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Subject 10.30.07 docs - California Waiver

Vroom

10.30.07 Jay Vroom cover.doc

California Waiver

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Briefing for the Administrator: California's GHG Waiver Request: Follow-Up on Additional Questions

October 30, 2007 (draft)

Overview

- Consistency with Section 202(a) – technological feasibility (including costs, leadtime, and relationship between CA and EPA rules) and safety
- Compelling and Extraordinary Conditions – "Motor Vehicle Program" vs "GHG pollutant"; Need for CA specific GHG program - specific GHG conditions in CA
- Protectiveness - Rebound/Fleet Turnover
- EPCA Considerations
- What happens after EPA Waiver Decision?

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Executive Summary

- Consistency with section 202(a) Technological Feasibility
- Key Considerations
  - **The CA program relies on the same basic set of technologies as the GHG rule, especially for the earlier years**
  - **There are essentially no differences in application of the CA and existing Federal standards through MY 2011**
  - **After 2011, technological feasibility is likely because manufacturers have a nearly complete redesign cycle (2007-2012, 5 years) to incorporate new technologies, and can continue to take advantage of trading and borrowing credits**

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Executive Summary

- Technological Feasibility – Safety
- **Key Considerations:**
  - CA identified clear technology paths to meet GHG standards without affecting safety
  - Long-term trend of both vehicle size increases along with (but not necessarily linked to) improved safety performance - no data to indicate a change in this trend
  - Absence of evidence/data in the record to support the few statements that manufacturers will likely downsize – Vermont court makes similar findings, and lack of any claims that CARB identified technologies are not feasible.
  - Complex and uncertain studies regarding changes in size/weight and impact on overall vehicle fleet safety; identified risks in size/weight changes may have been mitigated by advances in safety technologies and equipment.
  - The literature does not support the claim that a universal standard tilts the market towards lower safety.
  - Manufacturers will make economically rational choice to produce vehicles that have features consumers want (including safety features).
  - Consumer choice, backed by long term trend analysis, shows clear preference for larger vehicles
  - If waiver is denied on basis of some uncertain level of safety concerns, then future EPA mobile source rulemakings, including GHG rule, are at risk of not meeting the criteria under section 202(a).
  - OTAQ technical staff believe it is unlikely that there will be any adverse safety effects from the CA program.

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Executive Summary

- Compelling and Extraordinary Conditions – Need for "Motor Vehicle Program v. "GHG Pollutant Standards"
- Key Practical Considerations:
  - The CAA, in both its language and its legislative history, points clearly to EPA looking to the CA program as a whole. However, and "2nd level of analysis" of examining the need for GHG standards and the GHG impacts in CA still indicates, based on all available information (in addition to burden on opponents of waiver) that this waiver criteria is met by CA.
  - While GHG standards were likely not in the minds of the authors of the 1977 CAA, Congress chose language for section 209 that allowed for future CA flexibility, rather than cutting off future CA efforts by deliberate limits on pollutants eligible to be regulated. This allows for "fluid" section 209, in accord with Massachusetts v. EPA.
  - The potential for climate change to exacerbate California's unique tropospheric ozone problem is one element of California's compelling and extraordinary conditions. However, it is by no means the sole foundation for the compelling and extraordinary argument. In fact, climate change impacts on California's water resource situation may be the state's greatest concern.

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Executive Summary

- Compelling and Extraordinary Conditions – specific GHG conditions in CA
- Key Considerations
  - California exhibits a number of specific features that are somewhat unique and may be considered compelling and extraordinary with regard to both the need for mitigation actions and its potential vulnerability to climate change;
    - largest population, economy and agriculture sector crop value, including dairy and wine, in US and large tourism and outdoor recreation sectors.
    - Greatest variety of ecosystems, most threatened and endangered species, greatest climatic variation, major water supply problems, decreasing snowpack, increasing wildfires.

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Executive Summary

- Protectiveness – Rebound/Fleet Turnover
- Key Practical Considerations:
  - There is a wide range of plausible estimates of the rebound effect, particularly on the low side of the range. CARB estimate is within this plausible range, particularly if the rebound effect is linked to income.
  - CARB's upstream/net benefits are reasonable/conservative and NERA/Sierra estimates do not clearly demonstrate arbitrariness of CARB's calculations
  - NERA/Sierra Study is undermined by high vehicle costs (not credible based on CARB data and Vermont court findings) and commingling of ZEV and GHG programs.

