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Mr. Matthew Crosby
via U.S. mail and e-mail to mc4@cpuc.ca.gov
Regulatory Analyst, Policy and Planning Division
California Public Utility Commission
505 Van Ness Avenue
San Francisco, CA 94102

Re: CPUC White Paper - Light-Duty Vehicle Electrification in CA, May '09

Dear Mr. Crosby:

Clean Energy thanks the California Public Utility Commission (CPUC) for the opportunity to comment on the May 22, 2009, staff White Paper on "Light-Duty Vehicle Electrification in California: Potential Barriers and Opportunities", herein referred to as the "White Paper". Not only does Clean Energy believe that the CPUC rightfully should provide incentives for clean transportation alternatives that support California's policy positions (i.e., AB 1493 (Pavley), Executive Order (EO) S-3-05 / AB 32 (Nunez – Global Warming Solutions Act of 2006), EO S 01-07 / Low Carbon Fuel Standard, AB 1007 (Pavley), and AB118 (Nunez)), these policies irrefutably support the dual promotion of electricity and natural gas as viable low carbon vehicle fuels in California's transportation sector. In fact, the White Paper correctly states on p. 9 that "(t)he widespread use of plug-in electric vehicles (PEVs) and compressed natural gas vehicles (CNG) presents a major opportunity to cut GHG emissions from the transportation sector." Further, by adding natural gas vehicles (NGVs) to the scope of the Policy and Planning Division's recommended OIR, it would support another key California policy, Executive Order S-06-06 (the Bioenergy Action Plan), as the NGV Industry is increasingly investing in biomethane production[1]: an ultra-low carbon fuel that has the potential to provide up to 88.1% less carbon emissions than California-based gasoline according to the California Air Resources Board's (CARB) own wells-to-wheels analysis.[2]

In the ensuing commentary, we hope to persuade the CPUC to redirect its proposed policy direction to include NGVs within the scope of the proposed OIR so that California can both maximize its reach to reduce carbon in the transportation fuel sector and to avoid any division between two key and complimentary low carbon fuel strategies, natural gas and electricity, that must move forward to properly support the state's legislative and regulatory objectives: to bolster California's energy

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[1] Clean Energy recently purchased the biomethane rights to McCommas Landfill in Dallas, TX. McCommas is one of the nation's largest landfills and currently produces 4.4 million cubic feet (or ~35,000 gasoline gallon equivalent) of pipeline quality gas daily.

[2] California Air Resources Board. 2008. *Detailed California-Modified GREET Pathway for Compressed Natural Gas (CNG) from Landfill Gas*. October 10. Version 1.0. See p. 4.

independence, to promote low carbon transportation fuels, and to aggressively combat climate change. If the CPUC should determine that NGVs should not be a part of the PEV OIR, it should at the very least encourage natural gas utilities to continue to file applications for NGV programs with a CPUC commitment to process those applications in a reasonable, but expedited, timeframe. Finally, Clean Energy strongly encourages the CPUC to expand either the OIR or NGV programs to incentivize medium- and heavy-duty vehicles that can maximize California's low carbon potential in the transportation sector.

CPUC Policy Void

Historically, the CPUC provided both statewide policy direction, and program funding authorizations to California's energy utilities concerning their natural gas and electric vehicle low emission vehicle (LEV) programs through the Commission's LEV proceeding which was first implemented in the early 1990s (I.91.10-029/R.91-10-028). In 2005, the Commission formally closed its LEV proceeding in D.05-05-010. Since the closure of the LEV proceeding, the Commission has not provided any new statewide policy guidance or direction regarding the utilities' Clean Transportation Programs even though there have been many new major state policy initiatives since that 2005 decision, and changes in state law applicable to the alternate fuel vehicle market. Major state initiatives include the need for a suite of alternative fuels to address petroleum reduction (AB1007), public funding for alternative fuel market penetration with low carbon attributes (AB118), CARB's Low Carbon Fuel Standard under AB32, and the Bioenergy Action Plan (which includes renewable natural gas (EO S-06-06)).

