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February 28, 2011

Office of Environmental Information (OEI) Docket
Mail Code: 2822T
US Environmental Protection Agency
1200 Pennsylvania Ave., NW.
Washington, DC 20460

Re: *Comments of Growth Energy in response to a 30-day public comment period for the draft document "Biofuels and the Environment: First Triennial Report to Congress"*
Published at Vol. 76, No. 19, Pg. 5,154 (January 28, 2011)
Docket ID No. EPA–HQ–ORD–2010–1077

Dear Sir or Madam:

Growth Energy, an association of the nation's leading ethanol manufacturers and other companies who serve America's need for alternative fuels, is pleased to submit these comments regarding the Environmental Protection Agency's (EPA) draft triennial report to Congress on the environmental impacts of biofuels as required by the 2007 Energy Independence and Security Act, hereinafter referred to as the Report. Our comments are focused on the technical accuracy and potential policy implications of the Report, and its implications to ethanol. We provide comments in a few general areas where we feel the Report is lacking, examples and references to support our comments and defer to more detailed comments from the National Corn Growers Association in matters of agricultural practices in corn production.

We agree with the statements in the Report that the assessments of potential environmental impacts of biofuels are qualitative in nature and must be quantified using proper life cycle analysis (LCA) methods. In order for the environmental impact assessments to be meaningful, we further believe that a proper context must also be provided with life cycle analysis of other fuel pathways comprising the status quo and potential future transportation fuel scenarios. Growth Energy would like to work with EPA and other agencies in conducting this LCA analysis work.

The Report presents a running narrative of potential environmental concerns about biofuels with very little information that would quantify these concerns absolutely or relatively to other fuels, to the status quo or to alternative scenarios. Some of the fundamental assumptions that support the concerns raised in the Report are not technically accurate. For example, Line 97 in Chapter 3 states "…the percentage of corn acreage dedicated to ethanol could rise.." Although the economics of corn production are enhanced by ethanol, a corn crop is typically not planted for the primary purpose of ethanol production. US corn is produced primarily for animal feed either used directly or as distillers grains and solubles (DGS) made from the protein in portion of the kernel. When ethanol is produced, only the starch portion of the kernel is used without affecting the production of DGS for animal feed. DGS is more highly valued as animal feed since the protein is more highly concentrated compared to corn.

The production of co-products is apparently understood later in Chapter 4, however the repeated assumption that additional crop land will be needed to support higher ethanol volumes is not necessarily true. More corn production and more crop land may not be required to support higher ethanol volumes for several reasons. Farms are businesses that will produce a crop for market regardless of ethanol demand. Existing corn production may be used to produce ethanol without affecting its primary animal feed purpose. The effects of corn production must be properly attributed to co-products including ethanol and DGS, and should consider the feed displacement ratio of corn to DGS, and corn to soybean meal, another animal feed alternative to corn. Although California has assumed a feed displacement ratio of 1:1 DGS to corn, Argonne National Laboratory has found that a pound of DGS (wet or dry) displaces approximately 1.3 pounds of corn used directly as animal feed[1], meaning that the attribution of corn production to ethanol must be adjusted downward to account for the production of co-products and the feed displacement ratio.

Also, the continuing upward trend in corn yield per acre and the upward trend in ethanol conversion per bushel of corn support higher efficiencies in gallons of ethanol per acre of land.[2] According to USDA, corn yields in 2010 exceeded 152 bushels per acre, representing a nearly 70 percent increase in corn yield per acre over the last 30 years.[3] In Chapter 3, Lines 123 to 125 reference a paper that discusses crop rotation as opposed to continuous corn production, but makes the unsupported statement that non-crop land will be converted to corn. While higher corn prices may provide a short term incentive, the cyclical nature of corn prices make it risky to put more land into service, and available literature documents agricultural practices that make it less likely.[4]

The assumption of land conversion to corn production driven by increased ethanol demand appears throughout the Report as a fundamental reason for environmental impacts. This land conversion assumption, especially CRP land is not well supported and not reflected in actual experience in the time period from 2001 to 2009 when ethanol production increased from 1.8B to 10.8B gallons per year, or about 25% per year. A recent study of the implications of increased biofuel use documented that actual land area devoted to corn production remained essentially flat as ethanol demand increased by 9.0B gallons from 2001 to 2009, while US corn exports increased steadily along with a growing economy[5].

