



South Coast Air Quality Management District

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DOCKET	
06-AFP-1	
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October 19, 2007

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 06-AFP-1
1516 Ninth Street
Sacramento, CA 95814-5512

re: Docket Number 06-AFP-1, "State Alternative Fuels Transportation Plan"

The South Coast Air Quality Management District staff appreciates this opportunity to provide comment on the October 2007 State Alternative Fuels Transportation Plan Committee Draft Report. This Plan makes a major contribution by recommending appropriate state policies and programs related to the development and commercialization of alternative transportation fuels and vehicles.

The AQMD would first like to indicate our strong overall support for the recommendations in the report. These and other actions are essential if California is to be successful in deploying zero and near-zero emission alternative fuels and vehicles. There are several areas in which we would suggest that additional focus and recommendations could be provided.

First and foremost, the report should prominently indicate that one of the central and unequivocal goals of the state with respect to alternative fuels is the attainment and maintenance of federal and state ambient air quality standards. The 16 million residents of the South Coast Air Basin are subject to a very disproportionate burden with respect to air quality. For example, more than fifty percent of the entire nation's exposures to violations of the PM2.5 standard occur in our basin, while over 25 percent of the nation's 8 hour ozone violation exposures occur in our basin. The AQMD recently adopted its updated 2007 Air Quality Management Plan, which was subsequently approved by the California Air Resources Board as part of the State Implementation Plan. Accordingly, we strongly urge that the Plan explicitly state that one of its central goals is to support the implementation of the South Coast AQMP and related SIP. Expanded use of alternative fuels is a key component of our AQMP strategy. Specifically, the Plan should note the essential need to achieve the following:

- Attainment of the federal PM2.5 standard by 2015;

- Attainment of the 8 hour ozone standard by 2024; and,
- Achievement of all state and secondary federal standards for air quality by the application of all reasonably available control measures.

The report should also incorporate as a goal the reduction in toxic air contaminants, especially as they relate to goods movement. The ports of Los Angeles and Long Beach, for example, are major sources of toxic air contaminants – most notably diesel exhaust particulate – due to the disproportionate role these ports play in goods movement. Over 40 percent of the nation’s container cargo is processed through these ports. Port-related emissions raise significant environmental justice concerns due to excessive particulate, and NOx and SOx emissions from ships, trains and trucks serving port operations. Alternative fuels have a key role to play in reducing such community level toxic air impacts associated with goods movement, as well as other transportation segments. The Plan would be strengthened by highlighting these concerns.

The second general comment we have is related to the role of regulatory mandates as well as incentives. The AQMD has adopted the most aggressive fleet rules for alternative fuel vehicles in the nation. The result of these targeted rules has been an unparalleled commercial and operational success in transit buses, refuse trucks, taxi fleets, and street sweepers. The ARB regulatory authority should be referenced in the Plan as a major means of stimulating further demand statewide for alternative fuel engines and vehicles. Based on current trends, we anticipate up to an additional 5,000 alternative fuel heavy duty vehicles being deployed in our air basin alone, at the Ports as well as other fleets, between now and 2010. Significant growth potential beyond 2010 is also quite feasible. The Plan should recommend that state fleet rules should be adopted. Such a mandate could be a crucial means of ensuring that additional engine manufacturers rejoin the HD engine alternative fuel segment. The pipeline for engines needs to be continually primed. It would also signal to manufacturers around the world that alternative fuel vehicle markets are indeed sizeable enough to justify major development and certification efforts for a wider range of engine sizes and chassis configurations.

The AQMD staff also have the following comments on specific fuels and actions called out in the Plan, listed in the order which the fuels are identified:

Biofuels

- The Plan implicitly recommends that biofuels represent the predominant source of alternative fuels going forward. The following table derived from Table 1 in the Plan indicates the relative share of total public funding from federal and state sources which is recommended for various alternative fuels:

Total Public Investments Needed from 2008 to 2022 (\$millions)

AB 1007 Alternative Fuel Segment	State	Federal	Total	%
Biofuels	654	2,950	3604	69.3%
Propane	10	8	18	0.3%
Natural Gas	59	48	107	2.1%
Electric Drive	255	200	455	8.8%
Hydrogen	514	500	1014	19.5%
Total discretionary funding proposed	1492	3,706	5198	100.0%

As noted above, nearly 70% of the entire discretionary spending is dedicated to biofuels. It is unclear from the Plan if this reflects the preferred allocation, or if this reflects the expected allocations at the state and federal level. In either case, the policy significance of Table 1 in the Plan cannot be underestimated. We recommend that Table 1 be re-titled to indicate that these dollar amounts are not recommended relative priorities for the various fuel segments. For the South Coast basin, we believe that natural gas and electric technologies, including plug-in hybrids, should be given more emphasis.

