Growth Energy Comments: California's Dangerous Gamble with Indirect Land Use Change

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America's Ethanol Producers

Executive Summary

Growth Energy is committed to the promise of agriculture and growing America's economy through cleaner, greener energy. Growth Energy promotes reducing greenhouse gas emissions, expanding the use of ethanol in gasoline, decreasing our dependence on foreign oil, and creating American jobs at home.

Ethanol is America's best renewable fuel, reliable and affordable now. It is high-tech, home grown, and on the verge of innovative breakthroughs that will make it even cleaner and greener for the long term. Ethanol is vital to achieving greater American energy independence. It is today's only viable and available fuel that can be substituted for gasoline. Unlike oil, ethanol is renewable – it will never run out. As science moves from making ethanol from corn to producing it from corn cobs and other plant materials, ethanol will continue to be a sustainable and effective energy solution for the world. America's dependence on foreign oil causes enormous problems for Americans every day – raising prices on everything from gas to groceries and sending money and jobs overseas. Ethanol is America's green growth energy solution to our foreign oil problem.

For these reasons, Growth Energy is very concerned about the Low Carbon Fuel Standard (LCFS) regulation proposed by the California Air Resources Board (ARB). Our review of the proposed regulation and the staff report raises three major concerns:

(1) *The unequal treatment of the ethanol fuels*, which are subjected to an analysis of "Indirect Land Use Change" (ILUC) effects calculated by a seriously deficient model, as opposed to the other transportation fuels, which are not; and the bare, unsupported finding that there are no discernible indirect effects of *any kind* caused by the use of the other fuels.

Our basic objection here is that this regulation creates an unlevel playing field for transportation fuels by assessing a carbon intensity (CI) penalty on ethanol fuels for ILUC effects predicted by the Global Trade Analysis Project model (GTAP). This penalty, which places ethanol fuels in the same CI category as gasoline, is derived from a general equilibrium model designed to predict the amount of land that would be converted to agricultural use if the U.S. ethanol market experienced a significant increase in demand that, under the model's assumption, would be met entirely by increased production of corn. Such a model leaves out or inadequately accounts for a whole host of economic, political, meteorological and other factors, such as technological innovation, normal declines in other crops, export declines not associated with corn or soybeans, land conversion costs of converting from nonagricultural to agricultural uses, and the discrepancies in emission estimates of stored and released carbon. These deficiencies have provoked wide-spread criticism in the scientific community.

(2) *The Ca-GREET model for Life-Cycle GHG emissions*, which utilizes outdated and inaccurate inputs related to farming and ethanol production, which is insensitive to critical geographic differences in corn and ethanol production that greatly affect the total life-cycle GHG emissions, and which produces a

flawed co-product calculation that substantially underestimates the environmental value of dry distiller's grain with solubles (DDGS).
These errors and limitations serve only to exacerbate the highly discriminatory carbon intensity score for ethanol fuels. They also add further questions about the overall technical rigor of ARB's methodology for such highly sensitive calculations.

(3) *The legal standards applying to the process for adoption of new regulations,* which require a broad assessment of all of the relevant economic effects on business that a regulation may impose; the consideration of all of the evidence in the record relating to the proposed regulation; the avoidance of arbitrary or capricious decision making or any discriminatory or selective enforcement as a result of the regulation, the fair and equal treatment of all economic actors, and require careful consideration of the environmental impacts that the regulation may have.

Growth Energy supports CARB in its groundbreaking efforts to address global climate change and to deal successfully with the enormous challenges posed by such an important undertaking. Because of this, we strongly recommend that staff reconsider its decision to introduce into the program a highly controversial and very premature process for the identification and quantification of indirect environmental effects from the production and use of a transportation fuel. At some point there may be a strong scientific basis for initiating such an investigation, but that time has yet to arrive. But equally important, no such investigation should single out one fuel and ignore the indirect effects of other fuels. As science and methodology move forward, a full and fair-minded investigation may then be warranted. But as for now, this is a public policy disaster in the making. Unfortunately, there is no kinder way to put it.

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Introduction

Reducing carbon emissions in transportation fuel, a subject of recent national debate, is in fact an ambitious and admirable goal for the state of California. It is also a goal fraught with danger. Unless sound, proven science is used to determine carbon emissions, the state and nation could suffer the reverse effect: a transportation system that actually increases emissions.

An issue before California's Air Resources Board (ARB) threatens to cause just that. The theory of Indirect Land Use Change (ILUC) employs no empirical evidence and an unfair notion of justice to single out one industry – ethanol – as the culprit behind poor environmental practices in other countries. The Air Resources Board should reject use of ILUC and prevent bad policy from undermining America's only clean, green alternative to gasoline available today.

