



February 13, 2009

Mr. John Courtis  
Manager, Alternative Fuels Section  
California Air Resources Board  
1001 "I" Street  
Sacramento, CA 95812  
*Submitted electronically*

Dear John,

The Renewable Fuels Association (RFA) is submitting these preliminary comments in regard to two critical assumptions made by CARB in its most recent CA-GREET analysis of corn-based ethanol. RFA will be submitting more substantive comments, including responses to ARB's most recent indirect land use change analysis, within the next week.

For its analysis of "Midwest Average" corn ethanol, CARB assumed 95% of the distillers grains produced by dry mill ethanol plants in the Midwest are in dried form and just 5% of distillers grains are marketed in wet form. In reality, approximately 63% of the distillers grains produced in the Midwest are dried, while the remaining 37% are sold as wet feed. These figures are taken from a 2008 report by Argonne National Laboratory using aggregated data from a 2007 survey of U.S. ethanol plants.<sup>1</sup> These data are considered by the feed industry to be representative of current distillers grains drying practices and are further supported by proprietary sales data from major feed marketing companies.<sup>2</sup> This assumption is important because dry mill ethanol plants producing exclusively wet distillers grains typically use about 1/3 less thermal energy than dry mill plants that produce exclusively distillers dried grains.

When the CA-GREET results are adjusted to more accurately reflect the share of dried vs. wet distillers grains, the calculated carbon intensity (CI) of "Midwest Average" dry mill corn ethanol drops nearly 4% from 67.99 g CO<sub>2</sub>-eq./MJ to **65.33 g CO<sub>2</sub>-eq./MJ**.

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<sup>1</sup> *Analysis of the Efficiency of the U.S. Ethanol Industry 2007* by May Wu (Argonne Natl. Lab) states "Data shows that more than a third (36.7%) of [distillers grains] is currently sold as wet feed."

[http://www.ethanolrfa.org/objects/documents/1652/2007\\_analysis\\_of\\_the\\_efficiency\\_of\\_the\\_us\\_ethanol\\_industry.pdf](http://www.ethanolrfa.org/objects/documents/1652/2007_analysis_of_the_efficiency_of_the_us_ethanol_industry.pdf)

<sup>2</sup> CHS, the world's largest marketer of distillers grains, estimates 64% of distillers grains are marketed in dried form, with the remaining 36% being marketed in wet form. Source: Ethanol Industry Outlook 2008, page 14 (pg. 20 of the PDF located at: [http://www.ethanolrfa.org/objects/pdf/outlook/RFA\\_Outlook\\_2008.pdf](http://www.ethanolrfa.org/objects/pdf/outlook/RFA_Outlook_2008.pdf))

<b>CARB CA-GREET RESULTS</b>	Carbon Intensity (CI)	CARB Share	Weighted CI
Midwest Dry Mill, DDGS	68.40	95%	64.98
Midwest Dry Mill, WDGS	60.10	5%	3.01
Weighted: Midwest Dry Mill			<b>67.99</b>

<b>CARB CA-GREET RESULTS ADJUSTED FOR WET vs. DRY DG PRODUCTION</b>	Carbon Intensity (CI)	Adjusted Share	Weighted CI
Midwest Dry Mill, DDGS	68.40	63%	43.09
Midwest Dry Mill, WDGS	60.10	37%	22.24
Weighted: Midwest Dry Mill			<b>65.33</b>

We also encourage CARB to revisit the assumption on the share of Midwest corn ethanol capacity that is wet mill vs. dry mill process technology. For its determination of the CI for “Midwest Corn Ethanol,” CARB assumed 80% of Midwest corn ethanol comes from dry mill plants, with the remaining 20% coming from wet mills. February 5, 2009 data on ethanol industry capacity shows total installed ethanol capacity of 12,375 mgy.<sup>3</sup> Of that capacity, 11,689 mgy resides in states defined as the “Midwest,” with the remaining 686 mgy residing outside of the Midwest.<sup>4</sup> Of “Midwest” capacity, 10,235 mgy is dry mill capacity, while 1,454 mgy is wet mill capacity. Thus, the assumed share of dry mill vs. wet mill capacity used to determine the CI of “Midwest Corn Ethanol” should be 88% dry mill and 12% wet mill. When the CA-GREET results are adjusted to more precisely reflect the share of wet mil vs. dry mill capacity, the calculated CI of Midwest Corn Ethanol drops 0.8% from 69.41 g CO<sub>2</sub>-eq./MJ to 68.84 g CO<sub>2</sub>-eq./MJ.

<b>CARB CA-GREET RESULTS</b>	Carbon Intensity (CI)	CARB Share	Weighted CI
Midwest Dry Mill Avg.	67.99	80%	54.39
Midwest Wet Mill Avg.	75.10	20%	15.02
Weighted: Midwest Ethanol			<b>69.41</b>

<b>CARB CA-GREET RESULTS ADJUSTED FOR WET MILL vs. DRY MILL SHARE</b>	Carbon Intensity (CI)	Adjusted Share	Weighted CI
Midwest Dry Mill Avg.	67.99	88%	59.83
Midwest Wet Mill Avg.	75.10	12%	9.01
Weighted: Midwest Corn Ethanol			<b>68.84</b>

<sup>3</sup> <http://www.ethanolrfa.org/industry/locations/>. Accessed Feb. 12, 2009.

<sup>4</sup> Midwest is ND, SD, WY, CO, TX, KS, NE, SD, ND, MN, IA, MO, MS, TN, KY, IL, WI, MI, IN, OH. Ethanol capacity outside of the Midwest currently resides in CA, OR, ID, AZ, NM, NY, GA.

When the CA-GREET results are adjusted to correct the assumptions on *both* distillers grains shares (WDG vs. DDG) and process type shares (wet mill vs. dry mill), the CI of “Midwest Average” corn ethanol drops 4.2% from **69.41 CO2-eq./MJ to 66.50 CO2-eq./MJ**. Making both adjustments also reduces the CI of “LCFS Corn Ethanol” (80% Midwest corn ethanol/20% CA corn ethanol, WDG) from **65.67 CO2-eq./MJ to 63.34 CO2-eq./MJ**, a 3.5% reduction.

<b>CARB CA-GREET RESULTS</b>	Carbon Intensity (CI)	CARB Shares	Weighted CI
Midwest Dry Mill, DDGS	68.40	95%	64.98
Midwest Dry Mill, WDGS	60.10	5%	3.01
Weighted: Midwest Dry Mill			67.99
Midwest Dry Mill Avg.	67.99	80%	54.39
Midwest Wet Mill Avg.	75.10	20%	15.02
Weighted: Midwest Ethanol			<b>69.41</b>

<b>ADJUSTED CARB CA-GREET RESULTS</b>	Carbon Intensity (CI)	Adjusted Shares	Weighted CI
Midwest Dry Mill, DDGS	68.40	63%	43.09
Midwest Dry Mill, WDGS	60.10	37%	22.24
Weighted: Midwest Dry Mill			65.33
Midwest Dry Mill Avg.	65.33	88%	57.49
Midwest Wet Mill Avg.	75.10	12%	9.01
Weighted: Midwest Ethanol			<b>66.50</b>

**We strongly encourage CARB staff to review these assumptions and make the recommended adjustments, which are simply executed and strongly supported by current industry data.**

We sincerely appreciate CARB’s consideration of these comments and look forward to further interaction with the agency as the fuel pathway estimates are refined. We will continue to review information provided by CARB and respond with comments as appropriate.

Sincerely,

Geoff Cooper  
Renewable Fuels Association