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Executive Summary

- EPCA – Should EPA's waiver decision answer or otherwise address the issue of whether EPCA preempts California's standards?
- Key Considerations:
  - FR Notice asks the novel question: Whether the Energy Policy and Conservation Act (EPCA) fuel economy provisions are relevant to EPA's consideration of this petition or to CARB's authority to implement its vehicle GHG regulations?
  - Unless EPA changes historic waiver practice and explicit interpretations, and takes position inconsistent with several cases (*MEMA I and MEMA III*), then precluded from considering EPCA preemption
  - Most initial comments on waiver stated that EPCA was not relevant (with exception of AIAM), however, significant comment on issue was submitted post-Vermont court decision and may merit explanation of EPA's limited role in reviewing whether California has met the specified criteria in 209(b)

Consistency with section 202(a) Technological Feasibility

- **Questions:**
  - Are CA's GHG Vehicle Technologies Feasible within the leadtime provided?
  - Are technologies feasible if lead time is measured differently than from the date of CA's rule adoption?
  - If waiver is granted how does that affect the stringency of the federal standards and how cost/benefit is calculated?
- **Waiver Criteria at Issue:**
  - The Administrator shall grant the waiver unless he finds… "such standards … are not consistent with section 202(a) of (the Act).
  - Whether there is inadequate lead time to permit the development of technology to meet CA's requirements, giving appropriate consideration to the cost of compliance within that time frame.
- **Key Considerations:**
  - **There are essentially no differences in application of the CA and existing Federal standards through MY 2011**
  - **The CA program relies on the same basic set of technologies as the GHG rule, especially for the earlier years**

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Technological Feasibility – technologies considered

Summary of Record:

- All of the technologies CARB relied upon in setting their standards are also being considered as part of EPA's GHG Vehicle Proposal

Additional Information:

- EPA is also considering some technologies which CARB considered "longer-term," such as full hybrid systems
- For the GHG Rule, EPA has expanded the list of technologies and updated "costs" and "effectiveness" to reflect technology advancements that have occurred since the analysis for the CARB rule in 2004

CARB's Potential Near & Mid-Term Technologies
ENGINE MODIFICATIONS
Low Friction Lubricants
Engine Friction Reduction
Variable Valve Timing - Intake Cam Phasing, Coupled Cam Phasing, Dual
Cylinder Deactivation
Variable Valve Lift & Timing - Continuous and Discrete
Camless Valve Actuation
Gasoline Direct Injection
Turbocharging and Downsizing
Homogenious Charge Compression Ignition
Diesel Engines
TRANSMISSION MODIFICATION
5 Speed Automatic Transmission
Aggressive Shift Logic
Early Torque Converter Lockup
6 Speed Automatic Transmission
Automatic Manual Transmission
Continuously Variable Transmission
ACCESSORY LOAD IMPROVEMENT
Improved Accessories
Electronic Power Steering
42-Volt Electrical System
DYNAMIC LOAD REDUCTION
Low Rolling Resistance Tires
AERODYNAMIC DRAG REDUCTION
Aero Drag Reduction
HYBRID SYSTEMS
Integrated Starter-Generator with Idle-Off
IMPROVED AIR CONDITIONING
Reduced leaks and improved efficiencies

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Comparing California Standards and a Federal 4% Standard

Model Year	CA Comb mpg *	% mpg Improvement from prior MY	20-in-10 Combined	% mpg Improvement from prior MY
2009	23.8		25.1	
2010	25.2	5.7	25.8	2.8
2011	27.7	9.8	26.6	3.0
2012	30.6	10.7	27.6	4.0
2013	31.2	2.0	28.7	4.0
2014	31.8	1.8	29.9	4.0
2015	32.8	3.1	31.1	4.0
2016	33.9	3.3	32.3	4.0
2017			33.6	4.0

* CA standards are more stringent that corresponding Federal standards, but mfgs can trade between cars and trucks and borrow from future vehicles.

