



California Natural Gas Vehicle Coalition

DOCKET

09-ALT-1

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June 1, 2010

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 09-ALT-1
1516 Ninth Street
Sacramento, CA 95814-5512

Re: 2010-2011 Investment Plan – Revised Draft Staff Report – Docket 09-ALT-1

Dear Peter Ward:

The California Natural Gas Vehicle Coalition submits the following comments on the Revised Draft Staff Report of the 2010-2011 AB 118 Investment Plan. We know and appreciate that the Energy Commission staff have put a great deal of time and effort into this Plan. We also appreciated the opportunity to participate in the Advisory Committee meeting on April 30th and we will continue to be an active participant.

This comment letter addresses three primary concerns we have with the current staff draft: 1. a noticeable shift in CEC's representation of the potential of natural gas as a transportation fuel through 2050 which runs counter to the growing list of reasons supporting an increase in the use of natural gas in transportation; 2. CEC's decision to shift monies allocated for natural gas vehicle incentives to biomethane production; and, 3. errors in the report which CEC needs to correct.

Prospect for Natural Gas is EVEN BETTER than it was in 2007, 2008, and 2009

In 2007, the California Energy Commission (CEC) developed a report in response to AB 1007 (Pavley) that was eventually adopted by the California Air Resources Board (CARB) and the Governor as the State's Alternative Fuels Plan (CEC-600-2007-011-CTF). That plan included a detailed assessment of all alternative fuels and the potential they had to displace petroleum out to the 2050 timeframe. Natural gas for transportation was one of those fuels that exhibited great near- and long-term potential to displace petroleum in California.

The analysis that went into each potential transportation fuel included assessments of technology, cost competitiveness with petroleum, business plans for expansion, investments required, infrastructure development, etc. The analysis for natural gas and natural gas vehicles (NGVs) was comprehensive and yielded very positive projections for fuel displacement in the heavy-, medium-, and light-duty vehicle arena; with the strongest

potential to displace diesel in the heavy-duty truck market. CEC conducted an analysis of each fuel and developed near and long-term projections of market penetration that were qualified by uncertainties. In the 2007 report, natural gas was one fuel that exhibited significant long-term potential to displace petroleum.

Since that time, AB118 (Nunez) was passed giving the CEC substantial resources to invest in the development of alternative fuels for California and additional resources to CARB to augment clean air projects under the Carl Moyer Program. The NGV industry was supportive of the 2008-2009 Investment Plan developed for the AB118 program. In that Investment Plan, significant funding was allocated to NGVs. This investment was consistent with the assessment of natural gas in the 2007 State Alternative Fuels Plan.

However since that plan was adopted the CEC has reallocated almost half of the monies slated for natural gas *vehicle* investments to infrastructure projects, primarily for biomethane production. In the Revised Draft Staff Report for the 2010-2011 AB118 Investment Plan the CEC staff proposes to invest only half of the natural gas monies (\$12 million) in NGVs. As we have communicated in person we strongly believe more of the money should be invested in vehicles. Based on recent history we have the additional concern that CEC will further reduce this planned investment in vehicles by shifting some of these funds to infrastructure projects after the plan is adopted.

The Revised Draft Staff Report includes aggressive projections for biodiesel and advanced technologies such as hybrids, battery electrics and fuel cell vehicles, and greenhouse gas reductions associated with these fuels and technologies. However the report projects significantly less penetration of NGVs, or advanced NGVs (natural gas coupled with hybrid or plug-in hybrid technology). The bullish position that the CEC defined for NGVs in 2007 has disappeared just at a time when the outlook for natural gas as a transportation fuel never looked better; significantly better even than in 2007.

Why does natural gas as a transportation fuel look better today than it did in 2007?

The short answer is 1) a much better domestic supply picture for natural gas, 2) higher oil prices and more questions about availability because of increasing global demand; and 3) the price advantage of natural gas over gasoline and diesel; 4) the growing strength of the NGV Industry; 5) more vehicle options in the heavy-duty, medium-duty, and light-duty markets; and, 6) competitive clean air and greenhouse gas benefits compared to other fuels.

