NESTE OIL

April 30, 2008

California Environmental Protection Agency
Air Resources Board
Attention: Christina Zhang-Tillman
Sent by e-mail to: czhangti@arb.ca.gov

Re: Comments on "Proposed Concept Outline for the California Low Carbon Fuel Standard Regulation" (California Environmental Protection Agency Air Resources Board March 2008)

Thank you for the opportunity to comment on the **"Proposed Concept Outline for the California Low Carbon Fuel Standard Regulation"**. Neste Oil commends the California Environmental Protection Agency and the Air Resources Board for its environmental leadership. Neste Oil supports the California's efforts to develop alternatives to petroleum-based transportation fuels and respectfully offers the following discussion and comments to the LCFS Outline

Section 2.2: Standards for Diesel and Section 5.2: Calculation of AFCI

Discussion:

CARB has requested comments with regard to compliance schedules. To assist CARB in making a decision, Neste Oil provides the following information on its current NExBTL renewable diesel capacity projection:
2007 - 170,000 tonnes per year (58 million gallons per year) on stream at Porvoo I, Finland;
2009 - 170,000 tonnes per year (additional) to start up at Porvoo II, Finland;
2010 - 800,000 tonnes (271 million gallons per year) per year to start up in Singapore;
This will bring Neste Oil's worldwide NExBTL capacity to approximately 387 million gpy by 2010. Neste Oil continues to explore production opportunities in the United States, with California being a very attractive option. Typical lead time required for engineering, permitting, construction and start up is approximately two years (may be longer in California due to the extensive permitting time)

Comments:

1. The LCFS Outline fails to recognize the contribution of diesel as an alternative fuel to gasoline in transportation. A large GHG reduction is possible if gasoline vehicles in California are replaced with light duty diesel vehicles. CARB should consider including a credit for switching from gasoline production and consumption to diesel production and consumption. Simply put, "dieselization" especially in light duty vehicles should be encouraged as it offers large and immediate GHG reductions.

2. There are some factors in the LCFS Outline which warrant further clarification:
(a) The calculations to reach the values listed at Table 5.2.1 "Conversion Factors to Gasoline Gallon Equivalent" (gge) are not shown. CARB should confirm and explain the data used to calculate "gge" from diesel volume at Table 5.2.1.
(b) The calculations to reach the values listed at Table 5.2.2 "Vehicle Efficiency Factor "K" " are not shown. CARB should confirm and explain the data used to calculate "K" for diesel engines in Table 5.2.2. Will the CARB GREET model always use the 0.89 value for "K" to calculate the BAFCI for all alternative diesel fuels?
(c) We are not clear on the methodology and relevance of reducing the baseline AFCI of diesel fuel (by a factor of approximately 0.78) to 71 gCO_2e/MJ per Table 2.2. CARB should justify why the baseline AFCI for diesel should be 71 gCO_2e/MJ and not 91 gCO_2e/MJ.

3. As there is an energy density difference between "biodiesel" (although "biodiesel" is not defined in the LCFS Outline, we assume that this refers to fatty acid methyl esters) and "biomass-based diesel" (again, we assume that this refers to renewable hydrocarbons), biomass based diesel should have a higher "gge" than biodiesel. As an example, in the federal Renewable Fuel Standard, "biodiesel ester" is assigned an equivalency value of 1.5 (relative to ethanol which is 1); and "non-ester renewable diesel" is assigned an equivalency value of 1.7.

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Sections 2.3-2.8: Multi-Fuel Vehicles

Discussion:
The definition of "Multi-Fuel Vehicle" is clear for CNG, LNG, LPG, Electricity, and Hydrogen. However, the definition of multi-fuel vehicle using ethanol and biomass-based diesel fuel need clarification. For the fuels covered at Sections 2.3-2.6, it is apparent that every multi-fuel vehicle must have at least two fuel/energy storage systems and two fuel/energy delivery systems.