Ongoing utility LEV programs have been transferred to utility general rate case proceedings. With the elimination of the LEV proceeding, a policy vacuum exists which cries out to be filled. In its White Paper, the Policy and Planning Staff recommends correcting part of this omission with respect to light duty PEVs by way of the recommended PEV OIR, but unfortunately thereby proposes that the policy direction vacuum be left unfilled for NGVs. To fill this policy direction vacuum and to provide additional support for multiple state policies now in effect, the scope of the proposed electric vehicle OIR needs to be broadened to include NGVs.

Policy Direction Supporting the Inclusion of NGVs

In the Joint Energy Action Plan II which was issued by the CPUC in October, 2005, the Plan identifies the following "Key Action":

> "The CPUC, in conjunction with the CEC and Cal EPA, and local air districts, will continue to evaluate and implement policies to promote the development of equipment and infrastructure needed to facilitate the use of electric power and natural gas to fuel low emission-vehicles as required by Public Utility ("P.U.") Code Sections 740.3, 740.8 and Section 451"

Public Utilities Code Section 740.3 also directs the CPUC to:

" . . . implement policies to promote the development of equipment and infrastructure needed to facilitate the use of electric power and natural gas to fuel low-emission vehicles . . ." and "shall ensure that the costs and expenses of those programs are not passed through to electric or gas ratepayers unless the commission finds and determines that those programs are in the ratepayers' interest."

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In July of 2005, Senate Bill ("SB") 76 was chaptered which added P.U. Code Section 740.8, effective January 1, 2006. Section 740.8 reads as follows:

> "As used in Section 740.3, 'interests' of ratepayers, short- or long-term, mean direct benefits that are specific to ratepayers in the form of safer, more reliable, or less costly gas or electrical service, consistent with Section 451, and activities that benefit ratepayers and that promote energy efficiency, reduction of health and environmental impacts from air pollution, and greenhouse gas emissions related to electricity and natural gas production and use, and increased use of *alternate fuels"* (Emphasis added).

While Clean Energy supports the policy recommendations in the White Paper[3] that intends to justify an OIR for PEVs, Clean Energy is disappointed that the CPUC would pursue a "PEV only" strategy in light of the fact that NGVs currently reduce substantial tons of GHGs annually by displacing over 150 million gallons of petroleum fuel per year in California, and have the potential to provide deep reductions in GHGs with the displacement of several billion gallons of petroleum in the year 2050 (CEC conclusions in AB1007 State Energy Plan).

NGVs Show Promise in All Vehicle Classes, not just the MDV/HDV Markets

NGVs are often mistakenly viewed by California policy makers as vehicle applications limited to the medium or heavy-duty vehicle markets (see footnote no. 5 on p. 9 of the White Paper). Such opinions are formed primarily due to limited original equipment manufacturer (OEM) production of light-duty NGVs in the United States. For example, the only OEM product that is currently manufactured for the US market is the Honda Civic GX; a car that has once again received the top spot by the American Council for an Energy-Efficient Economy (ACEEE) for the "Greenest Vehicles of 2009".[4] However, all too often, either due to a lack of awareness or investigation, several small volume manufacturers (SVMs) who have continued to convert and certify light-duty vehicle models of GM and Ford lines were overlooked by the White Paper: BAF Technoligies, Baytech, and Fuel System Solutions to name a few. Ironically, some of these NGV SVMs are equal if not larger than some of the PEV companies outlined within the White Paper on p. 11. Finally, most analysis of the NGV Industry tends to be narrowly focused on the US, ignoring global transportation trends.

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[3] As a leading vehicle fuel provider of natural gas, biomethane and hydrogen, Clean Energy holds a strong interest in the advancement of hybrid-electric vehicle (HEV) and plug-in hybrid electric vehicle (PHEV) drive systems to further reduce the carbon footprint of NGVs and fuel cells vehicles (FCEVs).

