The Center for North American Energy Security
Our Fuels. Our Future.

2700 Virginia Avenue, N.W.
Suite 115
Washington, DC 20037
(202) 338-1993
tcorcoran@cnaes.net

COMMENTS OF THE
CENTER FOR NORTH AMERICAN ENERGY SECURITY
ON
PROPOSED LOW CARBON FUEL REGULATION
August 19, 2009

The Center for North American Energy Security ("the Center") is an organization dedicated to environmentally sound development of oil sands, oil shale and similar so-called "non-conventional" resources in North America. The Center submits the following comments on the July 2009 Proposed Low Carbon Fuel Standard Regulation (LCFS). Our comments focus on Section 95486, which governs calculation of carbon intensity values. These comments supplement and build upon the August 1, 2008 comments of the Center on the Draft AB 32 Scoping Plan Document (June 2008 Discussion Draft) and the Center's Comments of November 14, 2008, December 16, 2008 and April 22, 2009 on prior drafts of the LCFS Regulation.

Our comments throughout the LCFS process have focused on two primary points: (1) the carbon intensity value for all petroleum-based fuels, including the non-conventional fuels, or High Carbon Intensity Crude Oils (HCICO) should be the same; and (2) if not, there must be a "safety valve" mechanism for demonstrating the actual values for the non-conventional fuels, providing appropriate credit for applicable regulatory requirements and other measures to mitigate, offset, or otherwise account for carbon emissions from extraction and processing operations. While the regulation now proposed is somewhat different from the prior drafts with respect to calculation of carbon intensity values for non-conventional fuels, it remains subject to these critical flaws.

As discussed in our prior comments, discrimination among petroleum-based fuels is not necessary to achieve the purposes of the AB 32 program and would in fact be counter-productive. It is not needed to control development of unconventional resources in California, as they are controlled directly by applicable state and federal laws and regulations. The primary effect would be to discourage imports to California of fuels derived from other unconventional resources in North America, such as oil sands in Canada or oil shale in the Western U.S. This would have an inflationary effect on fuel prices in California, as these cost effective North American fuels would not be available. The adverse economic impacts would affect low income citizens disproportionately, an effect that AB 32 expressly seeks to prevent. While the legislation states a goal of contributing to worldwide greenhouse gas reductions, a discriminatory LCFS would not assist in attaining that goal. Fuels barred from California would simply be sold elsewhere, to other states or foreign countries where controls may be more lax

and emissions from fuel transportation increased. The California economy would suffer, but worldwide emissions would not be reduced and in some cases would be increased. This is precisely the situation that AB 32 and AB 1007 seek to avoid, in requiring a regulatory program "that is equitable, seeks to minimize costs and maximize total benefits," and "minimizes the economic costs to the state" (secs. 38562(b)(1), 43866(b)(2)).

Further, an arbitrary distinction between conventional and unconventional categories (now called "high carbon intensity crude oils") is an over-simplification of the suite of petroleum-based refinery feedstocks currently available. The global reality is that feedstocks in general are becoming heavier and sourer regardless of whether they are derived from so-called conventional or nonconventional sources. The past decade has seen significant changes in this regard that can be expected to continue even more markedly over the period when the LCFS takes effect. Many refineries currently are undergoing substantial modification to process these heavier feedstocks.

A primary concept underlying the proposal to adopt a discriminatory LCFS is the notion that fuels derived from unconventional sources are inherently "dirtier" than fuels derived from conventional sources. This is a common misconception that appears to be based on analyses that do not consider promising new technologies or application of mitigation measures or carbon credits or offsets to unconventional fuels operations. The current scientific literature indicates that emission rates from production of unconventional fuels are extremely uncertain, but can be reduced to levels the same as or lower than conventional fuels when such measures are considered.[1]

Yet another reason to avoid a discriminatory LCFS is that it would be extremely difficult to administer fairly and effectively. Because the resulting refined products (gasoline and diesel) would carry different carbon intensities downstream, they would no longer be economically fungible. This would lead to substantial uncertainty in the fast moving/low inventory distribution system for transportation fuels, and threaten a consistently adequate supply of fuels in California. In addition, many refinery feedstocks are produced, transported, stored, blended and otherwise altered in ways that may not be readily apparent to those conducting the assessments or auditing the work of producers, brokers and other types of vendors. In this system, domestic producers and those from countries with comprehensive reporting systems would be disadvantaged. Similarly, the focus on the carbon footprint alone would work to the disadvantage of feedstocks with low sulfur content or other environmental advantages but higher emissions of greenhouse gases. These aspects of the proposed system are likely to

