



# Air Resources Board



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July 3, 2009

Mr. Matthew Crosby  
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California Public Utilities Commission  
Policy & Planning Division  
Room 5119  
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Staff at the Air Resources Board (ARB) would like to thank the California Public Utilities Commission (CPUC) for the opportunity to comment on the white paper entitled "Light-Duty Vehicle Electrification in California: Potential Barriers and Opportunities." We appreciate CPUC's efforts and look forward to working with you to remove barriers and facilitate vehicle electrification. ARB has a long history of developing regulations which support fuel and vehicle technology advancement. This year marks the adoption of the Low Carbon Fuel Standard (LCFS), which in addition to the Zero Emission Vehicle (ZEV) mandate will, encourage electric vehicle usage in California. The LCFS requires significant reductions in greenhouse gas emissions from the transportation sector.

ARB staff strongly supports CPUC's efforts to evaluate policy opportunities to promote electric vehicle commercialization. Among these are CPUC's consideration of rate design options, vehicle incentives, infrastructure development (including streamlined permitting requirements for installation of charging equipment), and the incorporation of renewable energy supply with vehicle charging. Staff also supports CPUC's consideration of a rate-based subsidy or low-finance loan incentive program for customer-site energy-related capital improvements.

ARB staff also supports a coordinated state agency approach to prepare the electric system infrastructure and promote electric transportation. We look forward to ongoing work with the CPUC to encourage growth in the electric transportation sector.

*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>.*

California Environmental Protection Agency

ARB staff have the following comments on specific items in the White Paper.

- Potential electric vehicle population: The projected number of vehicles included in the CPUC scenarios (p. 18) is compared below to scenarios included in the LCFS Initial Statement of Reasons for the year 2020. The low to no growth, and middle growth, scenarios should at a minimum correspond to the current ZEV regulation requirements. Consequently, we recommend that you revise both the low to no growth and middle growth scenarios.

	CPUC			LCFS	
	BEV	PHEV		BEV	PHEV
Low to no growth	3,000	58,000	Current ZEV regulation	90,000	400,000
Middle growth	33,000	312,000	Potential revised ZEV regulation	220,000	670,000
Achievable	455,000	2,500,000	Enhanced market penetration	440,000	1,340,000

- Electricity generation from oil/coal: The paper suggests the possibility of an emissions increase due to a greater amount of imported electricity generated from oil and coal (p. 21). ARB staff do not expect any increase, because carbon dioxide emissions from electricity used in California are capped, including imported electricity from other states that may use oil and coal to generate electricity.
- Impacts on gasoline vehicle use: The paper also suggests that the increased use of electricity for transportation in California may not result in decreased use of gasoline (p. 21). ARB staff would like to point out that gasoline vehicle use is expected to *decrease* as a result of electric vehicle use. One of the state's goals in electrifying the transportation sector is to reduce our dependence on petroleum. An electric vehicle can displace up to 100 percent of a vehicle's gasoline use, depending on configuration. (State Alternative Fuels Plan, CEC/ARB 2007)
- Lithium carbonate reserves: The paper states that lithium carbonate demand could exceed two percent of global reserve base per annum, thereby increasing prices. Yet the reference states lithium demand will

grow by 2.4 percent/year and increase prices by 3.9 percent/year. Two percent growth in demand is different than two percent of the Global Reserve base per year. A joint study performed by the International Energy Agency's (IEA) Implementing Agreement on Hybrid and Electric Vehicles (IA-HEV) states "The world's supply of lithium is sufficient to allow for the use of lithium-ion batteries in all appropriate HEVs, plug-in hybrid electric vehicles (PHEV), and electric vehicles likely to be produced in the next several decades."

- Lithium ion battery recycling: The paper poses the possibility that battery production, including lithium-ion, metal hydride, lead acid, and others, could result in additional downstream waste over time (p. 22-23). In fact, preparation for lithium ion battery recycling has already begun. The recycling industry (Kinsbursky/Toxco) is consulting with vehicle manufacturers and is preparing for lithium ion battery recycling. Current legislation requires the proper disposal and recycling of automotive lead acid batteries as well as portable rechargeable batteries. (California Code of Regulations Title 22, Division 4.5, sections 66273.2, 66266.80, 66266.81)
- LCFS implementation date and emission benefits: The paper states that the LCFS will take effect in 2011 and will achieve annual reductions of approximately 15 MMT of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) (p. 24). The LCFS will take effect January 1, 2010, although the first substantive equivalent takes effect January 1, 2011. Therefore we recommend that you revise the statement to reflect the effective date of the regulation and expected LCFS annual reductions of 16 MMT CO<sub>2</sub>e.
- Utility revenues: Additional utility revenues that result from increased electricity as a transportation fuel could be, as suggested by the white paper, used to fund investment in charging infrastructure, passed on to electricity vehicle customers/ratepayers, or used to benefit utility shareholders (p. 31). ARB staff supports the use of these revenues to either enhance electric vehicle infrastructure or to be returned to electric vehicle ratepayers. As the CPUC considers changes to electricity rate schedules to reflect and promote electric vehicle charging, ARB staff welcomes coordination and exchange of information between organizations.