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Technological Feasibility - Lead Time

When Does Clock Start? Are Technologies Feasible?

- At time of CA's Rule - 2004

  Yes, all technologies required to meet the levels of the standard already in the market (by at least some manufacturers), and a full vehicle redesign cycle (5-6 years) available to incorporate during the "regular business cycle"

- At time of Mass v EPA - 2007

  A) **Yes, through 2011** given that current Federal CAFE standards are more or nearly equally protective through 2011 (no additional manufacturer efforts required, GHG technologies developed and can be applied as necessary)

  B) **Likely, after 2011** given:

  - There is still nearly a complete redesign cycle (2007-2012, 5 years) to incorporate new technologies,
  - California's flexibility to trade between cars and trucks,
  - California's flexibility to borrow from future vehicles (up to five years)

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CARB's Approach to Standard Setting

- CA Legislature required CARB to set standards which *"achieve the maximum feasible and cost-effective reductions of GHGs from motor vehicles"*
- CA Legislature also stated that maximum feasible and cost-effective *"means the GHG reductions that the state board determines meet both of the following criteria: (A) Capable of being successfully accomplished within the time provided by this section, taking into account environmental, economic, social and technological factors. (B) Economical to an owner or operator of a vehicle, taking into account the full life-cycle costs of a vehicle."*
- CARB's approach was therefore first to determine the maximum technologically achievable reductions, and then to determine if those standards resulted in a net savings to the vehicle owner over the full-life of the vehicle.

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Comparing CARB's Vehicle CO_2 Standards to NHTSA's CAFE rules (using the Volpe Model)

- CARB's approach to setting the level of a standard is different than NHTSA's approach through EPCA
  - CARB was required by the CA legislature to consider "maximum achievable" as well as cost-effective for the owner of the vehicle
  - NHTSA's 2006 light-truck CAFE rule under EPCA sets fuel economy standards at a value determined to be where the marginal cost = marginal benefits to society as a whole (the "socially optimal" point)
- Using the same set of Vehicle Technologies, all other things being equal, these different economic approaches will lead to different levels of stringency
  - CARB's "maximum achievable" will be more stringent than NHTSA's "socially optimal", though the programs are close
- For an EPA Rule, using CARB's criteria (maximum feasible, cost-effective), preliminary indications are that the Volpe Model would predict that the levels (CO2-mpg) of the California GHG standard are achievable

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How would decision on the CA Waiver impact EPA's GHG Vehicle Proposal?

Full Waiver Approval - Model Years 2009-2016

- Modest Impact, but Straight-forward Assessment
  - When considering cars and trucks together, the CO2 level of the CARB standard is very comparable to the 20-in-10 program of 4%/year
    - the fleet average in the last years is essentially equal **in both cases** at ~268 gmCO2/mi (or ~33.6 mpg)
- Manufacturer Product Offerings
  - If EPA rule is near or equal to CA, then probably a one-car "50-state" fleet
  - If EPA rule is much less than CA, then autos could potentially see advantages of two-car "49-state" and "California" fleet
- As EPA develops its standards – even if we grant a CA a waiver – we would have the same criteria and resulting analysis

Partial Approval - Model Years 2009-2011

- Little impact
  - Current CAFE standards for light-trucks are more stringent than CA's levels, CA's levels for passenger cars are more stringent than CAFE
  - CA allows averaging between cars and trucks, on average the CA program is essentially equivalent to the current federal CAFE program in MY2011

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How would decision on the CA Waiver impact EPA's GHG Vehicle Proposal?

Implications for Federal Rule of Full or Partial Waiver

- Manufacturers likely to produce 50-state vehicles in order to meet both CARB and Federal standards, likelihood increases as standards grow closer
- As with past EPA rules (e.g., light-duty Tier 2 standards), EPA would zero-out California vehicle sales from our analysis, to ensure no double counting of costs or benefits

Denial of Waiver Based on Technological Feasibility

- Hinders EPA's ability to set 3-4% standards based on use of same technologies and similar leadtimes

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Technological Feasibility - Safety

- **Waiver Criteria at Issue:**
  - EPA must grant waiver unless it can affirmatively find that CA's standards are inconsistent with section 202(a) – including whether CA's standards are infeasible
  - Has CA provided a reasonable approach to meeting standards without necessarily leading to substantial safety concerns?
  - Have opponents of the waiver provided clear and convincing evidence that CARB's standards will result in the production of less safe vehicles? Will such evidence also show such significant safety problems to tip the balance of considerations under section 202(a) ?