This data contradicts modeling simulations that have assumed that increased corn demand would lead to dramatic shifts from other crops to corn and a reduction in corn exports. These factors have been in turn assumed to cause land use changes in other countries (indirect land use change) which would not have otherwise occurred. We suggest instead a marginal economic analysis that examines current agricultural practices and takes into account how trends in corn crop and ethanol yield can be predicted to affect conditions in 2022.

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1 Arora, Wu & Wang, "Estimated Displaced Products and Ratios of Distillers' Co-products from Corn Ethanol Plants and the Implications of Life-Cycle Analysis", Argonne National Laboratory, 2010.

2 Liska, et al., "Improvements in Energy Efficiency and Greenhouse Gas Emissions of Corn Ethanol", Journal of Industrial Ecology, Volume 13, Number 1, 2009.

3 Economic Research Service, United States Department of Agriculture, "Feed Grains Database", http://www.ers.usda.gov/Data/FeedGrains/

4 Burney, et. al., "Greenhouse Gas Mitigation by Agricultural Intensification", Stanford University, Proceedings of the National Academies of Science, May 2010, http://www.pnas.org/content/early/2010/06/14/0914216107.full.pdf+html.

5 Oladosu and Klein, "The Role of Modeling Assumptions and Policy Instruments in Evaluating the Global Implications of U.S. Biofuel Policies", Oak Ridge National Laboratory, May 2010, http://www.iaee.org/en/publications/proceedingssearch.aspx.

Table 3-2 makes several unsupported statements under the "Harvest of Corn Stover" heading, such as increased fertilizer use and increased soil erosion. Common practices of removing about 25% of the above ground available plant material have not resulted in a need for additional fertilizer. Also, the literature indicates minimal effects on soil erosion and run-off with removal rates of 25%.[6] The general assumptions of increased fertilizer use and soil erosion due to stover harvesting are repeated throughout the Report in Lines 657 and 789 in Chapter 3. Although we are not aware of evidence that high stover removal rates are currently being practiced, it seems likely that as corn yields continue to increase, some stover removal will be required so as not to interfere with planting, and at least in northern states to allow the soil to warm sufficiently for planting.

The water availability discussion in Chapter 3 focuses on the negative impacts of irrigation for corn production in the Great Plains states, but does not appear to recognize the benefits of irrigation on crop yield and fertilizer use. While irrigation is required in the drier western Corn Belt and Great Plains states, irrigation increases crop yields and nitrogen use efficiency while also reducing year-to-year yield variation.[7]

In general, the references and the resulting discussion of environmental impacts appear to be one-sided and especially negative toward agricultural practices and their potential environmental impacts, ignoring alternative points of view available in the literature as we have discussed above. Also, the listing of non-specific concerns such as biodiversity and invasiveness made the list of concerns appear larger and more problematic when these concerns are likely less meaningful compared to air emissions and water quality concerns that are more quantifiable. This points to the need for a complete LCA as recommended in the Report that would provide an estimate of the potential environmental impacts that could be compared to the status quo and to potential future transportation fuel scenarios.

The indirect land use change (ILUC) discussion in Chapter 5 seems to ignore recent studies by Tyner and others that have suggested that early estimates of ILUC due to corn ethanol should be reduced by 50 percent.[8] Another recent research study has found that improvements in agricultural practices have avoided 500B tons of CO2 emissions to the atmosphere.[9] In Chapter 4, discussions of biofuel distribution emissions, spills and leaks, and groundwater contamination are meaningless unless compared to similar concerns with petroleum based fuels. A marginal analysis in a proper context would likely find no concerns relative to the status quo, as California found in their Multi-Media Evaluation of ethanol blended gasoline in 1999.[10] Likewise, Figures 6-1 and 6-2 in Chapter 6 are inappropriate and misleading in the Conclusions and Recommendations section since, according to the text in the Report at Line 42, "Impacts shown in this figure are only relative to each other. No attempt has been made to compare impacts to those of petroleum production, nor do impacts represent possible environmental benefits gained by petroleum displacement."