In January 2007, Governor Arnold Schwarzenegger signed an Executive Order establishing the first Low Carbon Fuel Standard (LCFS). The goal of the LCFS is to lower the carbon intensity of California's transportation fuels by 10 percent by 2020. Governor Schwarzenegger charged the ARB with developing the regulations that would govern the LCFS, and the agency released a draft rule for public comment with the final rule to be voted on by the ARB on April 23.

One of the most controversial aspects of the ARB's rulemaking has centered on the carbon accounting of biofuels, and more specifically the inclusion of Indirect Land Use Change (ILUC) models in calculating the carbon intensity of biofuels. Currently, the carbon intensity of transportation fuels is determined through "lifecycle analysis." So for corn-based ethanol, its carbon intensity is calculated from the time the crop is planted and farmed until it is harvested, turned into ethanol and burned as an additive in gasoline. According to the most recent data from the University of Nebraska-Lincoln, the ethanol industry currently produces a fuel that is 48 to 59 percent lower in lifecycle greenhouse gas emissions than gasoline.[1]

However, the ARB is now proposing a significant shift in these internationally-recognized standards for lifecycle analysis by including indirect emissions theoretically related to the production and use of biofuels. This theory claims that growing crops for biofuel production displaces other crops, which are then grown in other parts of the world, leading to deforestation. Based on this theory, the ARB would assign an indirect land use change "adder," or penalty, to ethanol in addition to its direct carbon intensity. According to ARB's preliminary work on this issue, it has calculated the carbon intensity of dry-mill corn-based ethanol to be 67.6 (gCO2/MJ), which is not as good as the University of Nebraska's

[1] http://ianrnews.unl.edu/static/0901220.shtml

findings, but is significantly better than calculation for California Gasoline Blendstock of 96.88 (gCO2/MJ). But, when adding the indirect land use change penalty to ethanol, ethanol's carbon intensity jumps to 97.6 (gCO2/MJ).[2]

The debate over ILUC has become increasingly polarized, with opponents of ILUC models pointing to the scientific problems with its application and proponents saying any number is better than zero, even if there are many unknowns. Often lost in this debate is whether applying ILUC penalties to biofuels will actually accomplish the original goal – reducing carbon emissions.

The theory behind ILUC is not conclusive and it fails to be realized empirically. The adoption of ILUC models could have the opposite intended effect - creating disincentives to decrease a fuel's carbon intensity. It could have dangerous repercussions in the broader policymaking effort to reduce carbon emissions. There are alternatives to ARB's proposal that would promote incentives for biofuels producers to adopt more sustainable practices that are verifiable and would ultimately contribute greatly to California's efforts to reduce its greenhouse gas emissions.

Indirect Land Use Change – How Did We Get Here?

The effort to include ILUC models in lifecycle analysis has been driven by a small group of academics who have relied on a theoretical framework rather than observable data. The first person to promote this theory was Mark Delucchi from the University of California-Davis.[3] In a paper he released in October 2004, Delucchi claims the calculation of GHG emissions for transportation fuels should include a wide array of factors, including policy action, production and consumption of energy and materials, prices, emissions and environmental systems. Instead of citing data, Delucchi provides imagined scenarios on how these factors could impact a fuel's carbon footprint.

Delucchi's theory was then promoted by a group of academics at University of California-Berkeley, Alex Farrell, Richard Plevin, Michael O'Hare, and Daniel Kammen. As part of his Masters in Science degree, Richard Plevin submitted a dissertation calling for California policy to measure the carbon intensity of biofuels by using "market-based" lifecycle tools.[4] It's important to note that while these academics are now firm opponents of corn-based ethanol, they previously supported it in a paper they published in *Science* in January 2006v. Once Governor Schwarzenegger signed the Low Carbon Fuel Standard in 2007, he appointed Alex Farrell to work with the ARB to develop the regulations for the standard and in August 2007, Farrell and his team submitted a policy analysis on how the ARB should establish the rules.[5] In the document, they acknowledge "indirect land use changes associated with biofuel production in the LCFS would be difficult to estimate because it is uncertain how increased biofuel production in one location (for instance California or Iowa) would affect the use of land in another

[2] http://www.arb.ca.gov/fuels/lcfs/lcfs.htm

[3] http://www.its.ucdavis.edu/publications/2004/UCD-ITS-RR-04-45.pdf

[4] http://plevin.berkeley.edu/docs/Plevin-MS-2006.pdf

[5] http://www.arb.ca.gov/fuels/lcfs/lcfs_uc_p2.pdf

location (for instance prairie land in the Great Plains or rain forests in Malaysia or Brazil). Few economists believe the international computable general equilibrium model could reliably predict such land use changes." Yet they go on to conclude that even though a correct indirect land use change penalty cannot be accurately determined, any number is better than zero. They justify this policy position by writing that it would send a "signal" to biofuels producers.