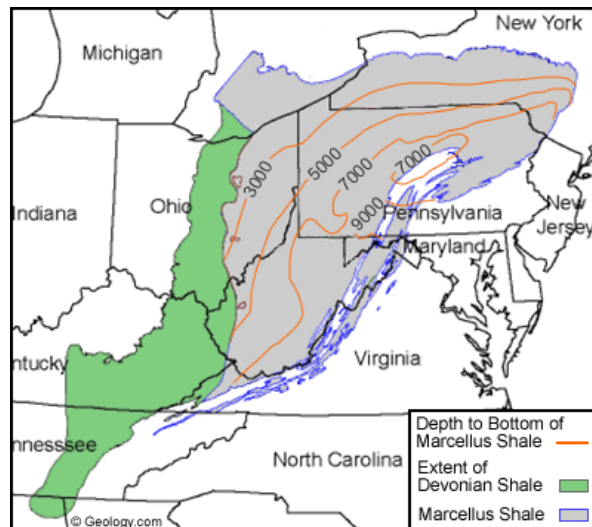
Natural gas supply picture for the U.S.: In the last 3 years, a wealth of information has been developed on gas shale reserves in the U.S. Gas shale is classified as unconventional gas. Over the last 6-7 years, gas producers have developed and significantly improved extraction methods for this gas. Recent assessments of the U.S.'s natural gas reserves are 2,000 Trillion Cubic Feet (TCF) [Potential Gas Committee, 2009] and up to 8,000 TCF for North America [National Petroleum Council, 2007]. Some are taking a conservative approach to these numbers and estimating that 4,000 TCF will ultimately be used.

Assuming 2008 national consumption levels this more conservative approach translates into 200 years of natural gas supply.

Gas Shale Basins in the U.S.



Initial projections of gas reserves are also being modified. For the Marcellus Shale in West Virginia, Pennsylvania, and New York, the geologists that did the initial assessment of 50 TCF (trillion cubic feet) earlier this decade revised their assessment in October 2009 to 489 TCF. [Dr. Terry Engelder, Pennsylvania State University]



The U.S. is becoming self sufficient in natural gas primarily because of gas shale and the know-how of how to extract it. Unlike years past, we now have the natural gas reserves capable of supplying conventional gas markets as well as the transportation market to displace foreign oil.

Higher oil prices and questions about availability: In 2007, future oil price projections from the U.S. Energy Information Administration's (EIA) were challenged by the CEC as being too low. The CEC began using higher price projections for fuel comparison analyses. In 2008 and 2009 EIA began to use higher price forecasts for oil as the reality of declining oil production worldwide and the world's increased demand for oil, in large part due to emerging economies in India and China.

Today oil prices are hovering between \$70 and \$80 per barrel during this major world recession. Fuel prices at the pump are slightly above the \$3 per gallon level in many parts of California. As soon as the world starts coming out of the recession, most economists are predicting that oil prices will go up significantly. The EIA 2010 forecast includes a very plausible scenario that the price will reach \$200/barrel by 2020.

Natural gas is cheaper than gasoline and diesel: Whether you compare natural gas to gasoline and diesel as an energy commodity (~\$.50/gallon vs. ~\$2.00/gallon) or at pump (~\$2.40/gallon vs. ~\$3.00/gallon) natural gas is a significantly cheaper alternative. We expect the cost differential favoring natural gas to improve over time as demand for petroleum exceeds supply.

Stronger Natural Gas Industry: Gas producer and utility membership in organizations like NGV America is on the rise. OEMs, like GM and Ford, are reintroducing natural gas vehicles or developing programs with small volume manufacturers to sell product. The U.S. Department of Energy is investing in further developing natural gas and natural gas hybrid technology. Trucking companies are purchasing natural gas trucks. Here in California we expect 1,000 natural gas trucks to be operating at the Ports of Los Angeles and Long Beach by the summer of 2010.