[4] http://corporate.honda.com/press/article.aspx?id=4951

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Taking a broader or more global view, one could come to a very different conclusion about the potential for NGV applications across all market segments, particularly the light-duty vehicle segment. For example, to date, there are well over 10,052,000 vehicles[5] in operation worldwide with approximately 95+ percent of those vehicles being light-duty vehicles (an increase of 5 million vehicles in the last two years alone). All major OEMs worldwide manufacture several NGV light-duty models for deployment in various parts of the world. For example, GM (over 18 models), Ford, Mercedes, Volkswagen, Volvo, Saab, Citroen, Peugeot, Fiat, etc., all produce NGVs for worldwide markets. Now that the US is facing foreign oil, greenhouse gas and fuel economy concerns, foreign OEMs are considering bringing light-duty models to the US markets and domestic OEMs are considering Qualified Vehicle Modifier (QVM) programs as a means to quickly introduce NGVs into California and US markets. Therefore, the CPUC's conclusion that NGVs may be most suitable for MDV or HDV markets may be pre-mature and incorrect. In fact, the above NGV worldwide trends should help compel the CPUC to strongly consider and adopt incentives that would further encourage NGV market penetration sooner, and may even demonstrate broader consumer acceptance of NGVs over PEVs based on the White Paper's own observations.[6]

CPUC Should Broaden the Scope of the Proposed OIR to include Medium- and Heavy-Duty Low Carbon Vehicle Opportunities

The White Paper's acknowledgement that "CNG vehicle market growth may emerge in medium- and heavy-duty vehicle markets" should be viewed as a huge opportunity for the CPUC to further support key California policies that hope to combat climate change, infuse larger volumes of low carbon and biofuels, and displace foreign oil import. Instead, the White Paper places a false limit on the CPUC's potential to deliver critical state benefits by openly omitting the evaluation of medium- and heavy-duty vehicle fleets (see footnote 5 on p. 9 of the White Paper); vehicle fleets that could provide significant benefits to California through the dedicated or mixed use of natural gas and biomethane.

At present, there are numerous engine and chassis manufacturers that offer medium- and heavy-duty truck and bus options that operate on both CNG and domestic liquefied natural gas (LNG) fuel. Cummins-Westport, Westport Innovations, and Emission Solutions, Inc., each offer NG engines that far exceed the USEPA and CARB 2007 HDDV emissions standards and two models already achieve the USEPA and CARB 2010 HDDV emissions standards. All of these engines, which can achieve up to a 21% carbon emissions benefit over diesel on a well-to-wheels basis, have been certified by CARB and are available for sale on the California market today. Further, these engines are successfully operating in school bus, transit, refuse, and goods movement fleets within the state today. If these fleets opted to purchase biomethane fuel supplies, carbon emissions reductions could be as great as 90% when compared to diesel. Given that the number of medium- and heavy-duty vehicles that operate on California's roads are substantially less (~7% of the vehicles on California's roads) than the state's light-duty vehicle population (~93% of the vehicles on California's roads), but represent a little more than half of the annual carbon emissions generated

[5] The Gas Vehicle Report. April 2009. P. 29

[6] California Public Utility Commission. 2009. *Light-Duty Vehicle Electrification in Californria: Potential Barriers and Opportunities.* May 22. Pp. 12-14

by the light-duty sector, the CPUC should not overlook this key carbon reduction opportunity.

Key NGV Clarifications and Corrections must be made throughout the White Paper

Clean Energy is disappointed that it was not approached or included as an external contributor despite the fact that our technical staff could have provided meaningful input on NGV fuelling infrastructure (stations, future projections, etc.), NGV advancements (CNG and LNG vehicle developments), NGV updates (FuelMaker's updated status since it was acquired by Fuel Solutions), and NGV and low carbon world trends/strategies that will change both California's and the nation's vehicle market. The CPUC does have the authority and experience to address PEVs and NGVs simultaneously and, with our assistance, we can help the CPUC make the case for a joint PEV-NGV OIR.

A. Base Light-Duty NGVs provide up to a 30 percent Carbon Reduction Advantage

Contrary to the White Paper's un-sourced claim that "CNG is approximately 10% less carbon intensive than regulated gasoline in CA", CARB has demonstrated through its own analysis that light-duty CNG vehicles can provide an upwards carbon benefit of 29% over CA gasoline on a wells-to-wheels basis[7] and the CEC found that light-duty CNG vehicles could provide a 30 percent carbon benefit over California-based gasoline on a well-to-wheels basis[8].