At that point, it was clear the ARB would move forward in developing a model to calculate an ILUC penalty for biofuels. The theory's proponents scored another victory when ILUC language was inserted in the final version of the Energy Independence & Security Act of 2007 (EISA), which gave the U.S. Environmental Protection Agency authority to use ILUC models to determine the greenhouse gas emissions of biofuels. The ILUC language had to be added to a section in EISA about life cycle analysis precisely because it is outside the accepted practices of life cycle analysis.

Then, in February 2008, the concept of indirect land use change gained enormous publicity when Tim Searchinger, an environmental lawyer with no scientific background, published a study in *Science* claiming that carbon emissions related to ILUC made corn-based ethanol more carbon intensive than gasoline.[6] According to Searchinger, the land diverted for increased corn production used for ethanol would lead to sharp decreases in American grain exports, which in turn would lead to increased land cultivation elsewhere, releasing the carbon stored in that particular region. This paper will address the many flaws of Searchinger's paper in the next section, but it's important to note that immediately after it was released, his research was widely disputed by experts in lifecycle analysis, including Dr. Michael Wang of Argonne National Laboratory[7] and Dr. Bruce Dale of Michigan State University.[8] Unfortunately, the media did not include these critiques in their stories and treated Searchinger's paper as actual "science." More recently, Professors Matthews and Tan of Macquarie University published a thorough review of Searchinger's February 2008 assumptions, methods and motives concluding: "if you wished to put US ethanol production in the worst possible light, assuming the worst possible set of production conditions guaranteed to give the worst possible ILUC effects, then the assumptions chosen would not be far from those actually presented (without argument or discussion of the alternatives in the Searchinger et al paper.[9]

Meanwhile, the ARB continued work on a model to include ILUC in its calculation of the Low Carbon Fuel Standard. In April 2008, Alex Farrell passed away, and now Michael O'Hare is lead advisor to the ARB. In addition, the ARB hired Lifecycle Associates, a company that includes Richard Plevin as part of its staff to conduct the lifecycle analysis for the various transportation fuels. The ARB's findings have all been posted on its Web site.[10]

[6] http://www.sciencemag.org/cgi/content/abstract/319/5867/1238

[7] http://www.bioenergywiki.net/images/0/0a/Michael_Wang-Letter_to_Science_ANLDOE_03_14_08.pdf

[8] ://www.bioenergywiki.net/images/e/e5/Dale.pdf

[9] http://www.sciencemag.org/cgi/content/abstract/319/5867/1238

[10] http://www.arb.ca.gov/fuels/lcfs/lcfs.htm

Theory vs. Reality

While the environmental impacts of land use changes related to international market effects need to be carefully studied for all land use-related activities, the assumptions behind ILUC models employed by CARB are contradicted by real world data. Further, policies are already in place that address many of the concerns raised by indirect land use change proponents.

It's easy to understand why the media and opponents of biofuels have come to embrace ILUC theory. It's an uncomplicated concept – corn for ethanol displaces other crops, namely soy, and therefore farmers in Brazil cut down the rainforest to grow soy and fill the demand. However, the facts dispute this simple narrative. First, the theory of ILUC is built on the idea that American grain exports will plummet because of corn used for ethanol. In his paper, Searchinger estimates that corn exports will decrease by 62 percent and that soy exports will decline by 28 percent.[11] In fact, nothing could be further from the truth. Even with growing ethanol production, corn production has been able to meet the demands for food, fuel, and exports. In 2007, the U.S. produced a record 13 billion bushels of corn and in 2008; American farmers harvested more than 12 billion bushels of corn, the second largest crop ever produced.[12] Meanwhile, since 1998, corn exports have remained at 1.5-2.5 billion bushels sold abroad each year.[13] These exports have been supplemented by the surge in distiller grains, a key co-product in ethanol production used to feed livestock. According to the U. S. Departmentof Agriculture (USDA), exports of distiller grains increased by 91 percent from 2.36 million metric tons (mmt) in 2007 to 4.51 mmt in 2008.[14] The story is similar for soybeans.

According to the U.S. Soybean Export Council, 2008 was a record year for soy exports, totaling 1.5 billion bushels exported, a 7 percent increase over the previous year.[15] Indeed, according to the 2009 United States Department of Agriculture's Long-Term Projections Report, American exports of corn and soy will grow or remain stable through 2015, showing that Searchinger's dire predictions are baseless.[16]

American farmers have been able to meet the demand for corn because technology has allowed them to grow more on the same amount of land. For example, in 1980, the average corn yield per acre was 91 bushels. In 2008, it was 153.9 bushels.[17] Similarly, ethanol yield has increased from 2.4 gallons per bushel in 1980 to 2.81 in 2007.[18] Had there been no improvements in ethanol and crop yield since 1980, it would have required significantly more land to grow the corn needed for ethanol. As it is, the U.S. planted 84.6 million acres of corn in 1976 and 85 million acres are expected this spring.