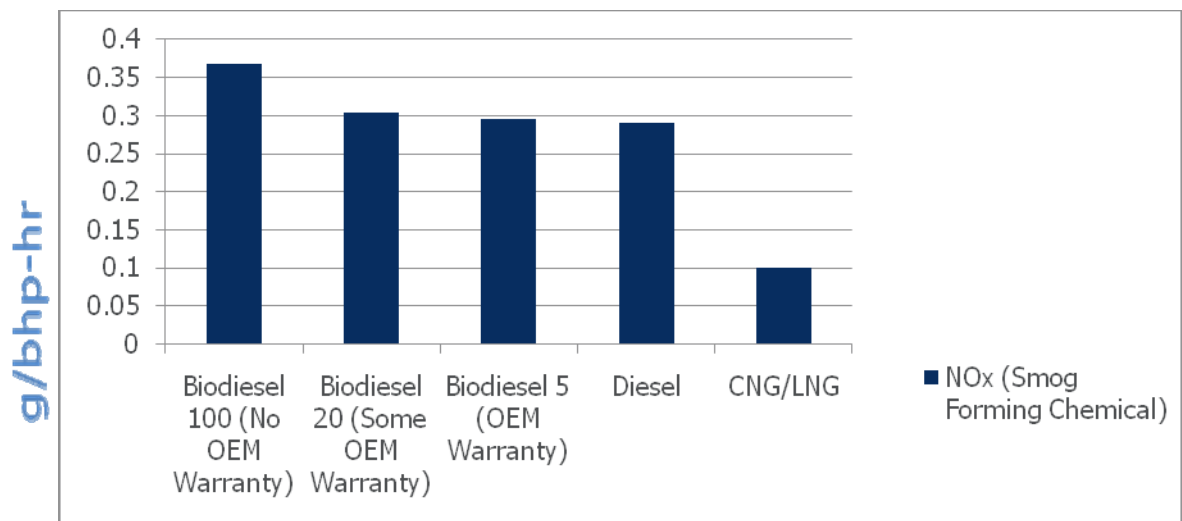
More NGV options in the heavy-, medium-, and light-duty market: In the heavy-duty sector all refuse and transit bus manufacturers offer natural gas vehicles, including Gillig. Heavy-duty truck manufacturers Kenworth, Peterbilt, Volvo/Mack, and Freightliner already offer natural gas trucks for sale. International is now in the market with their EIS 7.6-liter factory option and recently announced plans to develop a 13-liter product with Clean Air Partners. Finally, Ottawa, Capacity and Autocar offer yard tractor natural gas options.

In the medium-duty sector, GM has recently announced its desire to offer OEM product for commercialized vehicles, including vans. Ford is working with BAF Technologies to supply companies like AT&T with natural gas utility vans powered by E-350 engines. Airport shuttles, delivery trucks (i.e., UPS vans), and other medium-duty delivery fleet applications are also utilizing Ford's E-450 engines. Certainly, AT&T's announcement of

their purchase 8,600 natural gas utility vans and Verizon's recent contract to convert more than 500 Ford E-250/350 vans to compressed natural gas has gotten all the manufacturers attention.

In the light-duty market, several U.S. OEMs have publically announced plans to introduce vehicles or are discussing with industry leaders their intentions to offer natural gas vehicles in the U.S. market. In addition to the OEMs, including Honda's dedicated Civic GX, start-up companies like VPG are offering new taxicabs which run on natural gas and are ADA compliant and will be available in 2011. Such movement has also encouraged foreign manufacturers to consider offering natural gas options to the US market. Europe currently offers over 60 makes and models of natural gas vehicles in the light-duty sector.

