overpeck, G. Raga, V. Ramaswamy, J. Ren, M. Rusticucci, R. Somerville, T.F. Stocker, P. Whetton, R.A. Wood and D. Wratt, 2007: Technical Summary. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
50. Christensen, J.H., B. Hewitson, A. Busuioc, A. Chen, X. Gao, I. Held, R. Jones, R.K. Kolli, W.-T. Kwon, R. Laprise, V. Magaña Rueda, L. Mearns, C.G. Menéndez, J.

- Räisänen, A. Rinke, A. Sarr and P. Whetton, 2007: Regional Climate Projections. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
51. Schellnhuber, H.J., Cramer, W., Nakicenovic, N., Wigley, T., Yohe, G., Eds. (2006) *Avoiding Dangerous Climate Change* (Cambridge Univ. Press, New York, 2006).
 52. Declaration of Michael J. Kleeman, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April 30, 2006.
 53. Steiner, A. L., S. Tonse, R. C. Cohen, A. H. Goldstein, and R. A. Harley (2006), Influence of future climate and emissions on regional air quality in California, *J. Geophys. Res.*, 111, D18303, doi:10.1029/2005JD006935.
 54. Motallebi, N. et al (2007). *Climate Change Impact on California On-Road Mobile Source Emissions*. Submitted to the *Journal of Climatic Change* (in press).
 55. Declaration of Anthony L. Westerling, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April 30, 2006.
 56. *Climate Change and Wildfire In and Around California: Fire Modeling and Loss Modeling*, White Paper, California Climate Change Center, Westerling & Bryant, CEC-500-2006-190-SF, February, 2006.
 57. *Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity*, Westerling et al, www.sciencexpress.org, July 6, 2006, 10.1126/science.1128834.
 58. Mott, J., P. Meyer, D. Mannino, S. Redd, E. Smith, C. Gotway-Crawford, and E. Chase. 2002. "Wildland forest fire smoke: Health effects and intervention evaluation, Hoopa, California, 1999." *Western Journal of Medicine* 176: 157–165.
 59. "State to Restart Limited Delta Water Pumping," *San Francisco Chronicle*, June 9, 2007, <http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/06/09/BAG4AQCISI1.DTL>, originally appearing at. P. B3.
 60. Declaration of Reinhard E. Flick, Ph.D., *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 2, 2006.
 61. Declaration of Laurence S. Kalkstein, Ph.D., *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 2, 2006.
 62. Declaration of Edwin P. Maurer, Ph.D., P.E., *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April 29, 2006.
 63. Declaration of Iris T. Stewart-Frey, Ph.D. *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April 29, 2006.
 64. Declaration of Philip B. Williams, Ph.D., P.E., *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 1, 2006.
 65. The NOAA Annual Greenhouse Gas Index (AGGI), printed from <http://www.esrl.noaa.gov/gmd/aggi/> June 13, 2007.

66. Excerpts from Cross-Examination of John R. Christy in Green Mountain Chrysler-Plymouth-Dodge, et al. Crombie et al, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304.
67. "Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies," S. Pacala and R. Socolow, www.sciencemag.org Science Vol 305 13 AUGUST 2004 (supports wedge analyses).
68. "A Wedge Analysis of the U.S. Transportation Sector," U.S. EPA, EPA420-R-07-007 April 2007 (shows that for stabilization large reductions needed from U.S. transportation sector, supporting wedge analysis 5/30/07 slide 26).
69. Northeast State GHG Emission Reduction Potential from Adoption of the California Motor Vehicle GHG Standards Summary of NESCAUM Analysis, October, 2005 (supports wedge analysis 5/30/07 slide 26).
70. Auto population by state in 2000.xls (supports wedge analysis 5/30/07 slide 26).
71. AB 1493 Cumulative Benefits.xls (supports wedge analysis 5/30/07 slide 26).
72. "Future U.S. Greenhouse Gas Emission Reduction Scenarios Consistent With Atmospheric Stabilization," Kuuskraa1 et al., (an emissions reduction strategy aimed at atmospheric stabilization must include all sectors of the U.S. economy, including transportation.)
73. California Environmental Protection Agency, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March, 2006.
74. State of California's Actions to Address Global Climate Change, December 8, 2005, Attachment to Climate Action Team Report to Governor Schwarzenegger and the Legislature, March, 2006.
75. Scenarios of Climate Change in California: An Overview. Final report from California Energy Commission, Public Interest Energy Research (PIER) Program, California Climate Change Center, publication # CEC-500-2005-186-SF, February 27, 2006, , Attachment to Climate Action Team Report to Governor Schwarzenegger and the Legislature, March, 2006.
76. GM Joins United States Climate Action Partnership, May 9, 2007, http://www.gm.com/company/gmability/environment/news_issues/2007_news/USCAP_05 (admitting need to reduce greenhouse gas emissions generally)
77. A Call for Action, U.S. Climate Action Partnership (GM listed as member). Printed from <http://www.us-cap.org/> June 2007.
78. Remarks of James Connaughton, Chairman, Council on Environmental Quality, May 31, 2007, printed from <http://www.whitehouse.gov/news/releases/2007/05/print/20070531-17.html>.