B. Light-Duty NGVs can provide up to an 88 percent Carbon Reduction Advantage Today

The White Paper falls short of evaluating the carbon reduction potential of the NGV Industry as NGVs in the light-duty sector can potentially provide ultra low carbon benefits as high as 88% on a wells-to-wheels basis[9] or more when various vehicle strategies are applied. For example, based on CARB's own analysis, light-duty NGVs powered by biomethane can provide upwards of a 88% carbon benefit over California-based gasoline. If advanced NGV vehicle models, like Toyota's concept Camry hybrid NGV were made available to the marketplace, the carbon benefit could move up to 43.7% using conventional domestic natural gas or 87.9% using a 50-50 blend of conventional natural gas and biomethane. Comparatively, the CEC estimates that a plug-in hybrid electric vehicle (PHEV) would achieve a 44% carbon reduction and a PEV would achieve a 68% reduction.[10] Clearly, pairing up HEV and PHEV platforms with a low or an ultra low carbon fuel, like natural gas, biomethane, or a mixture of both, can produce

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[7] California Air Resources Board. 2009. *Detailed California-Modified GREET Pathway for Compressed Natural Gas (CNG) from North American Natural Gas: Version 2.1.* February 28.

[8] California Energy Commission. 2007. Full Fuel Cycle Assessment Well to Wheels Energy Inputs, Emissions, and Water Impacts. CEC-600-2007-003. June. p. 3-19.

[9] California Air Resources Board. 2008. *Detailed California-Modified GREET Pathway for Compressed Natural Gas (CNG) from Landfill Gas.* October 10. Version 1.0. See p. 4.

[10] California Energy Commission. 2007. Full Fuel Cycle Assessment Well to Wheels Energy Inputs, Emissions, and Water Impacts. CEC-600-2007-003. June. p. 3-27.

significant GHG benefits for California well before the 2050 goal of an 83 percent reduction of carbon for the transportation sector.

C. Natural Gas merits equal CPUC Attention to Electricity

The justifications that the White Paper makes to support LDV electrification (i.e., volatile petroleum costs, petroleum security problems, the overarching California Assembly Bill 32 goal of reducing greenhouse gas emissions in all sectors, etc.) also holds true for natural gas. Not only have recent trends demonstrate more OEM and SVM interest in producing NGVs or up-fitting vehicles to NGVs, concept cars like the Toyota Camry CNG hybrid are growing in popularity. The White Paper's notation that more "automakers have already have already begun or announced deployment of a range of on-road electric vehicles, including light-duty PHEVs" can only compliment the NGV Industry's efforts as NGVs will benefit from battery advancement and pairing natural gas fuel with HEV/PHEV platforms.

However, unlike PEVs which are anticipated to have an overall "impact to the electricity system in various ways" as described by the White Paper, NGVs will not have an overall impact on California's natural gas pipeline system. In fact, recent studies from the Colorado School of Mines Potential Gas Committee[11] and Navigant Consulting, Inc., [12] have projected domestic natural gas proved reserves to be upwards of 118 years at 2007 US consumption levels. This partially explains why the commodity price for natural gas in the United States has declined to roughly $3/mmbtu while the price of oil has steadily increased above $70/barrel.

Just like electricity fuel availability, natural gas also extends across the nation's natural gas pipeline system (much like the electricity grid) and therefore natural gas also enjoys the same competitive advantage in terms of existing refueling infrastructure over other alternative fuels (see correction of home refueling system in the next section). Thus, the statement that electricity enjoys a fueling advantage over CNG is simply incorrect. Further, NGVs would also benefit from Moore's law as the White Paper notes on p. 13 and there is plenty of evidence of the incremental cost of NGVs becoming smaller with greater volumes of sales, particularly in the refuse and transit bus sectors. Of course, NGVs face uncertainty of early adoption like PEVs or any other alternative fuel, but NGVs are unlikely to share the same sharp price barriers that customers will certainly face with the high battery and vehicle costs that the White Paper assigns to PEVs.

Bottom line, if climate change is as pressing an issue as California policy and international science has made it, citing time is of the essence to avoid significant environmental and global costs, the CPUC must take immediate action and implement both electric and natural gas fuel strategies now with a new OIR proceeding. Too much is at risk if we fail to act comprehensively with a silver buckshot (NGV-PEV OIR) and fall short in combating global climate change with a silver bullet approach (i.e., PEVs only OIR).

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[11] Colorado School of Mines. 2009. Potential Supply of Natural Gas in the United States: Report of the Potential Gas Committee. June 18.