- The specification and role of both E15 and E30 is unclear in the report. Relative to E15, the report should note that such a fuel formulation would not qualify under the ARB's current Predictive Model. We would urge the CEC to not promote E15 for a variety of reasons, most importantly that it will increase NOx and permeation hydrocarbon emissions compared to Phase 3 gasoline. It is also not an appropriate fuel for the current legacy fleet. Efforts to optimize future vehicles to E15 would be far less constructive than optimizing to higher biofuel blends. References to E15 are therefore counterproductive given that refiners need to focus on mitigating the impacts of E10 relative to emissions. There is insufficient information upon which to build any credible scenario for E15.
- The reference to E30 is similarly unclear. What is the expected reformulation? Does the Plan assume it is an oxygenated compound, or merely derived from renewable sources? There are numerous questions which are not addressed related to its specification and use. What are the multimedia implications? Would the fuel be intended for use by the legacy fleet. If not, why not optimize vehicle emissions for flexible fuel vehicles on the highest feasible ethanol content, as recently demonstrated by SAAB with their plug-in hybrid FFV optimized to E100?
- The upstream accounting of greenhouse gas (GHG) emissions for biofuels is much more complicated than for other alternative fuels such as natural gas or hydrogen. The report would be significantly enhanced if uncertainties in analysis of full fuel cycle GHG impacts were acknowledged and discussed. For example, a recent study by Nobel Prize-winning chemist Dr. Paul Crutzen strongly suggests

that a small change in the assumption about N₂O emissions from corn-based ethanol production can change the overall GHG value of ethanol from positive to negative impact.¹ The Plan should identify the possibility of such outcomes, and indicate that significant verification of the current assumption in the GREET model used for the Low Carbon Fuels Standard should be undertaken. In the absence of rigorous audits to monitor the multitude of parameters used in life cycle analysis models, policy makers should be cautioned against using such models to drive definitive policy judgments.

- Optimization of flexible fuel vehicles should include PZEV certification criteria. While at least one OEM has indicated that such certification is conceivable, there are no immediate plans to achieve this certification status across a wide variety of FFV engine families. In light of recent announcements by U.S. based manufacturers committing to produce at 50% of their car and light truck as FFV's starting in 2012, it is in the interest of the state to encourage PZEV certification as soon as possible.

Renewable Diesel

- The report should highlight that much additional data is needed to determine the scope and magnitude of emission impacts from different biodiesel formulations. ARB's biodiesel work program is an important step in this direction. Additional work to expand this testing may be needed to assess the impact of biodiesel on particulate trap durability. Some anecdotal data suggests that in-use fuel quality is difficult to ensure. In addition, particulate filter plugging of these systems may occur with biodiesel. Due to this concerns, manufacturers of verified retrofit systems have chosen to exclude biodiesel for use in their systems for the purpose of warranty coverage.
- The GHG impact of gas-to-liquids is significantly different than coal-derived diesel-like products. The Plan attempts to generalize about XTL, but such generalizations are not helpful when crafting careful alternative fuels policy. Coal-based liquid pathways should be fully differentiated from gas to liquid pathways. We suggest that the label "XTL" be dropped from the report altogether in place of specific fuel descriptions and abbreviations.

Propane

- The recent certification of the Rousch Ford 150 truck is a clear indication that progress continues to be made with respect to propane as an alternative fuel. Yet the report only indicates that \$10 million in state incentives be provided to stimulate market growth for such technologies.

¹ PJ Crutzen *et al*, *Atmos. Chem. Phys. Discuss.*, 2007, 7, 11191; and J Hill *et al*, *Proc. Natl. Acad. Sci. USA*, 2006, 103, 11206 (DOI: 10.1073/pnas.0604600103); <http://www.rsc.org/chemistryworld/News/2007/September/21090701.asp>

- While the report notes the need to develop additional heavy duty propane engines, it should also include light and medium duty vehicles in its targeted programs.

