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February 13, 2009

John Courtis, Manager
Alternative Fuels Section
California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

RE: LOW CARBON FUEL STANDARD

Dear Mr. Courtis:

On behalf of the DuPont Company, I am pleased to offer the following comments relating to the proposed Low Carbon Fuel Standard.

DuPont is uniquely positioned in this arena. We have been a global leader in greenhouse gas emission reduction, having begun systematic reduction of emissions from our operations in 1991, and accomplishing in excess of 70% reduction on a global basis by 2004. We are proud of that record, but we are also aware that such reductions reflect a unique mix of process and energy emissions that cannot be readily replicated by most companies or institutions.

GENERAL COMMENTS

With respect to biofuels, we are deeply invested in development of these fuels, with a three-part strategy set squarely in the midst of the LCFS. Through our Pioneer Hi-Bred subsidiary, we are committed to improving existing ethanol production via differentiated agriculture seed products and crop protection chemicals. We have over 170 varieties of corn and soy bred specifically for high biofuel yield.

In partnership with BP, we are pursuing the development and supply of the next generation biofuel, biobutanol. This biologically synthesized fuel offers distinct advantages over ethanol, and can be blended with ethanol to reduce the adverse characteristics of that fuel, including enabling it to utilize existing fuel system infrastructure.

CELLULOSIC CONVERSION: DuPont is in a global leadership position to develop and supply new cellulosic ethanol conversion technologies. With our partner, the Genencor Division of the Danish company, Danisco, we are investing $140 million in LLC) that will commercialize a leading technology package for non-food based, cellulosic ethanol production.

We noted that a number of other commentors on the LCFS expressed skepticism regarding commercial cellulosic conversion. Cellulosic biofuels could compete without incentives with oil priced between $70 and $90 per barrel in 2030, with accelerated development of technology and feedstocks. DuPont Danisco Cellulosic Ethanol LLC (DDCE) will license technology packages directly to ethanol producers. The package could be used as “bolt-on” to an existing ethanol plant to enable them to expand capacity to accept cellulosic feedstocks; or it could serve as the design-basis for a stand-alone cellulosic ethanol facility. Ground has been broken for a 250,000 gallon/year pilot-scale facility, which will be complete late this year, utilizing corncob and switch grass feedstocks. We expect commercial-scale production by 2012. More details can be found at: www.ddce.com

INDIRECT LAND USE: We have noted also vigorous debate regarding the question of indirect land use impacts of food-crop based biofuels. We believe that debate is not well-founded. This issue needs to be examined more holistically, taking into explicit account the many complex factors contributing to land use changes due to agriculture and to other uses.

More importantly, this dialogue needs to take into complete account the reality that advances in agricultural productivity have dramatically increased the availability of food, globally, and that there remains unrealized potential for enormous gains in many of the countries being targeted for scrutiny in this debate. For example, in the last 25 years, improved corn yields from existing acres in the US have resulted in corn production that would have required an additional 150 million planted acres had yields not steadily improved. In essence, better yield has created 150 million "virtual acres", about the amount of planted land in the US today.

We anticipate providing additional substantive input to you on this topic, generally, and on the question of yield assumptions, particularly, in subsequent communication.

DETAILED COMMENTS

In reviewing the document "THE CALIFORNIA LOW CARBON FUEL STANDARD REGULATION" December 2008 Draft, which is posted on-line, we offer the following specific observations/questions:

1. We question the commentary at the bottom of page 8. It states *"To compensate for the corn-ethanol-induced increase in gasoline's carbon intensity, the LCFS requires a 10.5 percent decrease in the carbon intensity of the gasoline fuel group in 2020. This reduction is needed to achieve a net 10 percent reduction in the carbon intensity of the gasoline from 2010."* This appears to imply that it is fully accepted that corn ethanol increases the carbon intensity of gasoline blended fuel? More detail, or a reference, supporting this commentary would be helpful.

2. Just a clarifying question regarding the bottom of page 36. If using Method 1, will the producer have to actually run the GREET tool or will they just use look-up tables? This is not exactly clear.

3. We question several of the inputs in version 2 of the "Detailed California Modified GREET Pathway for Corn Ethanol".

- The lime model used in the pathway appears to be quicklime. This overstates the impact of agricultural lime, because quicklime is produced from limestone using an energy intensive process that releases carbon dioxide. Almost all agricultural lime used in the United States currently is crushed limestone (West, T. and McBride, A., "The contribution of agricultural lime to carbon dioxide emissions in the United States: dissolution, transport, and net emissions" Agriculture, Ecosystems and Environment 108 (2005) 145-154, Figure 1. http://www.ornl.gov/info/ornlreview/v40_3_07/documents/article17web_West_McBride_aglimeCO2_emis.pdf). Using the USLCI data for limestone, along with crushing and milling, the GHG emissions for limestone are about 0.04 g CO_2 eq/g $CaCO_3$ versus the 0.607 g CO_2 eq/g $CaCO_3$ in the pathway. The results are similar for energy.

- The ethanol process energy input used in the pathway appears to be higher than the current industry average. According to the "U.S. Ethanol Industry Efficiency Improvements 2004 through 2007" report by Christianson & Associates, PLLP (http://www.ethanolrfa.org/objects/documents/1916/usethanolefficiencyimprovements08.pdf), the 2007 average dry mill producing dry distillers grains used 29,231 BTU natural gas and 0.7412 kWh electricity per gallon of ethanol produced. This is considerably lower than the 32,300 BTU natural gas and 1.08 kWh electricity per gallon ethanol used in the CA-GREET pathway.

- The ethanol transport by truck includes the empty return, but the rail transport appears to only include one-way movement of the railcar. Should the empty railcar return be included, also?

- In the models for the ethanol processes with a biomass boiler, why was it chosen to provide only 20% of the process energy from biomass? If a biomass boiler were installed, it is unlikely that a separate natural gas boiler would also be installed. Natural gas would likely be used for the direct-fired distillers grains dryer. If all steam is produced from a biomass boiler and natural gas is used for the dryer in a dry mill producing dry distillers grains, the split would be approximately 33% natural gas and 67% biomass for the process energy. Less natural gas would be required for producing wet distillers grains.

We urge your consideration of these comments and look forward to working with ARB staff as development of the LCFS proceeds. Please don't hesitate to contact us if you have any questions about the above.

Sincerely,

(transmitted via email)

Thomas R. Jacob
Government Affairs Manager, Western Region

cc: M. Singh, ARB