BRAZILIAN SUGARCANE INDUSTRY ASSOCIATION

ETHANOL • SUGAR • ELECTRICITY

October 16, 2014

VIA ELECTRONIC MAIL

Mike Waug
Branch Chief, Alternative Fuels Section
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: UNICA's Comments on Brazilian Sugarcane Ethanol Availability for the LCFS.

Dear Mr. Waug:

The Brazilian Sugarcane Industry Association ("UNICA") appreciates the opportunity to provide comments on the California Air Resources Board's (CARB) Low Carbon Fuel Standard's (LCFS) fuel availability assessment, which was presented at a workshop on September 25, 2014.

UNICA is the largest representative of Brazil's sugar, ethanol, and bioelectricity producers. Its members are responsible for more than 50% of Brazil's ethanol production and 60% of Brazil's sugar production. UNICA's priorities include serving as a source for credible scientific data on the competitiveness and sustainability of sugarcane biofuels, working to encourage the continuous advancement of sustainability throughout the sugarcane industry, and promoting ethanol as a clean, reliable alternative to fossil fuels. Sugarcane ethanol production uses less than 1.5% of Brazil's arable land and when used as a transportation fuel, reduces lifecycle greenhouse gas ("GHG") emissions by up to 90% on average, compared to conventional gasoline. Also, thanks to our innovative use of ethanol in transportation and biomass for power cogeneration, sugarcane is now a leading source of renewable energy in Brazil, representing over 16% of the country's total energy supply. The industry is expanding existing production of other renewable products, and with the help of innovative companies here in the United States and elsewhere, is beginning to offer bio-based hydrocarbons that can replace carbon-intensive fossil fuels and chemicals.

UNICA supports the work of CARB staff to project the availability of biofuels for the LCFS, firmly anticipates that Brazil will have 850 million gallons (MG) to 1.75 billion gallons (BG) of low-carbon sugarcane ethanol available to U.S. markets in 2020, as estimated by CARB, and believes California will demand much of it. The industry is ready to supply this demand, given the current and future investments that the Brazilian sugarcane industry is making to guarantee the continuous growth of our sector.

UNICA has played a critical and essential role in assisting America's drive to achieve its renewable energy goals and thereby reduce GHG emissions. Last harvest season, Brazil produced about 7.3 BG of ethanol, 767 MG of which were exported. 432 MG were imported

by the U.S., about 56% of our exports. In the past Brazil has exported more than 1 BG of ethanol, and based on the investments programmed for the next couple of years, we can easily surpass this mark in the near future. Just to illustrate, in 2008, Brazil exported 1.3 BG of sugarcane ethanol.

We believe California will have the incentives in place to attract the lowest carbon intensive (CI) fuels into its market, and given that we continue to work to lower Brazilian ethanol's CI, California will be the natural market for this product. Given the number of Brazilian mills registered both with CARB and EPA, the sector remains committed and excited to help California and the US to enjoy the benefits of sugarcane ethanol fuel.

As we have done in the past, we will continue to engage with CARB staff to provide additional input and feedback on the LCFS as requested. UNICA believes the supply of sugarcane ethanol will continue to grow based on several drivers present in our sector today, summarized in the following:

A. Potential for supply increase:

(i) horizontal expansion: the recent industry profile and investment capacity, and sustainable land expansion;

(ii) idle capacity and flexibility of the industry

(iii) vertical expansion: productivity gains in the agriculture and industry sectors;

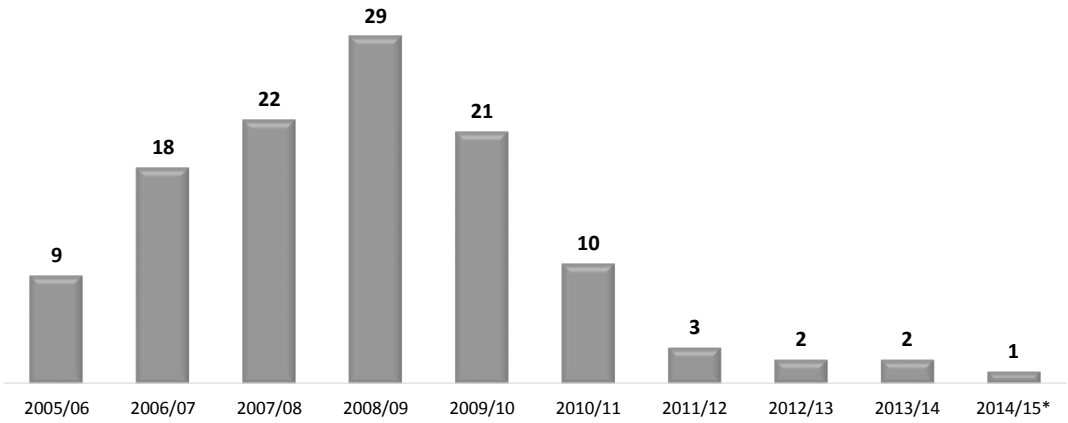
B. Competitiveness gains through logistics efficiency