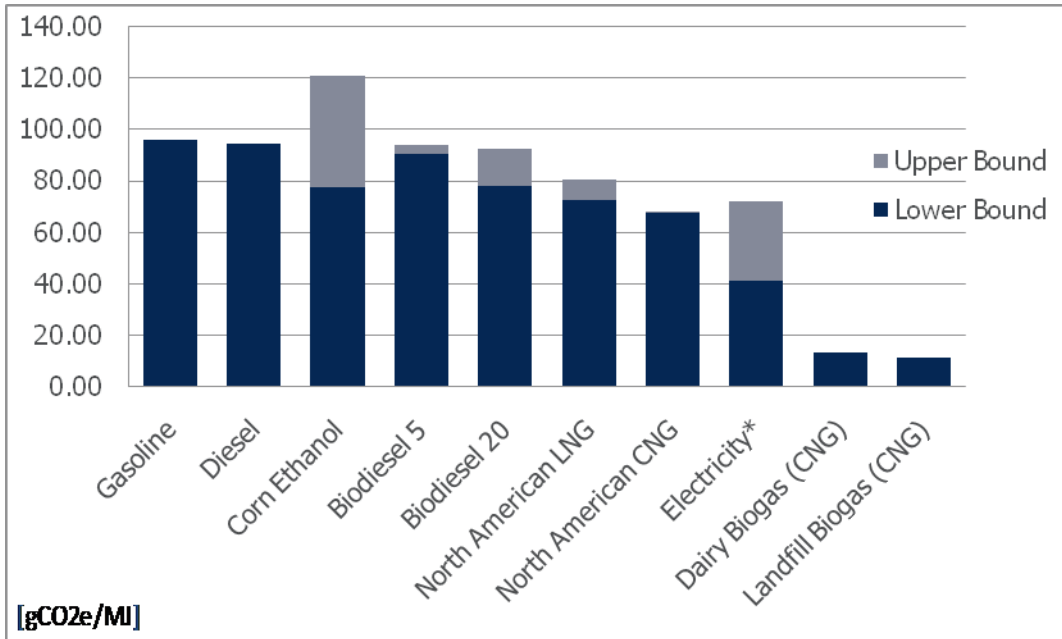
NGVs are a very clean option: We are very concerned that the Revised Draft Staff Report fails to consider the potential for increased use of natural gas between now and 2050 including: how natural gas could displace gasoline in hybrids and plug-in hybrids; how natural gas can displace diesel in heavy-duty applications; how renewable biomethane can achieve California's 2050 goals today; and how natural gas can be blended with hydrogen to meet ultra low carbon intensity goals. In fact, the Revised Draft Staff Report appears to underestimate the greenhouse gas performance and potential of NGVs as determined by the California Air Resources Board and other leading sources on the subject.



[compiled from CARB data - 2010 Certifications EO A-021-0526 and EO A-021-0520 and May 19, 2010 Biodiesel and Renewable Diesel Rulemaking, 2nd Public Workshop]

On criteria air emissions, not only does natural gas reduce diesel exhaust particulate, which is a listed toxic air contaminant by the California's Office of Environmental Health Hazard Assessment, CNG and LNG product is actually certified 50% below the US EPA's 2010 heavy-duty emissions standards.ⁱ Comparatively, "clean diesel" heavy-duty engines must use a "family emissions limit" to comply with the 2010 standard. This means that the newest CNG and LNG heavy-duty product are at least 65% cleaner on

oxides of nitrogen (NOx) emissions than the diesel alternative. The emissions performance gets better when natural gas is compared to biodiesel based on recent analysis performed by the California Air Resources Board.ⁱⁱ



[source: CARB, Low Carbon Fuel Standard, Table 6: Carbon Intensity Lookup Table, 2010]

On greenhouse gas performance, natural gas is one of the best options for AB 32 compliance even before combining the fuel with more efficient drive trains, such as hybrids or plug-in options. Conventional natural gas an “opt-in” fuel under the Low Carbon Fuel Standard (LCFS), providing up to a 24% (LNG) or 29% (CNG) carbon intensity reduction compared to current gasoline or diesel product.. Renewable natural gas produced from landfills or dairy farm operations well surpasses any other low carbon fuel under LCFS consideration achieving up to an 88% reduction compared to current petroleum product in California.ⁱⁱⁱ

It should also be noted that there have been several academic articles issued on the variability of the carbon intensity makeup of the national and California electrical grid systems since the adoption of the California LCFS. UC Davis’ Institute of Transportation Studies, for example, contends that the California Air Resources Board’s carbon intensity estimate for the electric grid is overly optimistic and should reflect “marginal power” over the agency’s more optimistic scenarios.^{iv} Using UC Davis’ calculations, conventional natural gas vehicles could actually provide lower carbon emissions than electric vehicles in certain cases.