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6 Andrews, Susan S., "Crop Residue Removal for Biomass Energy Production: Effects on Soils and Recommendations", USDA-Natural Resource Conservation Service, February 2006.
Blanco, Humberto, "Corn Stover Removal Decreases Soil Carbon, Impacts Crop", Ohio State University School of Environment and Natural Resources, 2007.

7 Liska, et al., "Improvements in Energy Efficiency and Greenhouse Gas Emissions of Corn Ethanol", Journal of Industrial Ecology, Volume 13, Number 1, 2009.

8 Tyner, Wallace, et al., "Land Use Changes and Consequent CO2 Emissions due to US Corn Ethanol Production: A Comprehensive Analysis", Purdue University Department of Agricultural Economics, July 2010.

9 Burney, et. al., "Greenhouse Gas Mitigation by Agricultural Intensification", Stanford University, Proceedings of the National Academies of Science, May 2010.

10 "Health and Environmental Assessment of the use of Ethanol as a Fuel Oxygenate, Report to the California Environmental Policy Council in Response to Executive Order D-5-99", California Air Resources Board, Office of Environmental Health Hazard Assessment, Water Resources Control Board, 1999.

To be meaningful for the purpose of informing policy, a proper assessment of the potential environmental impacts of biofuels must be done in comparison to the status quo and other possible transportation fuel scenarios that could play out in the time period covered by the Renewable Fuel Standard (RFS2). Also, the listed concerns are not compared to a standard of harm, or if there is an increase in emissions, whether the increase is significant or meaningful in relation to a measure of harm. A complete LCA of corn ethanol, soy biodiesel and other biofuels is needed along with a similar analysis of petroleum based gasoline and diesel fuel to provide the appropriate context in which to assess the relative impacts of environmental concerns arising out of changes in transportation fuel sources to meet RFS2 requirements until 2022. This would allow comparison to other potential scenarios such as no increase in biofuels.

We agree with the Report's recommendation in Chapter 6 beginning at Line 228 that a LCA of biofuels be performed to provide a more robust quantitative assessment of the environmental impacts of biofuels including a comparative context to fossil fuels. To be meaningful, the LCAs for these biofuels and the comparable petroleum based fuels must have the same temporal and spatial boundaries. If indirect effects such as ILUC are considered for biofuels, then indirect effects for petroleum fuels must also be considered. We suggest relative to our earlier comments a more balanced set of references to inform future life cycle assessment, environmental risk assessment and human health assessment tasks. In addition to the listed references in Chapter 7, we suggest recent work by Kim and Dale[11], Liska[12], Burney[13], Tyner[14], Oladosu and Klein[15], and California[16].

As an organization of ethanol producers, we have considerable experience in LCA and knowledge of biofuel production, distribution and use. We would appreciate the opportunity to work with EPA, USDA, DOE and other agencies in conducting the LCA for the next triennial report due in 2013. Prior to such an analysis, it is premature to use the conclusions and recommendations from this Report to inform policy or regulatory decisions.

Growth Energy appreciates your consideration of these comments and looks forward to the opportunity to work with EPA and other agencies in preparing a meaningful assessment of biofuel environmental impacts.

Sincerely,

Tom Buis

Tom Buis
CEO, Growth Energy

[11] Kim and Dale, "Biofuels, Land Use Change and Greenhouse Gas Emissions: Some Unexplored Variables", Environmental Science & Technology, Volume 43, Number 3, 2009.
Kim and Dale, "Biofuels Done Right: Land Efficient Animal Feeds Enable Large Environmental and Energy Benefits", Environmental Science & Technology, Volume 44, Number 22, 2010.
[12] Previously referenced at Footnote 2.
[13] Previously referenced at Footnote 4.
[14] Previously referenced at Footnote 8.
[15] Previously referenced at Footnote 5.
[16] Previously referenced at Footnote 10.