A. Potential for supply increase:

(i) Horizontal expansion: the recent industry profile and investment capacity, and sustainable land expansion;

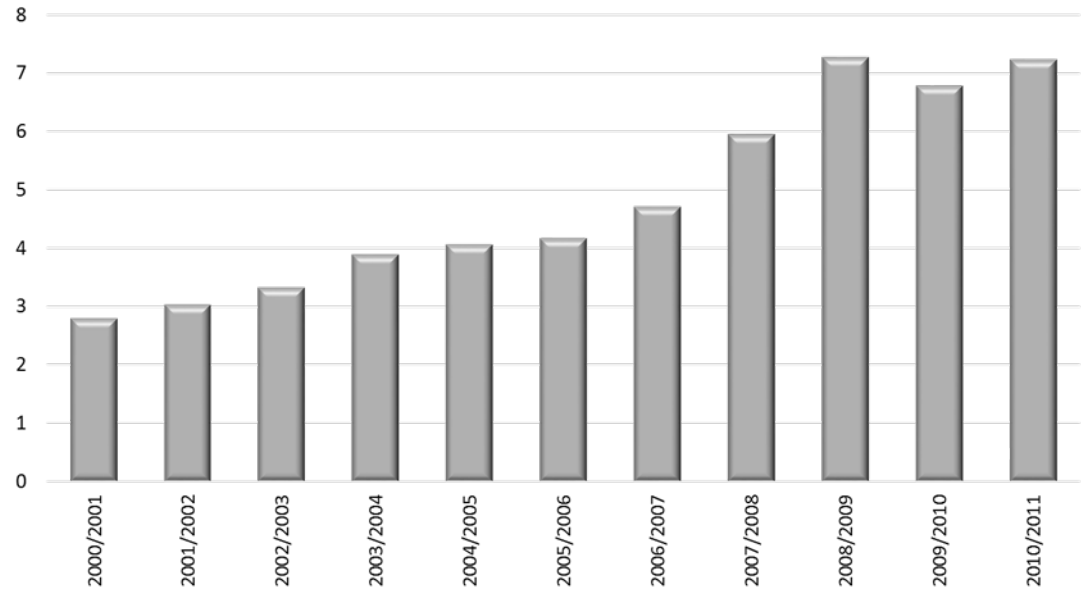
The sugarcane ethanol sector in Brazil has demonstrated an enormous dynamism for new investments, provided that market opportunities exist. The introduction of flex-fuel vehicles (FFV) in 2003, and the prospect of exports increase generated a significant wave of investments in greenfields, with the construction of almost 110 new mills – out of around 400 industrial plants in the whole country - in a period of six years, from 2005/06 to 2010/11. Most of these plants are dedicated to produce only ethanol and bioelectricity. For these investments to take place, the production of sugarcane more than doubled in less than one decade, and the production of ethanol increased 158% in this period, demonstrating the capacity of the sector to expand its production, as demonstrated in the three graphics below.

Number of new mills in South-Central region



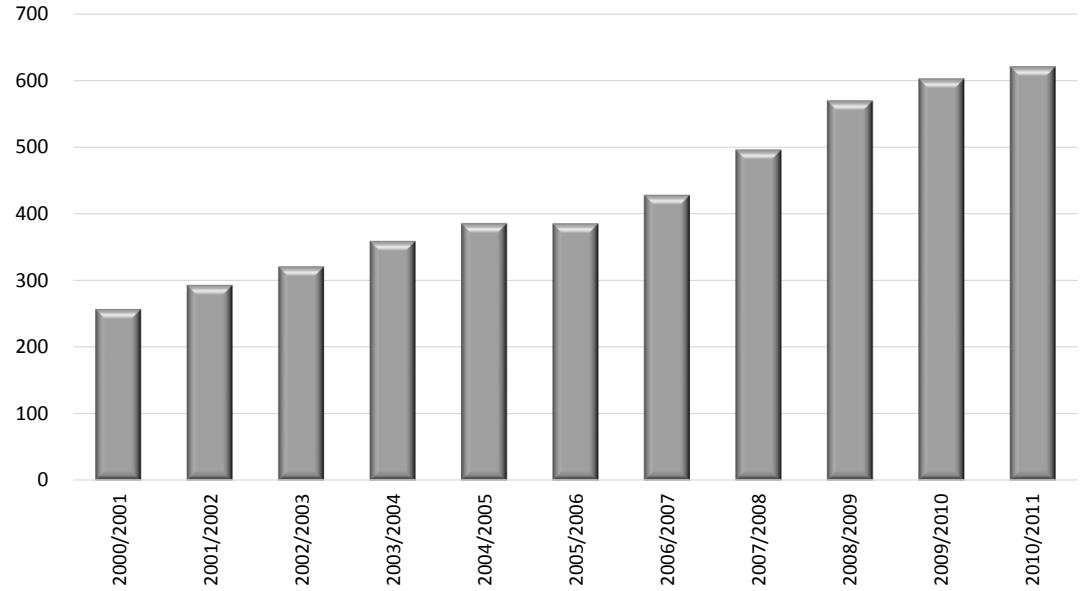
Source: UNICA. Note: 2014/15*-estimate.