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Technological Feasibility - Safety

- **Key Considerations:**
  - CA identified clear technology paths to meet GHG standards without affecting safety
  - Long-term trend of both vehicle size increases along with (but not necessarily linked to) improved safety performance - no data to indicate a change in this trend
  - Absence of evidence/data in the record to support the few statements that manufacturers will likely downsize – Vermont court makes similar findings, and lack of any claims that CARB identified technologies are not feasible.
  - Complex and uncertain studies regarding changes in size/weight and impact on overall vehicle fleet safety; identified risks in size/weight changes may have been mitigated by advances in safety technologies and equipment.
  - The literature does not support the claim that a universal standard tilts the market towards lower safety.
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  - OTAQ technical staff believe it is unlikely that there will be any adverse safety effects from the CA program.

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Technological Feasibility - Safety

- **California Legislative and Rulemaking Findings:**
  - **Pavley Legislation – Prohibits CARB from establishing GHG standards which require downweighting as CA compliance strategy**
  - **CARB rulemaking analysis –**
    - **Determination of Feasibility based on finding that no change in vehicle weight or size was needed.**
    - **No impact on vehicle safety**
    - **Alliance – members can't comply exclusively with technology and would have to downweight vehicles and some members may restrict or eliminate sales of larger vehicles.**
    - **CA Response: Autos have failed to perform independent technology modeling or critique CARB/AVL modeling demonstrating feasibility without downsize or downweight. Downsizing and downweighting may be less cost-effective than CARB's technology approach**

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Technological Feasibility - Safety

Summary of Waiver Record

- CA provided several approaches to meeting standards that do not affect vehicle weight or size.
- No information to suggest that CA's identified technologies/approaches are infeasible or would not be enough to meet standards. Autos introduced no evidence in Vermont trial suggesting they will reduce weight or size as a compliance method.
- GM –Shift to smaller and lighter vehicles driven by CA's regulation would lead to increased safety risks (presents no data or arguments as to why this shift would or must occur), references the 2002 NAS Report. Sized-based reforms are preferred.

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Technological Feasibility - Safety

- 2002 NAS Report
  - Majority report- "the downweighting and downsizing that occurred in the late 1970s and early 1980s, some of which was due to CAFE standards, probably resulted in an additional 1300 to 2600 traffic fatalities in 1993"
  - "If an increase in fuel economy is effected by a system that encourages either downweighting or the production and sale of more small cars, some additional traffic fatalities would be expected.
  - *However, the actual effects would be uncertain, and any adverse impact could be minimized, or even reversed, if weight and size reductions were limited to heavier vehicles (particularly those over 4000 pounds)."*
  - Minority dissent "the level of uncertainty is much higher than stated and the change in the fatality rate due to efforts to improve fuel economy may have been zero"

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Technological Feasibility - Safety

Additional Information (response to NAS):

- Many things have changed since the late 1970s/early 1980s, where large CAFE increases, high fuel prices and changes in consumer preferences led to major decreases in both vehicle size and weight
  - Automakers had few off-the-shelf fuel economy and safety technologies then, many more now
  - Automakers and safety experts understand the complex issues and tradeoffs much better today
  - Consumers placed little priority on safety then, much more now
  - Regulators now routinely allow much more leadtime for automakers

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Technological Feasibility - Safety

New Analyses Since NAS 2002

- Several recent studies have shown that some small cars, with safety features, have better safety performance than many larger vehicles
  - Much as catalytic converters de-coupled the historical relationship between vehicle size/weight and criteria emissions, safety innovations have de-coupled the relationship between vehicle size/weight and safety
- Furthermore, there is evidence that downweighting of larger vehicles could be beneficial to safety.
- Studies generally show that safety is a very complicated issued with no clear right answer, for example:
- Series of studies by Kahane/NHTSA and DRI/Honda have evolved to theory that vehicle size ("crush space") is more important to fleetwide safety than vehicle weight (which also increases risk to other vehicles and pedestrians)
- TRB paper by Greene/Ahmad found no correlation between fuel economy and vehicle safety at the national level from 1966-2002
- Wenzel/Ross found that research claiming that "lighter vehicles are inherently less safe than heavier vehicles" is flawed and that other aspects of vehicle design are more important factors in the safety record of vehicles