[11] http://www.sciencemag.org/cgi/content/abstract/319/5867/1238
[12] http://www.ncga.com/files/pdf/2009WOC.pdf
[13] http://www.ncga.com/files/pdf/2009WOC.pdf
[14] http://domesticfuel.com/2009/02/18/record-distillers-grains-exports
[15] http://www.ussoyexports.org/news/stories/pr/pr102008.pdf
[16] http://www.ers.usda.gov/Publications/OCE091/OCE091c.pdf
[17] http://www.ers.usda.gov/Data/feedgrains/StandardReports/YBtable1
[18] http://www.cleanfuelsdc.org/pubs/documents/FoodFeedandFuel08.pdf

The second major component of the ILUC theory is that corn for ethanol production leads to increased soybean farming worldwide which then encourages deforestation in places like the Amazon rain forest in Brazil. While deforestation continues to be an environmental challenge, there is no verifiable correlation between deforestation in Brazil and ethanol production. According to the National Institute of Space Research, deforestation in the Amazon has declined sharply just as American biofuels production doubled. In 2004, 10,588 square miles of the Amazon was deforested and in 2008, that number dropped to 4,621 square miles;[19] the peak year for ethanol production.

In addition to government policies that have reduced deforestation in the Amazon, partnerships between the private sector and non-governmental agencies also are also helping to keep the rainforests intact. One such project is the Soybean Moratorium. In July 2006, the Brazilian Vegetable Oils Industry Association (ABIOVE), which includes ADM, Cargill, and Bunge, signed an agreement with Conservation International, World Wildlife Fund, and Greenpeace to implement a voluntary ban on the purchase of soybeans grown on deforested land, destroying the market for soybeans grown in the Amazon. ABIOVE and Greenpeace say the moratorium has been effective at reducing new rainforest clearing for explicit soy production. A joint report released in April 2008 found no new soybean plantations in any of the 193 areas that showed deforestation of 100 hectares (250 acres) or more between August 2006 and August 2007.[20] The moratorium has been extended until 2010.

Endorses Different Standards for Different Types of Energy

It is important to note that land use is only one type of indirect impact that can be accounted for with respect to greenhouse gas emissions. In fact, there are many complex economic, social and political indirect effects that could lead to energy sources being more carbon intensive. Unfortunately, indirect effect penalties are only applied to biofuels. By singling out biofuels for ILUC penalties, the ARB would be applying different standards to different types of transportation fuels and artificially creating winners and losers under the Low Carbon Fuel Standard.

For example, a study presented by Life Cycle Associates at the last ARB meeting found that there are many direct and indirect carbon emitting effects of oil production that are not captured by the board's current lifecycle analysis.[21] Further, it shows that several elements of direct carbon emissions, including oil refining and transport are either not included or not well understood by the current models. And while the ARB has indicated that indirect land use changes may not be applicable to petroleum, there are many indirect effects that are not currently calculated in its lifecycle analysis for gasoline. These include carbon emissions related to refinery co-products, which are often toxic and hazardous waste, macroeconomic effects, the use of military forces and equipment to protect the Middle East oil supply, and the reconstruction of Iraq. Indeed, the increased carbon intensity from the characterization, storage, transport and disposal of oil production waste products could dwarf what the ARB is

[19] http://www.mongabay.com/brazil.html

[20] http://news.mongabay.com/2008/0623-soy_amazon.html

[21] http://www.arb.ca.gov/fuels/lcfs/013009lca.pdf

considering as a penalty for ILUC related to biofuels. In a recent publication Liska and Perrin quantified the carbon intensity of the indirect effects associated with petroleum-based military emissions and found that these emissions amount to 98 g CO2e MJ-1 which roughly double the carbon intensity for gasoline.[22]

Creates Disincentives to Innovate

Adoption of ILUC models in GHG measurements could slow advancements in second-generation biofuels and discourage corn-based ethanol producers from investing resources to reduce their carbon footprint. ILUC models lead to decreases in innovation because the models inject uncertainty in the marketplace. Already, it is widely understood that the penalties assigned for ILUC cannot be verified. Therefore, even though the penalty is derived from a model, the result is ultimately an arbitrary figure based on theoretical assumptions that have no basis in reality. With that in mind, why would someone invest in second generation biofuels when the feedstock they are using could be deemed to have indirect land use change effects? Why would corn ethanol producers, who have been making their production process increasingly efficient, continue to invest millions of dollars in new technology to be greener when that reduction in GHG emissions could be wiped out by an ILUC penalty?