Technological Feasibility, Lead Time, and Costs

79. Expert Report of Ms. Maryann N. Keller, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, June 13, 2006. (Also referenced in Protectiveness discussion.)
80. Addendum to Expert Report of Ms. Maryann N. Keller, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, October 6, 2006. (Also referenced in Protectiveness discussion.)

81. Expert Report of Dan Sperling, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April 24, 2006. (Also referenced in Protectiveness discussion.)
82. Comments on the Proposed Adoption of Regulations by the California Air Resources Board (ARB) to Control Greenhouse Gas Emissions from Motor Vehicles, Natural Resources Defense Counsel, September 23, 2004. (Also referenced in Protectiveness discussion.)
83. Innovation and Regulation in the Automobile Sector: Lessons Learned and Implications for California's CO2 Standards, Hwang (NRDC) and Peak, April, 2006. (Also referenced in Protectiveness discussion.)
84. 2007 Model Year Vehicles with Greenhouse Gas Technologies. ARB, 2007.
85. 2008 Model Year Vehicles with Greenhouse Gas Technologies. ARB, 2008.
86. GM Powertrain Unveils 3.6-Liter VVT Engine With Direct Injection, Source: http://www.gm.com/company/gmability/adv_tech/100_news/powertrain_unveils_051806.html, Accessed: 5/6/07 (shows GM implementing variable valve timing with direct injection and four cam phasers well ahead of California's regulations).
87. "Valeo signs up 'several global automakers' for camless engine," Automotive News, December 18, 2006, <http://www.autoweek.com/apps/pbcs.dll/article?AID=/20061221/FREE/61218008/1528>.
88. "Booster stage for the compact luxury SUV," <http://www.edmunds.com/insideline/do/Drives/FirstDrives/articleId=115583>, May 31, 2006 (shows variable flow turbo in production).
89. "Splitting the Difference: HCCI engine closes gap between gasoline emissions, diesel efficiency," Autoweek, July 31, 2006, <http://www.autoweek.com/apps/pbcs.dll/article?AID=/20060804/FREE/60731004/1041/TOC01ARCHIVE>.
90. Ford of Europe Puts Dual Clutch Transmissions Into High Gear, February 13, 2006, Source: http://media.ford.com/newsroom/feature_display.cfm?release=22361 (shows implementation of automated manual transmissions well ahead of California's regulations).
91. Ford Powertrain to Leverage Gas Turbo Direct Injection, February 26, 2007, Source: http://media.ford.com/newsroom/feature_display.cfm?release=24774 (shows Ford implementing downsized gasoline direct-injection, one of main technologies California projected).
92. Directive 2006/40/EC of the European Parliament and of the Council of 17 May 2006, L 161/12 EN Official Journal of the European Union 14.6.2006.
93. "Special Reports: Improving Aerodynamics to Boost Fuel Economy," Edmunds.com, posted May 2, 2006 (states several current popular models in sub-0.3 drag coefficient range).
94. Twenty In Ten: Strengthening America's Energy Security, Twenty In Ten: Strengthening America's Energy Security, printed from <http://www.whitehouse.gov/stateoftheunion/2007/initiatives/energy.html>.
95. Written Testimony of Alan Mulally, President and CEO, Ford Motor Company, Before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, March 14, 2007.