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Technological Feasibility - Safety

Information Beyond Waiver Record:

- In 2006, NHTSA changed the basis for the truck CAFE standards from a "universal" standard to a footprint-based standard, where smaller vehicles would have higher fuel economy targets and larger vehicles would have lower targets
  - "to minimize the incentive for manufacturers to comply through downsizing vehicles or by increasing the production of smaller vehicles solely to offset the sales of larger vehicles. These compliance strategies reduce safety by reducing the crashworthiness of individual vehicles, and compound the problem of fleet compatibility."
- EPA Fuel Economy Trends Report
  - While the report doesn't discuss safety implications, it does show that:
    - manufacturers continue to produce larger vehicles which also have improved performance, horsepower and additional advance safety features (airbags, etc)
    - Within the car, SUV, and pickup sales categories trends indicate a continuing rise in preference for larger vehicles

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Technological Feasibility - Safety

Relationship to Federal Rule:

- Both CARB's universal and NHTSA's footprint-based standards are workable and have advantages and disadvantages, and it is not known with any certainty the likely effect of either on safety
- EPA is considering a footprint-based standard for GHG/CO2 rule with a CO2 ceiling "backstop" that provides some of the "universal" characteristics
  - Emission reductions are substantial and cost effective
  - Most equitable requirement for all manufacturers
  - Consistent with previous NHTSA truck CAFE rule
- Bottom line—both universal and footprint standards are comparable for emission reductions, and current understanding does not support the claim that a universal standard tilts the market towards lower safety

Technological Feasibility - Safety

Consequences for Waiver Decision Options:

- Waiver Record strongly supports technological feasibility of standards without any demonstration of the necessity for downsizing or downweighting
  - Manufacturers will not need to change vehicles for purposes of meeting 2009-2011 vehicle standards
- EPA can only deny waiver if an affirmative finding of infeasibility is made:
  - Record Supports manufacturer compliance with near-term standards with no additional modifications
  - Manufacturers have submitted no facts to the record demonstrating product plans/necessity of downsizing or downweighting
    - No information in manufacturer product plans being reviewed as part of the GHG rule to show downsizing or downweighting either
  - EPA considering the same technologies and similar timeframe as CARB

Other Considerations

- See "Key Considerations" on Slide 18
- Vehicle safety is a very complex issue and it is difficult to estimate and predict the effects of changes in fuel economy standards on safety
- EPA believes that advanced technology is the key to making future vehicles that are more efficient, lower GHG, and safer, simultaneously

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Compelling and Extraordinary Conditions

- **Issue/Question:**

1. Is our traditional approach -- reviewing whether CA needs its own motor vehicle program, rather than whether it needs any specific set of standards aimed at specific pollutants – still proper for this request? Should EPA examine the specific standards/pollutants since they are somewhat unique and "different" from the classic criteria pollutants?
2. If EPA were to address the alternative question of the need for greenhouse gas standards, then are CA's GHG conditions localized or specific enough for CA in order to be compelling and extraordinary?
3. Can EPA base its decision on ozone and/or climate conditions alone?

- **Waiver Criteria at Issue:**
  - Section 209(b)(1)(B). Whether such State (California) does not need such state standards (California) to meet compelling and extraordinary conditions (emphasis added)."
  - Does analysis of need for "state standards" change depending upon the type of air pollutant being regulated by CA?
  - If EPA adopts new approach to "state standards" to mean GHG-only then is it appropriate to examine both ozone conditions and GHG conditions within CA?
  - Assuming CA's GHG standards were also designed to address ozone conditions, should EPA grant the waiver even if we make an affirmative finding that CARB's GHG conditions are not compelling and extraordinary?