For low level ethanol blends (<10 vol% ethanol with gasoline) a single-fuel vehicle is needed - i.e. a vehicle that can operate on a fuel that happens to be a blend of between zero and 10% volume ethanol in gasoline. As E85 is so different from gasoline and because the fuel delivery system in a vehicle designed to run on E85 has to have a more sophisticated control scheme, one could define an E85 vehicle as being a duel-fuel vehicle - i.e. one fuel is gasoline (with up to 10% ethanol), and one fuel is E85.

It is even more difficult to define a multi-fuel vehicle (Section 2.8) for diesel from biomass (which includes both biomass-based esters and biomass-based hydrocarbons). Not only is there is only one fuel storage system and delivery system per vehicle - in fact, it is a standard diesel vehicle.

Most diesel engine manufacturers have indicated that diesel fuel blends containing up to 5 vol% biomass-based esters (biodiesel) are acceptable in their engines (as long as one is not trying to make the ultra clean Category 4 diesel fuel described in the Auto Industry's Worldwide Fuel Charter). At the B5 level most diesel fuel standards are met, and except for very hard to measure small differences in fuel economy and emissions the performance of the vehicle is essentially unchanged. Thus, for all practical purposes it is a single fuel vehicle, not a multi-fuel vehicle. Some engine manufacturers have indicated that diesel fuel containing up to 20% (volume) biodiesel are acceptable for use in their engines. At this level some diesel fuel standards probably will likely not be met and it is more likely that differences in emissions and fuel economy can be discerned. However, the vehicle is still more like a single than a multi-fuel vehicle.

In response to comments concerning the use of biomass-based hydrocarbons (renewable diesel) the auto industry's Worldwide Fuel Charter Committee responded:

> *"The Committee agrees that fuels conforming to all requirements defined by the Charter are acceptable, regardless of whether they are synthesized from renewable sources or derived from petroleum."*

This means that as long as the fuel meets the diesel fuel standards it is acceptable. The absence of a concentration limit for renewable diesel in a document that limits the acceptable concentration of biodiesel implies that renewable diesel fuel is acceptable in all concentrations as long as the motor fuel meets the standards. When using renewable diesel in a dedicated diesel vehicle, the vehicle is a single-fuel vehicle. Only vehicles designed to operate on both diesel fuel and some other non-diesel alternative fuel can be clearly defined as multi-fuel vehicles.

Comments:

4. CARB should reword Section 2.8 as follows:

   2.8 Standards for Biodiesel/Renewable Diesel

   2.8.a For neat biodiesel/renewable diesel used in a dedicated-fuel or multi-fuel vehicle used for light-duty, medium-duty or heavy-duty application, the neat biodiesel/renewable diesel will use the diesel standard.

   2.8.b For a biodiesel-diesel blend up to 20 percent biodiesel used in a dedicated-fuel or multi-fuel vehicle used for light-duty, medium-duty or heavy-duty application, the biodiesel-diesel blend will use the diesel standard.

   2.8.c For a renewable diesel-diesel blend used in a dedicated-fuel or multi-fuel vehicle used for light-duty, medium-duty or heavy-duty application, the renewable diesel-diesel blend will use the diesel standard.

   The terms "biodiesel", "renewable diesel", and "biomass-based diesel" should be defined at Section 7, "Definitions".

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Section 2.9: Ultra Low Carbon Fuel and Minimum Volume Mandates

Discussion:
It is premature to suggest a definition for an Ultra Low Carbon Fuel without first knowing how the carbon footprint of a fuel will be calculated. The biggest unknown is the land use change (LUC) assumptions which will go into the LCA and which are as yet undefined (Section 5.3.5 a).

Comments:

5. Given the uncertainty of the LUC issue, CARB should not seek to define or mandate the use of an ultra low carbon fuel (ULCF).

6. If CARB insists on initiating and regulating an ULCF, CARB should establish flexible ULCF definitions and requirements. Rather than adopting strict mandates CARB should instead consider the use of financial incentives.

Section 3.3.4: Minimum Reporting Volume

Discussion:
CARB has requested comments on whether or not there should be a de minimus reporting level for LCFS fuels. Selecting a level is difficult because the petroleum side of the fuel supply industry deals with "millions of gallons per ***day"*** while the renewable side deals in "millions of gallons per ***year"***.