Ethanol production in Brazil per harvest season, in billion gallons



Source: UNICA and Ministry of Agriculture

Sugarcane crush in Brazil per harvest season, in million tons



Source: UNICA and Ministry of Agriculture.

It is important to mention this expansion has taken place in a very sustainable manner. Today, sugarcane plantations occupy 9.8 million hectares of Brazil's territory, only 1% of the total land of the country, and cane ethanol production occupies 0.5% of the Brazilian territory. In 2009, the Brazilian government launched the Agro-Ecological Zoning for Sugarcane (AEZ) initiative to induce the expansion of sugarcane production in areas that are agronomically, climatically, and environmentally suitable. This pioneer initiative is essential to guarantee the sustainable growth of sugarcane production in the country. With the AEZ

for sugarcane program, no sugarcane expansion or new ethanol production facilities can occur in sensitive ecosystems like the Amazon, the Pantanal wetlands and Upper Paraguay river basin. It also prohibits the clearance of native plants to expand sugarcane cultivation anywhere in the country, protecting the native Cerrado. Under this initiative, the Brazilian Agricultural Research Company (EMBRAPA) has undertaken a satellite mapping exercise to identify suitable areas for sugarcane expansion in Brazil, and as result, sugarcane expansion is allowed in 65 million hectares of land in Brazil. This corresponds to 7.5% of the Brazilian territory, 15 times more land than currently used for ethanol production. As the sector decides to expand area due to domestic and international demand, this land expansion will only occur in a sustainable way, preserving the environment.

Finally, we should also mention that the 2008 financial crisis brought important consolidation to the sector, by the form of acquisition of brownfields. When we look at the sector today, we find a smaller number of multi-national groups with large investment capacity like Bunge, Cargill, Louis Dreyfus, Shell, Petrobras, BP, Tereos, and Noble. This change has created a renewed capacity for the sector to optimize production and sales.

(ii) Idle capacity and flexibility of the industry:

Another important element to highlight is the capacity of existing mills in Brazil to produce hydrous and anhydrous ethanol. According to Brazil's National Agency of Petroleum, Natural Gas and Biofuels[1] (ANP) the installed capacity for anhydrous and hydrous ethanol production are 104.82 million and 205.19 million liters per day (27.7 MG and 54.2 MG, respectively). If we look at the 2013/2014 harvest season, Brazil produced an average of 70 million and 90 million liters (18.5 MG and 23.8 MG, respectively) of anhydrous and hydrous ethanol per day, which totaled 12.22 billion litters (3.2 BG) of anhydrous and 15.32 billion liters (4 BG) of hydrous ethanol. These numbers regarding ethanol productive capacity were based on the 383 producing mills listed by the ANP, and it shows that installed capacity is superior than the actual production, so in case of a higher demand for ethanol, Brazil is able to quickly respond to the market.

Number of mills in the Center-South for the 2013/2014 harvest season classified by their crush

Sugarcane crush	Number of Mills
Up to 1.5 million tones	127
From 1.5 to 3.0 million tones	104
Above 3.0 million tones	66

Source: UNICA.

It is also interesting to note that mills in Brazil are primarily small to mid-sized facilities, and we believe that given the investment capacity of the sector, a clear signal of demand for anhydrous ethanol in the mid-term scenario can easily result in expansion of

[1] Data published in September 2014 and available at: http://bit.ly/1vWVP6v

these mills to meet demand. Also, the majority of mills that have closed their doors in the recent years are believed to be "hibernating" and could easily come back into production if the demand for fuels increases in the country.