96. Statement of Thomas W. LaSorda, President and Chief Executive Officer DaimlerChrysler Corporation, Before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, March 14, 2007.
97. Written Testimony of G. Richard Wagoner, Jr., Chairman and CEO, General Motors Corporation, Before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, March 14, 2007.
98. Testimony of James E. Press President, Toyota Motor North America, Inc., Before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, March 14, 2007.
99. "President Participates in Demonstration of Alternative Fuel Vehicles with CEOs of Ford, General Motors, and DaimlerChrysler," March 26, 2007, from <http://www.whitehouse.gov/news/releases/2007/03/20070326.html>.
100. Testimony of Elizabeth Lowery Before the Senate Energy Committee Regarding GM Advanced Technology Vehicle Plans (January 30, 2007).
101. Defendants' Exhibit 2580 in *Green Mountain Chrysler- Plymouth-Dodge, et al.* Crombie et al, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304 (shows that alternative fuels vary in CO2 grams per mile versus gasoline and are not subject to same miles per gallon conversion).
102. Defendants' Exhibits 2363, 2365, 2367, 2370, 2371 in *Green Mountain Chrysler- Plymouth-Dodge, et al.* Crombie et al, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304 (demonstrative exhibits for use with Mr. Jackson showing potential alternative fuels compliance options).
103. Saturn Vue Green Line Hybrid Delivers Great Fuel Economy Through New, Lower-Cost Hybrid System, January 9, 2006, http://www.gm.com/company/gmability/adv_tech/100_news/hybridvue2_10906.html
104. '08 Vue to offer two hybrid powertrains: Both versions get a big boost in fuel economy, Automotive News, May 14, 2007, Printed From: <http://www.autonews.com/apps/pbcs.dll/article?AID=/20070514/SUB/70511081&SearchID=73282782915073&template=printart> (shows GM introducing two-mode "Green-Line" hybrid system years ahead of any need to meet California greenhouse gas requirements and adding just \$1,995 to retail cost of the 2007 Vue).
105. Technologies to Reduce Greenhouse Gas Emissions from Light-Duty Vehicles, Expert Report of Mr. K.G. Duleep, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, April, 2006.
106. Supplemental Report of Mr. K.G. Duleep, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, October 9, 2006.
107. Supplemental Report of Mr. K.G. Duleep, *Green Mountain Chrysler- Plymouth-Dodge, et al.* Crombie et al, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304, February 7, 2007.
108. References in Supplemental Report of Mr. K.G. Duleep, *Green Mountain Chrysler- Plymouth-Dodge, et al.* Crombie et al, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304, February 7, 2007.
109. Excerpts from Trial Testimony of Mr. K.G. Duleep, in *Green Mountain Chrysler- Plymouth-Dodge, et al.* Crombie et al, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304, Volume 12-B, May 2, 2007.