[1] See Robert H. Williams, Eric D. Larson, and Haiming Jin, *Synthetic fuels in a world with high oil and carbon prices,* prepared for the 8th International Conference on Greenhouse Gas Control Technologies, Trondheim, Norway (June 19-22, 2006); Adam R. Brandt and Alexander E. Farrell, *Scraping the Bottom of the Barrel: Greenhouse gas emission consequences of a transition to low-quality and synthetic petroleum resources*, forthcoming in Climatic Change. These studies were discussed in detail in the Center's Comments of August 1, 2008 on the Draft AB32 Scoping Plan, and copies were attached to those comments.

result in undesirable outcomes such as discrimination in favor of products from foreign countries with substandard environmental or human rights policies, and against products that have other desirable environmental attributes or emanate from countries with highly developed reporting systems.

It is also apparent that the costs of discrimination against non-conventional fuels would far outweigh the potential benefits, if any. We did not see any discussion of this issue in the economic and environmental analyses accompanying the proposed LCFS. The potential GHG reduction benefits of the discriminatory provisions would be negligible. The Department of Energy's National Energy Technology Laboratory (NETL) recently found that "well-to-tank" (WTT) releases of GHGs contribute only about 20% or less to the total life cycle GHG emissions for each fuel type.[2] Emissions associated with production of non-conventional crudes are only a small subset of this category for petroleum-based fuels. Further, the NETL Report concludes that other measures for reducing GHG emissions from transportation fuels would be more effective:

> Opportunities for lowering the life cycle GHG emissions from transportation-related fuels will best be achieved through improved vehicle efficiency (e.g., gallons of fuel consumed per mile traveled) or alternative sources of transportation fuels. For example, improving the average gasoline-powered light-duty passenger vehicle efficiency from 21.6 miles per gallon (MPG) to 28.6 MPG, a 7 MPG increase, reduces the life cycle GHG emissions by 20%–equal to the total upstream GHG emissions from well-to-tank. Opportunities for reducing emissions from refining operations are very limited. Petroleum refining operations are one of the most energy efficient chemical conversion processes in the country– averaging around 90% energy efficiency. The U.S. petroleum refining industry, through its trade association the American Petroleum Institute (API), has implemented an aggressive greenhouse gas reduction program entitled "API Voluntary Climate Change Program." This program, and others, should continue to be encouraged to reduce life cycle GHG emissions; however, large-scale reductions can only be achieved through improved vehicle efficiency and alternative sources of transportation fuels (p. ES-2, emphasis added).

While the potential benefits of the proposed discrimination against non-conventional fuels would be small, the costs would be substantial. Even if compliance with the proposed LCFS were feasible, the costs likely would cause fuel producers to shift sales to other markets. This would do nothing to address California or global GHG issues, but is likely to cause a significant increase in fuel costs in California.

As discussed above, a substantial and growing portion of U.S. fuel imports are derived from "heavier" petroleum resources or processes in Canada, Venezuela, Ecuador, Mexico and

[2] NETL, "Development of Baseline Data and Analyses of Life Cycle Greenhouse Gas Emissions of Petroleum Based Fuels," p. ES-2 (November 26, 2008).

other foreign producers. For example, about 18% of the crude oil, gasoline and diesel fuel imported into the U.S. now comes from Canada. This market share is expected to grow as Canadian oil sands production increases, and Canadian imports supply substantial and growing portions of the fuel demand in some of our northern states, over 50% in some cases. U.S. companies are spending billions to modify their facilities to refine and transport Canadian and other heavier crude oil products. The proposed LCFS would severely restrict sales of these fuels in California. The consequences would include more dependence on oil imports from unstable regions, higher fuel prices and a slap in the face to our Canadian neighbors and other valued trading partners. In addition, this approach could cause a net environmental detriment. Foreign production removed from the California market as a result of the LCFS would be shipped to less regulated markets in other states or countries, as discussed above.

The California statutes that govern this proceeding, AB 32 and AB 1007, expressly seek to avoid such a result. The Center again urges CARB to abandon the proposed distinction between conventional and non-conventional fuels in the calculation of carbon intensity values, and to adopt a single set of default values that applies to all petroleum-based fuels.