Comments:

7. CARB should consider making reporting optional when the volumes are below 100,000 gallons per year.

8. Where possible CARB should eliminate the need to track small volumes of renewable fuels by providing appropriate credits in the LCA of the major renewable fuel product. For example, the renewable diesel production process produces renewable propane and renewable gasoline as by-products. By allocating the renewable carbon credits attributed to the propane and gasoline to the diesel fuel, CARB eliminates the need to track the volumes of renewable propane and gasoline through the system. CARB should require the practice of assigning carbon credits for renewable fuel by-products to the primary product of the renewable fuel production process.

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Section 3.4.3: Compliance Software Tool

Discussion:
Net carbon footprints for renewable fuels can vary greatly depending not only on the type of feedstock used, but also on the source of the feedstock.

For example the Global Warming Intensity (GWI) for renewable diesel fuel derived from palm oil produced from sustainable plantations and efficient palm oil mills with good waste management practices is calculated to be 36 gCO_2e/MJ. However, if the palm oil feedstock is not cultivated and processed using sustainable practices, a GWI as high as 55 gCO_2e/MJ may be calculated.

Comments:

9. The Compliance Software Tool needs to have the flexibility to accommodate actual fuel pathways, including specific feedstock sourcing. The goal of the Tool should be to reward those renewable fuel producers that implement sustainable practices and who require their suppliers/contractors/partners to also adopt sustainable practices.

Section 5.1: GREET Model

Discussion:
The CARB GREET model is still under development.

Comment:

10. The CARB GREET model should use the same feedstock sources for fuel pathways for biodiesel and renewable diesel (and for biomass based diesel if CARB chooses to continue using this nomenclature).

Section 5.3.5: Land Use Change

Discussion:
There has been much recent debate and discussion on the issue of Land Use Change. The issue of indirect Land Use Change is especially contentious. At an extreme position, indirect LUC assumptions ignore technology improvements in farming including yield improvement and marginal land cultivation and may make it impossible for any renewable fuel to show any LCA carbon reduction.

Comment:

11. Given the large capital investment needed and the long lead time for renewable fuel projects, the LUC assumptions and resulting LCA calculations for the various fuel pathways must be resolved and confirmed as soon as possible. It will be difficult, if not impossible, to make investment decisions on renewable fuel plants in California until the CARB-approved carbon footprint for such fuels has been confirmed.

Section 7: Definitions

Discussion:
The list of definitions is to be developed.

Comments:

12. A "California fuel" as used at Section 3 should be defined.

13. For consistency with other jurisdictions including the federal government and other states, the term "renewable diesel" should be defined and used in the LCFS. The LCFS should directly reference the 2007 Federal Renewable Fuel Standard for the definition of renewable diesel. For convenience, this definition is posted below.

Non-ester renewable diesel means a motor vehicle fuel or fuel additive which is all the following:
(1) Registered as a motor vehicle fuel or fuel additive under 40 CFR Part 79.
(2) Not a mono-alkyl ester.
(3) Intended for use in engines that are designed to run on conventional diesel fuel.
(4) Derived from nonpetroleum renewable resources (as defined in paragraph (m) of this section).

14. For the definition of biodiesel ester, again the definition in the 2007 Federal Renewable Fuel Standard should be referenced. For convenience, the definition is posted below.
Biodiesel (mono-alkyl ester) means a motor vehicle fuel or fuel additive which is all the following:
(1) Registered as a motor vehicle fuel or fuel additive under 40 CFR part 79.
(2) A mono-alkyl ester.
(3) Meets ASTM D-6751-07, entitled "Standard Specification for Biodiesel Fuel Blendstock (B100) for Middle Distillate Fuels."
(4) Intended for use in engines that are designed to run on conventional diesel fuel.
(5) Derived from nonpetroleum renewable resources (as defined in paragraph (m) of this section).

15. If the term "Biomass-based diesel" is to be used, it should be defined as per the federal Energy Independence and Security Act (2007), which references definitions in the Clean Air Act of 1992, and the 2007 Federal Renewable Fuel Standard.

Respectfully Submitted,

Neste Oil

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