Compelling and Extraordinary Conditions

Summary of Record:

"Need for motor vehicle program" vs "need for GHG standards"

- Relevant inquiry is whether CA needs its own emission control program and not whether any given standard is necessary – the Congressional history, and EPA past practice of affording CA broad discretion for regulating "air pollutants" [GHG is an air pollutant like all others – *Mass v EPA*] affecting the State, is otherwise negated.
- California continues to have compelling and extraordinary conditions in general as confirmed by several recent EPA waivers - ZEV, SORE waivers in 2006.
- If need for each specific standard is examined then the first waiver criteria of protectiveness "in the aggregate" can not be given meaning, and discretion to CA as envisioned in Congressional history is negated.
- CA can only make a showing of need for standards when its "especially severe" local air quality – seeming to suggest especially severe GHG conditions do not merit the same need

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Compelling and Extraordinary Conditions

Compelling and Extraordinary Conditions in CA – GHG conditions

- Though GHGs, once emitted, become well mixed in the global atmosphere, the climate change that results from increased concentrations of GHGs is not uniform, either spatially or temporally. Resultant impacts on health, society and the environment can further vary by region.
- IPCC – vulnerability to climate change is "a function of the character, magnitude and rate of climate change and the variation to which a system is exposed, its sensitivity and its adaptive capacity."
- Even if temperature and precipitation changes were uniform across the country {see below as evidence suggests they won't be for CA}, the end-point impacts on human health, society and the environment can vary by region

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Compelling and Extraordinary Conditions

California exhibits a number of specific features that are somewhat unique and may be considered compelling and extraordinary with regard to both the need for mitigation actions and its potential vulnerability to climate change:

- California's transportation sector is responsible for a greater share of its state-wide CO2 emissions than for any other state.
- California has the largest state population and the largest coastal population. (This population point first made in 1967 Congressional report, and customarily reiterated by CARB in waiver requests.)
- California has the largest economy in the nation; and ranks among the top world economies.
- California's agricultural sector has the highest crop value in the U.S., including the nation's leading dairy state. Wine is California's highest value agricultural product.
- California's tourism industry is the state's largest sector; and tourism and outdoor recreation (e.g., hunting and fishing) industries in make up one of the nation's largest.

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Compelling and Extraordinary Conditions

Compelling and Extraordinary Conditions in CA – GHG conditions

- California has the greatest variety of ecosystems in the U.S.; and the most threatened and endangered species in the continental U.S.
- California exhibits the greatest climatic variation in the U.S.
- Every major water supply source in California is currently over-allocated. This means that the systems are beyond their physical and/or legal capacity to be sustained.
- There is more diversity in the state's land forms, climate, ecosystems, and species than in any comparably-sized region in the nation.
- Wildfires are increasing. Wildfires generate particulates that can exacerbate the health impacts from increased smog projected from higher temperatures.

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Compelling and Extraordinary Conditions

Compelling and Extraordinary Conditions in CA – GHG conditions

IPCC's Key Conclusions: Many of IPCC's key conclusions about impacts elevated to the executive summary for North America are specific issues in California, and thus California may exhibit a greater number of key impact concerns than other regions:

- Coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution (very high confidence).
- Climate change will constrain North America's over-allocated water resources, increasing competition among agricultural, municipal, industrial and ecological uses (very high confidence).
- Climate change impacts on infrastructure and human health and safety in urban centers will be compounded by aging infrastructure, maladapted urban form and building stock, urban heat islands, air pollution, population growth and an ageing population (very high confidence).
- Disturbances such as wildfire and insect outbreaks are increasing and are likely to intensify in a warmer future with drier soils and longer growing seasons (very high confidence).

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Compelling and Extraordinary Conditions

- Ozone conditions
  - Legislative history, case law, and past waiver practice acknowledge that California ozone problem is "compelling and extraordinary."
  - It is beyond question that California continues to need ozone reduction strategies to address extraordinary and compelling conditions in the state: geography, the concentration of vehicles, the number of vehicles.
  - Higher temperatures from global warming are expected to increase ozone concentrations.
  - California identifies direct reduction of ozone precursors from GHG standards.
  - If Congress had only been concerned about the CA smog problem, it could have limited CA to only HC and NOx standards, but it did not.
  - Previous waivers and case law do not require large reductions from any single regulation – "every little bit helps."