Additional Concerns: Absence of Fair Determination and Application of Direct Effects

The California-modified GREET pathway for corn ethanol inaccurately measures carbon intensity values in a variety of significant ways, including use of undocumented assumptions, lack of transparency of analysis and reliance on outdated farming and ethanol production data; underestimating the co-product credit for corn-based ethanol and failing to account for regional differences in corn production inputs.

In order for scientists to understand and recognize conclusions from the GREET model as applied by ARB, parameter values and data sources must be clearly shown according to known protocols such as those described in ISO 14040 and 14044, federal EPA guidelines and guidelines provided by the federal Office of Management and Budget. Cassman and Liska[23] describe five major areas of deficiency in this regard with additional 23 specific deficiencies which render the ARB results from the GREET analysis without merit. For example, the proposed regulation appears to incorporate data about farm input rates from 1995-1999.[24] More recent information is likely available, however, and based on recent improvements in efficiency (including reduced petroleum use, no-tillage and increased corn yield) updated information would result in more accurate and better GHG performance for corn-based ethanol.[25]

[22] http://www.arb.ca.gov/lists/lcfs09/251-2009_liska_perrin_bbb.pdf

[23] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf

[24] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf

[25] growthenergy.org; http://www.monsanto.com/pdf/investors/2008/06-05-08.pdf

The California-modified GREET proposed pathway also uses outdated data about ethanol production. For example, the regulation appears to incorporate ethanol energy use data from 2001.[26] Ethanol production facilities have made significant advances in energy usage since 2001. Without accounting for this the regulation significantly overestimates the energy used to produce ethanol.[27] With the dramatic increase in state-of-the-art refinery capacity soon to be on line, average industry energy efficiency will improve substantially, and a later baseline year will more accurately represent the industry; earlier years give a large bias towards much higher carbon intensity for corn-ethanol. In order to accurately reflect the current technology used by ethanol producers, the baseline for LCFS evaluation of corn-based ethanol should be 2007 or later. The proposed calculation of the DDGS co-product credit is seriously flawed and substantially underestimates the environmental value of DDGS.[28]

The model fails to account for differences in corn and ethanol production among different states and regions. As noted by Cassman and Liska,[29] "[c]rop inputs per unit of grain yield vary substantially from state to state, with southern states requiring greater nutrient inputs per unit of grain produced, and western states requiring additional fossil fuel use for irrigation." Similarly, "there is substantial variation in the GHG emissions intensity of corn-ethanol due to biorefinery design and location."[30] The failure to adequately account for regional differences in production is more significant than might first appear because production inputs constitute a large part of GHG emissions and production inputs can vary greatly. "Based on state averages for crop yields and management, crop production represents 37 to 65% of total life-cycle GHG emissions..."[31] The model's failure to adequately address these regional differences severely undermines the scientific accuracy of the proposed regulation as applied to corn ethanol.

Proposed Regulation Violates Applicable Legal Standards

The staff report fails to analyze the relevant economic effects the regulation will have on business; the indirect land use change effect analysis is not supported by substantial evidence; the carbon intensity penalty assessed on the ethanol industry improperly discriminates against and burdens interstate commerce; and the environmental impacts from the regulation are inadequately evaluated.

The violations identified in these comments are based on review of the proposed regulation, the staff report and its initial statement of reasons for the proposed regulation, and the comments received from the public. Other violations, legal claims or legal issues may be identified and pursued by Growth Energy after the entire rule-making file and administrative record is made available for review.

[26] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf).
[27] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf
[28] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf
[29] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf
[30] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf
[31] http://www.arb.ca.gov/lists/lcfs09/25-9-03-31_critique_of_transparency_in_carb_lca_methods.pdf

Relevant economic effects on business from the regulation are not addressed. Gov. Code Section 11346.3 requires a broad assessment of the potential for adverse economic impacts on "business" – not simply California businesses and not simply limited impacts. The staff report limits, without justification, the entire analysis of economic effects to the "cost effectiveness" and "job growth" aspects of the regulation. Despite a series of GTAP "uncertainties" enumerated in the staff report, the application of the model usurps the hard-won economic advantages of the ethanol industry and transfers them to its competitors. None of this is mentioned or discussed in the staff report.

The LCA and ILUC provisions in the proposed regulation applying to the ethanol industry are not supported by substantial evidence. Gov. Code Section11350 adopts the substantial evidence standard for review of legal challenges to ARB's adoption or repeal of its regulations. As set forth in these comments, the calculations from the use of the CA-GREET and GTAP models for determining the direct and indirect carbon emissions emitted and or caused by ethanol production, use, and demand are not supported by substantial evidence.