Electric Transportation Technology

- Plug-in hybrid electric vehicle (P-HEV) technologies offer tremendous potential and should be at the core of the state's alternative fuel strategy. The Plan should emphasize the paradigmatic shift which is enabled through the substitution of renewable zero emission electricity for gasoline vehicle propulsion. P-HEV technology represents a durable platform for achieving the long-term as well as medium term objectives of the Plan, as well as the 2050 goals outlined in SB 32. Because PHEV systems can be integrated with other technologies such as natural gas, hydrogen and biofuels, it also provides unique added strategic agility. We recommend that the Plan highlight the need to provide high priority for PHEV development and commercialization.
- In addition to attempting to develop an OEM vehicle manufacturing in the state, the Plan should attempt to build Tier 1 suppliers of advanced components such as batteries. Current industry trends suggest that off-shore manufacturing plants are likely to predominate for certain key components such as lithium ion battery production.
- Recycling plant development and expansion should be added to the battery production plant goals noted on page 17.
- With respect to fast charging system development identified on page 17, there is need to foster the development and deployment of advanced metering which offer a variety of options, such as vehicle to grid, vehicle to home, and updated vehicle communication software.
- We suggest that fast-charging subsidies not be provided absent the development of lower rate tariffs which encourage off-peak charging, as such charging is a much more efficient use of existing generation, transmission and distribution assets.

Natural Gas Fuel and Technology

- The extensive commercial deployment of natural gas vehicles and infrastructure is one of the most tangible success stories resulting from AQMD efforts in adopting carefully crafted set of fleet rules combined with substantial incentive funding and visionary technology advancement programs. We believe that these three elements were essential to creating a sustainable natural gas vehicle market. The Plan would be strengthened if it noted how a carefully balanced mix of incentives, cost-shared technology development and fleet rules can be successful in accelerating and expanding natural gas vehicle deployment, as well as other alternative fuels..

- The role of light duty natural gas vehicles may be underestimated in the report, based on rapidly maturing light duty natural gas technology offered commercially in Europe. Some 17 different light duty vehicle types are available. Focused effort should be made to encourage OEM manufacturers to bring such vehicles to California for certification testing and demonstrations in the short term. In the medium term, the ARB should aggressively seek support from manufacturers to offer such vehicles for sale in California and throughout the U.S.
- The growth in hydrogen blending with natural gas offers significant opportunities to exceed the stringent 2010 NOx standards for heavy duty trucks by 50% or more. This emission reduction potential is significant for several reasons. It justifies continuing differential incentives for post-2010 engines, and it provides a means of rationalizing the economic risks of developing longer term hydrogen refueling infrastructure. The Plan should identify hydrogen / NG blends as a major strategic opportunity, and recommend that the ARB conduct manufacturer workshops to explore means of optimizing future post-2010 engines to appropriate blend levels of hydrogen and natural gas.

Hydrogen

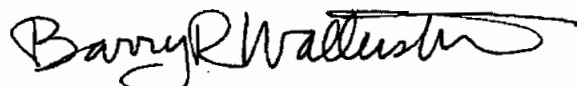
- The fuel cell vehicle scenario upon which the Plan is based does not appear to be consistent with the current ARB ZEV fuel cell schedule or volume levels. We recommend that the Plan make a more direct link to the ARB's current ZEV regulation, and explore options for strengthening the mandate where feasible.
- Hydrogen bulk storage and on-board storage continue to represent especially difficult technical challenges. It is vital for the success of FCV technology that progress be accelerated to enhance these crucial elements. We recommend that the Plan identify a role for ARB specifically to promote aggressive development of technology in this regard.

We appreciate this opportunity to provide comments on this complex subject. The need for alternative fuels is accelerating due to the convergence of several interrelated trends, including greenhouse gas emissions, ambient air quality, toxic air contaminants, and petroleum resource depletion. Effectively addressing all of these concerns in a coordinated fashion requires actions and policies which are deeply rooted in alternative fuel and vehicle development and commercialization.

Because the needed risk taking on the part of industry is so great, government has a key role to play in sharing a sizeable portion of this burden. The AQMD remains strongly committed to working closely with both the CEC and ARB in bringing alternative fuels and vehicles to market in the most aggressive and commercially sustainable fashion possible. We commend the agencies for the opportunity which the Plan provides to fine tune our strategies, while identifying a wide range of actions that will be needed to achieve success. We look forward to joining with both agencies on these important efforts as we move forward.

If you have any questions related to these comments, please feel free to contact me or Paul Wuebben, Clean Fuels Officer, at 909-396-3247.

Sincerely,

A handwritten signature in black ink, appearing to read "Barry R. Wallerstein". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Barry R. Wallerstein, D.Env
Executive Officer