Invest More Money in Natural Gas Vehicles

In one of the success stories the CEC should be sharing widely, the natural gas vehicle industry has evolved to a point where most fueling stations do *not* need public funding to support their construction or operation. Private capital is being secured for most CNG fuel station projects where there are enough NGVs present to provide a sustainable demand for the stations fuel. Increasing the number of NGVs on the road as soon as possible is critical to the continued success of this business model. That is why we are urging the CEC to put more money into NGV incentives, rather than stations that may or may not have the demand to sustain them.

The Revised Draft Staff report shows a balance between vehicle investments and infrastructure (biomethane plants and refueling stations) but the historical summary CEC presented on April 26th shows that more than \$11 million dollars has been shifted from natural gas vehicle investments to biomethane plants.

To be clear the California Natural Gas Vehicle Coalition supports biomethane and biogas development AND we support AB 118 Investment in developing these fuels. However we are very concerned about a scenario where CEC diverts so much money away from vehicles that we end up with great biomethane facilities and not enough vehicles to use the fuel. It is critical that vehicles receive the lion's share of funding; not stations or other infrastructure projects.

Errors in the report which CEC needs to correct

As we pointed out that the last Advisory Committee meeting we believe Figure A-6 in Appendix A is incorrect. It shows only a 2% carbon benefit for liquefied natural gas when compared to diesel. We believe this number may represent a worst case scenario for LNG rather than a more likely scenario or even a reasonable average. On a related note we see that CEC continues to use an energy economy ratio (EER) of 0.9 for natural gas. We believe this is no longer correct as the newest natural gas engines such as the HPDI are more efficient and should be reflected with an EER of at least 1.0. We ask that CEC staff review these details and make the appropriate corrections.

Though not technically an error we have concerns about the following statement in the report:

“One of the biggest barriers to the penetration of natural gas in the marketplace is the lack of public access fueling infrastructure. Until this problem is addressed the use of NGVs will likely be confined to the medium- and heavy-duty class of vehicles which can use pre-determined CNG/LNG stations on a regular route.” [page 60]

We think this statement is out of date. With new public access stations coming online every month [as noted elsewhere many of which are privately financed] and a new

home refueling equipment option, Ecowise, in the California market we no longer see this as one of the biggest barriers to growth in NGV use.

Concluding Remarks

In conclusion, the Revised Draft Staff Report for the 2010-2011 Investment Plan presents a pessimistic view of the future of natural gas as a transportation fuel. This is in stark contrast to the CEC's AB 118 Investment Plan for 2008-2009 which presented a much more optimistic if not bullish view. This shift is quite shocking given the lack of evidence presented in the Revised Draft Staff Report to support the change in view. As noted above we believe the 2008-09 Investment Plan presented a reasonable perspective and the information that has become available since then strongly support a very positive forecast for the increased use of natural gas in the transportation sector.

We respectfully request that the CEC staff reexamine their forecasts and projections in light of the information provided above and readily available from multiple sources. We would be happy to assist CEC in finding any additional information your staff needs. We further request that the staff make modifications to the Investment Plan to reflect a more realistic view for natural gas. Finally we ask that the staff further consider and include more in this Investment Plan on the future benefits of combining natural gas with advanced technologies such as hybrids and plug-in hybrids; and blending with hydrogen and biomethane.

Sincerely,



Tim Carmichael
President

CC: Commissioner Boyd
 Commissioner Eggert

ⁱ California Air Resources Board. Certifications of 2010 Cummins Diesel and CNG/LNG 8.9L Engines, EO A-021-0526 and EO A-021-0520, respectively.

ⁱⁱ California Air Resources Board. May 19, 2010. "Biodiesel and Renewable Diesel Rulemaking, 2nd Public Workshop". Lex Mitchell, Bon Okamoto.

ⁱⁱⁱ California Air Resources Board, Low Carbon Fuel Standard, Table 6: Carbon Intensity Lookup Table, 2010.

^{iv} Journal of Power Sources 195 (2010) 2099-2109. "Determining marginal electricity for near-term plug-in and fuel cell vehicle demands in California: Impacts on vehicle greenhouse gas emissions." Ryan McCarthy, Christopher Yang. Institute of Transportation Studies, University of California, Davis, One Shields Avenue, Davis, CA 95615-8762.