Additionally, the findings and determinations required by Gov. Code Section 11340 et seq. are not supported by substantial evidence. Consequently, any decision to approve the Proposed Regulation on the basis of the current record would constitute an abuse of discretion and arbitrary and capricious governmental action.

The Proposed Regulation Violates the Commerce Clause. Under the Commerce Clause of the United States Constitution, states may not enact a statute that directly regulates or discriminates against interstate commerce, or favors in-state economic interests over out-of-state interests. Here, because California harvests relatively little of the country's corn, the land use "penalty" for corn-based biofuels under the Proposed Regulation necessarily regulates extra-territorial conduct and effectively favors in-state interests over out-of-state interests. Furthermore, while California has a legitimate interest in protecting its citizens against the effects of global warming, it may not do so in a manner that places an excessive burden on interstate commerce. Including ILUC in the Proposed Regulation will place an excessive burden on interstate commerce by arbitrarily denying the corn ethanol industry access to the nation's largest market of transportation fuels.

The environmental analysis is inadequate and does not comply with the California Environmental Quality Act. As set forth below, approval of the Proposed Regulation on the basis of the current record would violate the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 et seq., in at least two respects. First, the Proposed Regulation is not within the scope of the ARB's certified regulatory program. Therefore, an environmental impact report ("EIR") is required. Second, the environmental analysis contained in the staff report, which is apparently intended to serve as the "functional equivalent" of an EIR under ARB's certified regulatory program, is inadequate and does not comply with CEQA in numerous respects.

State regulatory programs that meet certain environmental standards and are certified by the Secretary of the California Resources Agency ("Secretary for Resources") are exempt from CEQA's requirements

for preparation of EIRs, negative declarations and initial studies. Environmental review documents prepared pursuant to such certified programs are considered the "functional equivalent" of EIRs or negative declarations and may be used instead of environmental documents that CEQA would otherwise require. However, certified regulatory programs remain subject to other CEQA requirements.

On August 17, 1978, the Secretary for Resources certified a portion of ARB's regulatory program, stating as follows: "I hereby certify that the portion of the regulatory program of the State Air Resources Board involving the adoption or approval of standards, rules, regulations or plans to be used in the regulatory program for the protection and enhancement of the ambient air quality of California meets the requirements for certification in Public Resources Code Section 21090.5. As a result of this certification, this portion of the regulatory program is exempt from the requirement for preparing environmental impact reports under Chapter 3 (commencing with Section 21100 of Division 13 of the Public Resources Code)."

The Proposed Regulation in this case is not intended to protect or enhance the "ambient air quality of California," but rather is intended to address the issue of global climate change by reducing the emissions of greenhouse gases associated with the use of transportation fuels in California. To the extent that the Proposed Regulation has any effect on "ambient air quality in California," such an effect is clearly incidental to the primary purpose of the Proposed Regulation.

Furthermore, in deciding whether or not to certify ARB's regulatory program under CEQA, the Secretary of Resources was required to consider, among other things, whether the enabling legislation of the regulatory program contains, "authority for the administering agency to adopt rules and regulations for the protection of the environment, guided by standards set forth in the enabling legislation." Pub. Res. Code § 21080.5. In this case, the staff report identifies a variety of "legislative and policy" directives that "support" the LCFS, beginning with the adoption of Assembly Bill 32 in 2006 and continuing through the AB 32 Scoping Plan adopted by ARB in December 2008. Importantly, none of these legislative and policy directives existed at the time ARB's regulatory program was certified in 1978. In fact, there were no legislative or policy directives relative to global climate change at that time, as the connection between greenhouse gas emissions and global climate change was not generally understood or recognized as scientific fact until many years later.

In its 1978 decision to certify a portion of ARB's regulatory program, the Secretary for Resources cites various reasons to support the certification. These reasons focus on ARB's authority to establish and achieve certain ambient air quality standards within designated air basins and to protect the public health. Not surprisingly, none of the current policy concerns associated with global climate change - severe droughts, melting ice caps, rising sea levels, increased risk of wild fires and impacts on plant and animal life - are remotely covered by the Secretary of Resources' 1978 certification decision.

Finally, it should be noted that the Secretary for Resources' 1978 certification decision extends only to that portion of ARB's regulatory program that is designed to enhance the ambient air quality of California. The Proposed Regulation, on the other hand, is obviously intended to address the global

problem of man-made climate change. Indeed, the staff report states on page ES-4 that an "important goal of the LCFS is to establish a durable fuel carbon regulatory framework that is capable of being exported to other jurisdictions." Thus, the Proposed Regulation is clearly not limited to enhancing California's ambient air quality, and has far-reaching implications that go well beyond the scope of the program that was certified by the Secretary of Resources over 30 years ago.