[12] Navigant Consulting, Inc. 2008. North American Natural Gas Supply Assessment. July 4. p. 14.

D. Fuel Solutions Returns Phill Unit to the Market

The White Paper makes an incorrect implication on p. 58, footnote 164, that the Phill home fueling unit manufactured by once bankrupt FuelMaker (not "Phill Maker") is no longer available on the market. This is factually incorrect. FuelMaker FMQ was acquired by BRC-Impco parent Fuel Systems Solutions, Inc. Further, FuelMaker continues to display its Phill home fueler at worldwide NGV conventions for sale on the market.[13]

To conclude, Clean Energy is disappointed that the NGV market has not been well represented, repeatedly underestimated, and essentially dismissed from the light-duty vehicle sector discussion when opposite conclusions and outcomes could have been projected based on current worldwide NGV growth and consumer acceptance. Further, we believe that California risks missing many of its goals embedded in AB 32 (LCFS), AB 1007 (State Alternative Energy Plan), EO S-6-06 (Bioenergy Action Plan), and AB118 (Low Carbon Fuel Investment Plan), if it fails to include a NGV strategy in the PEV OIR.

Conclusions

CARB, the state's lead agency on AB32 and the Low Carbon Fuel Standard, views both natural gas, biomethane (methane from renewable resources), and electricity as viable solutions to greenhouse gas emissions in the transportation sector. Natural gas as a transportation fuel already displaces over 150 million gallons per year of petroleum fuel. The state legislature, through SB 76, has affirmed the CPUC's role in promoting both electricity and natural gas as transportation fuels in California. The CEC, in their AB1007 State Alternative Fuels Plan, identified the need for a suite of alternative fuel options for the state that includes both natural gas and electricity.

The staff white paper correctly identifies a number of policy issues for electric vehicles that the CPUC should address through an OIR process. Clean Energy is not challenging the premise that PEVs are important to the state's plan to reduce greenhouse gases. But we are challenging the CPUC perception that it must solely address electricity as a fuel – while ignoring natural gas and its current and growing role in California's transportation fuel market. Clean Energy believes that the CPUC should address the policy issues of both electricity and natural gas simultaneously.

Clean Energy is concerned that an OIR proceeding for PEVs would place any gas utility programs for NGVs on hold until deliberations on electric utility policy issues are resolved. NGVs are and existing and growing market in California and it would be very unfortunate if gas utility proposals for NGVs could not be addressed in a timely manner by the Commission.

With that in mind, Clean Energy would like to propose the following either/or recommendations to the CPUC.

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[13] GNV Madrid: New Company Groupings. 2009. Fleets and Fuels. Volume XVI, Number 14. June 29. p. 3.

Recommendations:

1. A new OIR proceeding should encompass both electricity and natural gas vehicles. An OIR should be structured in two phases. Phase I should address cross-cutting issues that are common for both natural gas and electricity in order to create consistent statewide policy for electric and natural gas vehicles. Common issues could include the rate-basing of home refueling, special rates, vehicle incentives, and a identifying the utility role in developing public fueling infrastructure consistent with the directive in PUC Section 740.3 – "The commission's policies shall also ensure that utilities do not unfairly compete with nonutility enterprises." Phase II of the OIR should address those unique issues associated with PEVs such as the impacts on renewables, system impacts, peak/off-peak charging, metering, etc.
2. If the CPUC determines that natural gas should not be part of a PEV OIR, then the Commission should encourage natural gas utilities to continue to file applications for NGV programs and process those applications in a reasonable timeframe so as not to impede NGV market development in the state and to allow the state to realize the positive environmental and societal benefits of NGVs.
3. Clean Energy strongly encourages the CPUC to expand a NGV-PEV OIR or NGV programs to incentivize medium- and heavy-duty vehicles so that California can maximize its low carbon fuel potential in the transportation sector. Like the light-duty sector, Clean Energy views a tremendous opportunity to ultimately combine natural gas and biomethane fuel with HEV and PHEV platforms to deliver low to ultra-low carbon benefits in these key transportation sectors.

Again, Clean Energy thanks the CPUC for this opportunity to comment on the White Paper and for the CPUC's consideration of our input on this important effort to introduce to key low carbon fuel strategies into the California marketplace and beyond.

Sincerely,

Todd R. Campbell