110. Excerpts from Trial Testimony of Mr. Van Jollisant, in *Green Mountain Chrysler-Plymouth-Dodge, et al. Crombie et al*, U.S. Dist. Ct. (Vermont), Civil File No. 05-302 & 304, Volume 4-B, April 13, 2007.
111. "Drivers Cut Back: 1st Time in 26 Years," USA Today, May 17, 2007.
112. "Energy Security & Climate Change: Investing in the Clean Car Revolution," Merrill Lynch, June, 2005.
113. 2007 KPMG Global Auto Executive Survey (2006).
114. "Going Green: America's Growth Engine for the 21st Century: Automotive manufacturers who ignore "green" will do so at their financial peril, January 11, 2007, http://www.deloitte.com/dtt/press_release/0,1014,cid%3D141305%26pv%3DY,00.html
115. Executive Order 13432, May 14, 2007.
116. Interim Report: New Powertrain Technologies and Their Projected Costs, EPA420-R-05-012 October 2005 (describes NESCCAF report on which California's rule relied as among the two most authoritative on the subject).
117. caliber.xls (launch test data).
118. caravan.xls (launch test data).
119. Congressman Edward Markey - May 7, 2007 – High Gas Prices Indicate Need For Increased Fuel Efficiency ("According to the National Highway Transportation Safety Administration (NHTSA), the average cost to the auto industry of making a passenger car that would get 35 mpg by 2017 is only \$822.")
120. NHTSA, CAFE Compliance and Effects Modeling System Documentation (Draft, 5/26/06) (attachment to Markey May 7, 2007 press release, and note VEHSIM not even considered as a modeling system).
121. NHTSA Scenario_Summary cars.xls (attachment to Congressman Markey May 7, 2007 press release).
122. NHTSA Scenario_Summary trucks.xls (attachment to Congressman Markey May 7, 2007 press release).
123. "Money In The Bank – Not In The Tank," Congressional Joint Economic Committee, May 2007 (summarizes bills in response to changing world of increased attention to better efficiency).
124. Witness Statement of James Page, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, U.S. Dist. Ct. (E.D. Cal. – Fresno Div.), No. CIV-F-04-6663 REC LJO, May 1, 2006.
125. AB 1493 Early Years Compliance: Admissions by Manufacturers at Vermont Trial. ARB, 2007.

Supplemental Questions Noticed April 30, 2007

126. *Massachusetts et al. v. EPA*, 127 S.Ct. 1438 (2007).
127. Brief for Respondents, *Center for Biological Diversity v. NHTSA*, No. 06-71891 (9th Cir argued May 14, 2007).
128. *Central Valley Chrysler-Jeep, Inc. et al. v. Witherspoon*, Document 562, Case 1:04-cv-06663-AWI-LJO Filed 12/12/2006.
129. Alliance June 5, 2007 letter addressing 4-30-07 Notice Supplemental Questions.

Procedural Issues

130. 4-16-04 Sierra Research Fax to Toyota.
131. Unreasonable Delay Notice of Intent letter, Catherine Witherspoon to Stephen Johnson (4-26-07), enclosing letter from Governor Schwarzenegger to Stephen Johnson (4-25-07).
132. *Fresno Dodge, Inc. et al. v. California Air Resources Board et al.*, Fresno County Superior Court, Case No. 04CECG03498, Administrative Record Index, November 17, 2005. (Alliance and others' California Administrative Procedures Act challenge; documents listed therein not already in the docket available on request.)
133. E-mail from Julie Becker acknowledging partial PRA response.

Safety/Other/General

134. California Environmental Protection Agency, Air Resources Board, Peer Review Comments and Responses, Initial Statement of Reasons and Supporting Appendices for the Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, September 2004.
135. An Assessment of the Effects of Vehicle Weight and Size on Fatality Risk in 1985 to 1998 Model Year Passenger Cars and 1985 to 1997 Model Year Light Trucks and Vans, R. M. Van Auken and J. W. Zellner, Dynamic Research, Inc., SAE 2005-01-1354.
136. A Review of the Results in the 1997 Kahane, 2002 DRI, 2003 DRI, AND 2003 Kahane Reports on the Effects of Passenger Car and Light Truck Weight and Size on Fatality Risk, , R. M. Van Auken J. W. Zellner, DRI-TR-04-02, March, 2004.
137. A Further Assessment of the Effects of Vehicle Weight and Size Parameters on Fatality Risk in Model Year 1985-98 Passenger Cars and 1985-97 Light Trucks, R. M. Van Auken and J. W. Zellner, DRI-TR-03-01, January 2003.
138. Supplemental Results on the Independent Effects of Curb Weight, Wheelbase, and Track on Fatality Risk in 1985-1998 Model Year Passenger Cars and 1985-1997 Model Year LTVS, R. M. Van Auken and J. W. Zellner, DRI-TR-05-01, May 20, 2005.
139. On Vehicle Weight, Fuel Economy and Safety, Expert Report of David L. Greene, *Central Valley Chrysler-Jeep v. Witherspoon*; USDC (E.D. Cal.) No. CIV-F-04-6663, April 30, 2006.
140. Selected Trial Testimony and Documents from *Green Mountain v. Crombie* (D.Vt. No. 2:05-CV-302) (electronic file folder containing multiple documents)