Because the Proposed Regulation falls outside of the scope of that portion of ARB's regulatory program that has been certified by the Secretary of Resources, ARB is required to prepare an EIR in accordance with the requirements of CEQA. Moreover, even if the Proposed Regulation was within the certified portion of ARB's regulatory program, the Proposed Regulation may not be approved at this time because the environmental analysis contained in the staff report is wholly inadequate and does not meet the applicable legal standards.

In the case of a certified program, an environmental document used as a substitute for an EIR must include "[a]lternatives to the activity and mitigation measures to avoid or reduce any significant or potentially significant effects that the project might have on the environment …" 14 CCR § 15252. This requirement is reflected in ARB's own regulations, which provide: "All staff reports shall contain a description of the proposed action, an assessment of anticipated significant long or short term adverse and beneficial environmental impacts associated with the proposed action and a succinct analysis of those impacts. The analysis shall address feasible mitigation measures and feasible alternatives to the proposed action which would substantially reduce any significant adverse impact identified." 17 CCR § 60005.

Here, the staff report acknowledges or indicates that the Proposed Regulation may have adverse effects in the areas of energy consumption (see page VII-12, which states that for "cellulosic ethanol facilities, the energy requirements are typically greater than that for convention ethanol facilities based on the conversion of corn starch"), air quality (see page VII-20, which states that that "there may still be localized diesel PM impacts and localized facility emissions impacts"), water quality (see page VII-24, which states that "[e]thanol and biodiesel blends release to surface water may increase the likelihood and degree of fish kills compared to CARB gasoline and petroleum diesel because they deplete oxygen more rapidly"), biological resources (see page VII-27, which notes that the refining, marketing and distribution of petroleum fuels - which are given favorable treatment over corn-based ethanol under the Proposed Regulations - may "adversely impact important habitat, or interfere with critical life-cycles of native species," due to the potential for leaks, spills and wastewater discharges into water resources), and hazardous materials (see page VII-29, stating that the operation of new biofuel facilities "will involve the transportation of hazardous materials that could be released on roadways"). Nonetheless, the staff report fails to evaluate any alternative to the Proposed Regulation that may avoid or lessen any of these potential impacts. For example, the staff report fails to evaluate an alternative to the Proposed Regulation that would establish a "level playing field" by eliminating the indirect land use "penalty" for crop-based ethanol fuels. By eliminating the "advantage" given to traditional petroleum-based fuels under the Proposed Regulations, such an alternative could lessen the potential impacts associated with the continued use of such fuels. Such an alternative could also eliminate the need for some of the

estimated 30 new biofuel facilities that are assumed in the staff report, thereby further reducing the potential impacts of the Proposed Regulation.

The environmental analysis contained in the staff report also fails to identify feasible mitigation measures for some potential impacts and improperly defers the formulation of mitigation measures for other potential impacts. For example, the staff report acknowledges on page ES-29 that the LCFS is designed to stimulate the production of lower-carbon, non-crop-based fuels. After noting that the energy requirements for cellulosic ethanol facilities are greater than conventional ethanol facilities based on the conversion of corn starch, the staff report states, on page VII-12, as follows: "To provide additional information for local districts and to inform the CEQA process, ARB staff is committed to developing a guidance document to provide information on the best practices available to reduce emissions from these types of facilities. This effort will commence immediately; ARB staff plans to have a draft available by the end of December 2009."

Other examples of ill-defined and/or improperly deferred mitigation measures can be found throughout the staff report. See page VII-12 ("ARB staff recommends that the emissions associated with production of low carbon fuels be fully mitigated consistent with local district and CEQA requirements"); page VII-26 ("Any impacts associated with aesthetics, siting and construction of facilities supporting the LCFS would be assessed on a location and project-specific basis"); page VII-27 ("If siting of facilities results in the conversion of agricultural land, this would be subject to the CEQA process and approved by the city or county on a project-by-project basis"); and page VII-31 ("During construction of facilities, traffic impacts can be mitigated through ingress and egress controls to mitigate for congestions, and facility design should include appropriate traffic controls such as turn lanes, traffic lights, and reduced speed zones to ensure safety").