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Compelling and Extraordinary Conditions

- **Consequences for Waiver Decision Options:**
  - Granting of Waiver is consistent with "2nd level of analysis" of both looking at specific standards rather than program as a whole and specific GHG conditions in CA.
  - If EPA changes course and accepts the Industry point that we must look at each standard individually outside the context of the whole CA program, this will eviscerate the "in the aggregate" test, and, in effect, amend the CAA by administrative action.
- **Key Practical Considerations:**
  - The CAA, in both its language and its legislative history, points clearly to EPA looking to the CA program as a whole. However, and "2nd level of analysis" of examining the need for GHG standards and the GHG impacts in CA still indicates, based on all available information (in addition to burden on opponents of waiver) that this waiver criteria is met by CA.
  - While GHG standards were likely not in the minds of the authors of the 1977 CAA, Congress chose language for section 209 that allowed for future CA flexibility, rather than cutting off future CA efforts by deliberate limits on pollutants eligible to be regulated. This allows for "fluid" section 209, in accord with Massachusetts v. EPA.
  - The potential for climate change to exacerbate California's unique tropospheric ozone problem is one element of California's compelling and extraordinary conditions. However, it is by no means the sole foundation for the compelling and extraordinary argument. In fact, climate change impacts on California's water resource situation may be the state's greatest concern.

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Protectiveness – Rebound/Fleet Turnover

Questions:

- How does approval of CA's waiver affect federal rule and its fleet turnover and rebound affect estimates?
- **Waiver Criteria at Issue:**
  - Can EPA make a finding that CARB's protectiveness determination was arbitrary and capricious based on the divergent viewpoints regarding the levels of fleet turnover and rebound affects?

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Protectiveness – Rebound/Fleet Turnover

- **Summary of Record:**

  Rebound

  - CARB estimates a 3% rebound effect in 2020, based on CA-specific data/conditions.
  - One of the more comprehensive literature surveys by Greening, Greene, and Difiglio (2000) estimated a direct rebound effect in the 10-30% range.
  - More recent work on the rebound effect suggests that the rebound effect is decreasing over time as income increases. Small and Van Dender's research found a long term national rebound effect of 22% from 1966-2001. However, the nationwide rebound effect was significantly smaller, 11%, from 1997 – 2001. Additional working paper - Small estimated the 2000-2004 rebound effect of about 6%.
  - NERA developed its own study and calculated 17% with a 1983-2003 timeframe and re-estimated the Small and VanDender study and found 13%. Both NERA studies are for California.

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Protectiveness – Rebound/Fleet Turnover

Summary of Record:

– Fleet Turnover

- CARB analysis shows little/no impact of fleet turnover, modeling finds initially "accelerated/then delayed" fleet turnover. CARB estimates even in out years (2020) an increase of 2.5 tons/day of criteria air pollutants
- CARB analysis demonstrates that rebound and fleet turnover are not significant enough to be offset by upstream emission reductions/benefits
- CA maintains NERA/Sierra Study overstates fleet turnover effects based on too high vehicle costs and commingling of GHG/ZEV estimates; also NERA/Sierra don't accurately account for "fuel economy benefits" of new vehicles – Dr. Small study indicates that fuel economy improvements are "synchronized" with higher priced new vehicles and consumers will value new vehicles more than NERA/Sierra project.

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Protectiveness – Rebound/Fleet Turnover

- **Information Beyond Record:**
  - Unpublished working paper by Small estimates the 2000-2004 rebound effect of about 6%
  - NHTSA used a nationwide rebound effect of 20% in setting 2006 light-duty CAFÉ standards
  - Recent trend appears to support a declining rebound rate
- **Relationship to Federal Rule:**
  - NHTSA and EPA have agreed to propose an estimate of 15% for rebound effect and also plan to take comment on a range of effects including 5%.
- **Consequences for Waiver Decision Options:**
  - Highly vulnerable to deny waiver based on 2nd level of analysis (1st level is numerical comparison of EPA and CA standards), reasonableness of CARB's projections, and ability of CARB to make an "in the aggregate" policy choice of addressing GHGs rather than criteria air pollutants.
- **Key Practical Considerations:**
  - There is a wide range of plausible estimates of the rebound effect, particularly on the low side of the range. CARB estimate is within this plausible range, particularly if the rebound effect is linked to income.
  - CARB's upstream/net benefits are reasonable/conservative and NERA/Sierra estimates do not clearly demonstrate arbitrariness of CARB's calculations
  - NERA/Sierra Study is undermined by high vehicle costs (not credible based on CARB data and Vermont court findings) and commingling of ZEV and GHG programs.