A discriminatory LCFS also is unnecessary because major North American resources are, or soon will be, subject to detailed mitigation requirements, well before the LCFS takes effect. Examples include new Canadian regulations for oil sands production, requiring the equivalent of carbon capture and sequestration, and the program that the Bureau of Land Management within the Department of Interior is developing for leasing and control of oil sands and oil shale resources on federal lands. Others may include the need for offsets or allocation purchases for the carbon emissions associated with production. AB 32 calls for a program that is “feasible . . . complementary, nonduplicative, and can be implemented in an efficient and cost-effective manner” (sec. 38561(a)). The program also must “minimize the administrative burden of implementing and complying with these regulations” (sec. 38562(b)(7)). A LCFS that discriminates against North American unconventional resources would not be consistent with these requirements.

If a discriminatory standard is retained, it is essential that the host of national and international mitigation measures potentially employed is considered, both for the reasons discussed above and because various provisions of AB 32 require consideration of mitigation measures. On the basis of the prior drafts of the LCFS and underlying materials, the Center understood that full credit would be given for actual mitigation measures associated with crudes supplied to California refineries. However, at present this remains unclear. Our current understanding is that CARB intends to allow credit for physical improvements (such as carbon capture/storage systems) but not for credits derived from "cap and trade" or carbon tax programs.

Such an approach would constitute a blatant violation of AB32. For example, Sections 38561 and 38562 include the following requirements, among others:

- The state board must consider all relevant information pertaining to greenhouse gas emissions reduction programs in other states, localities, and nations, including the northeastern states of the United States, Canada, and the European Union;
- The state board must identify opportunities for emission reductions measures from all verifiable and enforceable voluntary actions, including, but not limited to, carbon sequestration projects and best management practices;
- The regulations must be designed in a manner that is equitable, seeks to minimize costs and maximize the total benefits to California, and encourages early action to reduce greenhouse gas emissions;
- The state board must consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health.

None of these requirements would be satisfied by refusal to consider cap and trade, carbon tax or other non-technological control measures. In addition, the earlier requirements of AB 1007 provide that "full fuel-cycle assessment means evaluating and comparing *the full environmental and health impacts* of each step in the life cycle of a fuel . . ." (sec. 43867(b), emphasis added). No full and complete assessment of such impacts could fail to consider *all* effective mitigation and other emission reduction measures.

The requirement to consider all effective mitigation measures also is reinforced by the August 2007 U.C. Davis analysis of the LCFS. For example, the report includes the following discussion of CCS technologies:

> In the future, GHG emissions may be reduced by a variety of *carbon capture and storage* (CCS) technologies that are currently under development (Intergovernmental Panel on Climate Change 2005). More research in measurement, monitoring and verification of CCS is needed, as well as into the long-term trapping mechanism, but we expect these challenges will be overcome. There are also concerns about siting CCS facilities and environmental justice. Once these issues are resolved, CCS projects in the transportation sector should be included in the LCFS . . . One significant approach to CCS is to capture CO2 from fuel combustion or industrial processes, and to compress it and inject it into appropriate rock formations deep underground where it can be stored for many years, perhaps permanently. This geologic CCS is similar to the current practice of CO2 flood enhanced oil recovery (CO2-EOR) in which the underground formation is an oil reservoir from which no more crude oil can be economically produced. The CO2 can liberate significant quantities of oil from the rock, restoring once-depleted fields to productivity (Damen et al. 2005). Oil produced in this way may have a lower net GWI than conventional crude oil and

in such instances should be considered a low-carbon fuel (Jessen, Kovscek, and Orr 2005; Parson and Keith 1998)(Part 2, p. 62).

Conclusion

The continuing proposal to adopt a LCFS that discriminates against fuels derived from oil sands, oil shale and other similar resources is not necessary to effectuate the purposes of AB 32 and is likely to work against them. The Center urges that this proposal should be abandoned in favor of a single standard for all fuels derived from petroleum-based resources, including those from heavy-oil reserves, EOR resources, oil sands and shale oil. If a discriminatory standard is retained, full credit for all deployed mitigation measures should be allowed, including offsets and/or carbon credit purchases or fees.

Respectfully submitted,

Thomas J. Corcoran
Executive Director

Kurt E. Blase
General Counsel