- Support for electrification incentives: As stated in the paper, stakeholders have suggested the CPUC consider a rate-based subsidy or low-finance loan incentive program for customer-site energy-related capital improvements. CPUC staff suggests a pilot subsidy or low-interest finance program for electric vehicle users who do not yet have a “smart meter” (p. 65). ARB staff supports subsidy and loan programs for meter/charger installation.
- CPUC rate schedule changes: The paper points out that non-utility electricity generators may face a barrier to qualification for LCFS credits (p. 67). This is due to current law authorizing only Independently-Owned Utilities (IOU) to provide “retail” electricity. We are aware of non-utility entities that would like to generate LCFS credits through the production of electricity for transportation uses. To address this issue, ARB staff plans to meet in the near future with British Petroleum, the California Energy Commission, and CPUC to discuss entities other than IOUs generating electricity for transportation.
- Effects on emissions due to electrification: The paper asserts that “if electricity retail providers can convert surplus credits into allowances or offsets, this will result in an increase in the allowable level of emissions, increasing statewide greenhouse gas (GHG) levels, rather than decreasing” (p. 70). ARB is still in the process of designing the cap-and-trade program. If surplus LCFS credits are allowed into the program, the program can be designed to avoid an increase in emissions, for example by setting aside allowances for this purpose from within the cap.

Additionally, ARB staff does not believe that the electricity sector will see increases in their GHG emissions for two reasons. Even with the most optimistic of projections for electrified vehicles, the total electricity needed to power these cars is less than 0.5 percent of the total electricity generation. In addition, the electricity sector will be meeting other mandates such as a 33 percent Renewable Portfolio Standard, which will decrease their emissions much more substantially than the increases caused by increased demand.

- Relative responsibility of transportation and electricity sectors for GHG reductions: The paper states: “Within California, the electricity sector accounts for only 25 percent of economy wide emissions, yet the sector is responsible for reducing 40 percent of emissions to meet 2020 goals,

according to CARB's Scoping Plan. The Plan recognizes that the transportation sector must be responsible for reducing its share of the economy wide emissions and not expect other sectors, such as electricity, to make up the difference" (p. 69). These numbers are based on an analysis of the Draft Scoping Plan, combining reductions called for from the electricity and natural gas sectors and ignoring the reductions expected from the cap-and-trade program. Similar analysis based on the Final Scoping Plan suggests that the combined electricity and natural gas sectors will contribute about 35 percent of the reductions outside of the cap-and-trade program, compared to 32 percent of current emissions; the transportation sector would contribute 45 percent of reductions, compared to 38 percent of the current emissions. Additional reductions from the cap-and-trade program, representing 20 percent of the total in the Scoping Plan, would come from the sectors with the most cost-effective reduction opportunities. It is not accurate to suggest that the electricity sector is "making up the difference" for the transportation sector in terms of emission reductions.

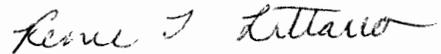
- Policy suggestion related to allowances: The paper suggests that, if ARB allocates allowances in the cap-and-trade program on a sectoral basis, ARB consider a policy to shift allowances from the transportation sector to the electricity sector, while not changing the total cap on the pool of allowances (p. 69-70). ARB recognizes that the inter-sectoral implications of electricification of the transportation sector need to be considered during the design of the cap-and-trade program. ARB will welcome the continued involvement of CPUC staff on this and other cap-and-trade program design issues affecting the electricity sector during ARB's rulemaking process.

Again, ARB staff would like to thank the CPUC for accepting our comments on your white paper. We also look forward to working with you on these critical issues that will make electrification of vehicles a reality for California.

Mr. Matthew Crosby  
July 3, 2009  
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If you have any questions, please contact me at (916) 322-2733 or Ms. Carolyn Lozo, Air Pollution Specialist, Fuels Section at (916) 445-1104.

Sincerely,

A handwritten signature in cursive script that reads "Renee T. Littaua".

Renee T. Littaua, Manager  
Fuels Section

cc: Ms. Carolyn Lozo, APS  
Fuels Section