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Relevance of EPCA to this Waiver and related issues

- EPA requested comment on whether the EPCA fuel economy provisions are relevant to our consideration of the GHG waiver, and heard from both waiver proponents and opponents on the issue.

- Proponents
  - EPA must look at the CARB request solely within the criteria of the CAA, EPA's long-standing waiver practice and court decisions support limited review
    - *MEMA I* (DC Circuit, 1979) - "It is generally considered that the constitutionality of Congressional enactments is beyond the jurisdiction of administrative agencies." "The waiver proceeding produces a forum ill-suited to the resolution of constitutional claims."
  - Point to Mass v. EPA as authority for EPA to act under the CAA to reduce GHGs without taking away from the authority of NHTSA, and consequently to permit CA to enact its GHG standards
  - When EPA issues a waiver, the CA standards are deemed to be "Federal standards" under the CAA, and not within the set of state standards subject to express or implied preemption of EPCA.
  - Disagree with industry comments that Vermont decision requires EPA to consider EPCA criteria. The court's statement that the technological and economic factors that EPA considers under the waiver are analogous to the factors that NHTSA considers under EPCA still only requires EPA to act under the terms of section 209(b) – all interested parties have had previous and full opportunity to comment during EPA's comment period

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Relevance of EPCA to this Waiver and related issues

- Opponents
  - During waiver comment period, pointed to NHTSA's LDT CAFE rule – April, 2006 – NHTSA's analysis reconciles CAA waiver authority with specific prohibition against state fuel economy stds. Appropriate for NHTSA to state this since CA insists EPA can't look outside 209(b) criteria – unless EPA changes historic (*MEMA*) approach then precluded from considering EPCA preemption
  - Recently, Industry commented that the Vermont decision held that EPA has authority to deny a waiver based on factors Congress expressly or impliedly intended EPA to consider including "economic practicability, " a factor relevant under EPCA.

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After Waiver Decision – General Information

- Any law suit will be heard in the Court of Appeals for the D.C. Circuit
  - Law suits in D.C. Circuit usually take between one-two years from petition to decision
  - This case might be expedited
- Significant chance of petition for certiorari, particularly if EPA wins, and reasonable chance that Supreme Court would take case, given its importance and recent S. Ct. practice
- Adverse decision only requires us to revisit our decision based on court's opinion – court is very unlikely to order us to grant or deny

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If We Grant…

- Likely Suit by Manufacturers
  - Somewhat less likely if we grant partially
- EPA is almost certain to win such a suit
- Grant will likely allow CA standards to go into effect, at least unless and until a court determines that EPCA preempts CA standards
  - Grant should not have an effect on EPCA preemption
    - EPA will state that waiver decision made based only on CAA authority
- Grant would be generally consistent with federal GHG rule
  - Might make it somewhat more difficult to promulgate standards that are not within reasonable range of stringency, but that does not appear to be a major issue given rule analyses to date

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If We Deny…

- Almost certain lawsuit by California
- EPA likely to lose suit
  - Less Likely to Lose if Denial Based on Leadtime Concerns for later years
- Court would require us to revisit our waiver decision, which would entail starting waiver process almost from the beginning
- A decision to deny may have some consequences for justifying federal GHG rule
  - Ex 1: denial based on lack of "c & e circumstances" would likely require downplaying benefits of GHG rule- we would need to say that expected reduction in ozone precursors and temperatures doesn't appreciably help CA problems, including ozone
  - Ex 2: denial based on "safety" issue would leave federal rule vulnerable to similar safety concerns, especially given lack of support in the technical record

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