Finally, if Brazil is ever faced with an extremely negative harvest season, the sector's export commitments are not expected to suffer given the flexibility of the hydrous market in the country. Given that about 65% of the Brazilian fleet is composed of flex fuel vehicles, drivers can run on E25 instead of E100, and part of the hydrous ethanol production can be dehydrated in order to fulfill export contracts. This flexibility acts like an insurance policy for the industry to produce either product (hydrous or anhydrous ethanol), directed to either domestic or international markets, depending on their relative prices.

(iii) Vertical expansion: productivity gains in the agricultural and industrial sector

Since 2006, the advancement of mechanized harvesting of sugarcane in the center-south region of Brazil required industry investments in machinery and equipment (truck, harvesters, trailers, etc) of more than $5 billion dollars. In the State of São Paulo, responsible for 55% of the cane crushing in Brazil, about 84% of the harvesting is mechanized, according to the States' Environment secretariat.[2]

Since sugarcane is a semi-perennial crop that only needs replanting every six-years, the quality of cane for the past few harvests had been compromised due to the lack of investment in renewal of cane fields. But in 2012 the sector invested more than $4 billion dollars in renewing and expanding the cane fields in Brazil, providing for better quality of cane, which is crucial for our productivity.

According to the Center for Cane Technology (CTC), by 2025 sugarcane ethanol's productivity will grow from about 7,100 litters (1,900 G) per hectare today to 24,500 L per hectare (6,472 G). This increase will be possible because of improvement of cane varieties, agricultural and industrial improvements, and also second generation ethanol, which has the potential to increase cane's productivity in 45%.

Most recently, Grandbio started operation of the first cellulosic ethanol plant to operate at commercial scale in Brazil, and this plant is expected to produce 82 million liters (21.6 MG) of fuel per year. Raizen's commercial plant is expected to be operational in the beginning of 2015. CTC's project is expected to operate at commercial scale in 2016/2017, with a technology that will increase cane's productivity by 50% without any area expansion. Petrobras is expected to operate at a commercial level within the next year as well.

Because of the low carbon intensity of these fuels, we believe there will be significant market demand for these Brazilian biofuels in the United States, and specifically California, given the expected incentives for this CI in the LCFS.

[2] The evolution of mechanized harvesting in São Paulo state is available on the following link:

http://www.ambiente.sp.gov.br/etanolverde/files/2014/05/Resultados-safra-2013_2014-Etanol-Verde.pdf

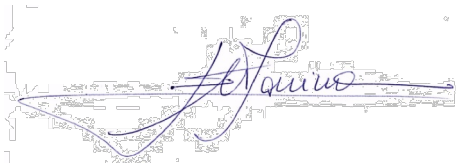
B. Competitiveness gains through logistics efficiency

In addition to investment in cane renewal and expansion, the sector is investing heavily in infrastructure that will result in more efficient distribution and exports of sugarcane ethanol, namely railroads, port terminals, storage tanks, pipelines and waterways. When we look at the investments in pipelines and waterways, more than $3.5 billion dollars are expected to be invested in the next 2-3 years. As stated on our previous letter[3] to CARB on September 15 of this year, the ethanol pipeline is expected to be completed in the next two years, and we expect that 90% of Brazil exports will be transported via pipelines and waterways. These investments alone are expected to decrease logistic costs by 20%-30% by as early as next year and, based on the fact that the final destination of these transport modes, in the next three years, will be the major Brazilian ports, they should completely change the scenario of ethanol competitiveness for exports. Since 2004 the industry has invested more than $30 billion dollars in order to increase production capacity and the supply of sugarcane ethanol.

Therefore, given: (i) the proven dynamism of the sector to respond to appropriate market stimulus and continue investing in production; (ii) the remarkable capacity for Brazil to expand ethanol production, both through sustainable land increases and productivity gains, (iii) the investments that have already happened and the ones scheduled to happen in logistics over the next few years, (iv) the fact that Brazil has already exported more than 1 BG in the past and could easily surpass that amount based on sufficient demand; and last but not least, (v) the flexibility of our industry, UNICA assures CARB that it can continue to count on low-carbon-intensive sugarcane ethanol in high amounts for compliance with the LCFS, provided that market policies remain stable.

UNICA members and staff look forward to the continuing opportunity to work with CARB to achieve the economically and environmentally beneficial goals of the LCFS in California. UNICA is ready to provide further information, including additional economic assessments, or answer any questions CARB may have about these comments or the Brazilian sugarcane ethanol industry.

Respectfully submitted,



Elizabeth Farina
President and CEO

Leticia Phillips
Representative – North America

[3] For a copy of UNICA's letter to CARB please see: http://bit.ly/1n84Gm4