The environmental analysis contained in the staff report is also inadequate in each of the following respects:

The environmental analysis, which focuses almost exclusively on the presumed decrease in greenhouse gas emissions and the potential impacts associated with the construction of the estimated 30 new biofuel production facilities, is impermissibly narrow. Among other things, by not applying the indirect land use impact "penalty" to petroleum -based fuels, the LCFS indirectly encourages the use of such fuels over crop-based ethanol fuels. Yet the environmental analysis fails to consider any of the potential environmental effects associated with the production, transportation, or use of petroleum-based fuels. As stated above, these potential impacts include, but are not limited to, the carbon emissions related to refinery co-products, which are often toxic and hazardous waste, the use of military forces and equipment to protect Middle East oil supplies and the storage, transport and disposal of oil production waste products.

The environmental analysis is also based on highly-speculative assumptions. For example, the staff report indicates that in order to meet the proposed LCFS, approximately 30 new biofuel production facilities will need to be built in California, including 18 new cellulosic ethanol facilities and 6 new

biodiesel facilities, by 2020. However, the staff report acknowledges (on page ES-24 and elsewhere) that biofuel production on a commercial scale will require development of new technologies. What will happen if these "new technologies" are not developed as hoped? Would the proposed regulation have the unintended effect of promoting the use of petroleum-based fuels? If so, what are the potential impacts on the environment? The environmental analysis contained in the staff report fails to address these questions.

Finally, as indicated elsewhere in these comments, the staff report is replete with conclusions that are based on faulty or incomplete data, derived from highly-flawed models, or otherwise not supported by substantial evidence. Many of these conclusions relate directly to the potential environmental impacts of the Proposed Regulation. For example, as stated above, the CA-GREET and GTAP models used for determining the direct and indirect carbon emissions allegedly attributable to ethanol production, use and demand are seriously flawed, thereby unfairly skewing the environmental analysis against crop-based ethanol fuels. These flaws, coupled with persistent questions concerning the feasibility of commercial-scale development of non-corn-based ethanol fuels, will likely result in the continued use of environmentally-damaging petroleum-based fuels well into the future.

The foregoing comments raise significant environmental issues relative to the proposed regulation. Therefore, pursuant to applicable regulations, ARB staff must summarize and respond to the comments either orally or in a supplemental written report. 17 CCR § 60007. Additionally, prior to taking final action on the Proposed Regulation, ARB must approve a written response to each environmental issue raised in this letter.

The Current Ethanol Market

The ethanol market – already challenged by the economic downturn – will be crippled by the LCFS if, as proposed, it selectively enforces indirect effects only against ethanol. The ethanol market is critical to environmental and energy security goals set by government and as evidenced by federal and state mandates exist for the use of ethanol. According to the Congressional Budget Office, overall U.S. consumption of ethanol hit a record high in 2008, exceeding 9 billion gallons. The California market currently consumes approximately 950 million gallons of ethanol per year.

The federal Energy Independence and Security Act of 2007 set a goal of 36 billion gallons of renewable fuels for 2022, which requires 15 billion gallons of corn ethanol, 16 billion gallons of cellulosic ethanol and 5 billion gallons of advanced biofuels. California has advanced a number of programs for increasing the usage of renewable transportation fuel, including goals to produce a minimum of 20% of its own biofuels, including ethanol, by 2010, 40% by 2020, and 75% by 2050.

The ethanol market in California, including infrastructure, represents approximately $500 million in capital investment and a production capacity of 220 million gallons per year (citation). Though currently idle, five ethanol production plants exist and have operated in California, representing sufficient ethanol production capacity to meet the 2010 target. Additional capacity will be needed to meet the 2020

target. SR-II-3. Additionally, the 2007 State Alternative Fuels Plan (ARB/CEC) calls for 30 to 60 new ethanol plants in California using imported corn feedstock, initially, and transitioning ultimately to agricultural waste products. Ethanol is a crucial market for security and environmental reasons for both California and the nation. In view of this, it is inexplicable that ARB would single out this market for a crippling blow by putting ethanol at a comparative disadvantage against the petroleum industry. Yet this is exactly what the inclusion of ILUC would do.

Conclusion

As the world's efforts to reduce greenhouse gas emissions continue, carbon accounting will be an increasingly important factor in identifying the best solutions to our climate challenges. For this reason the best available science must be employed, and the standards for such measurements need to be the same across the board. But as we have seen, current Indirect Land Use Change models fail to accurately account for carbon emissions and are used selectively. As a result, the inclusion of ILUC models to determine the carbon intensity of biofuels should be rejected by California's Air Resources Board.

Not only is the foundation for the theory flawed, it creates different standards for lifecycle analysis, and would ultimately damage any amount of innovation that would help decrease GHG emissions further. California should take the opportunity afforded by the LCFS to create a level playing field for all fuels and by studying indirect effects using the best available science using a peer review process through an objective organization like the National Academy of Sciences.

The members of the Growth Energy take great pride in the environmental benefits of their product and desire to work with states like California and the environmental community to ensure that renewable fuels like ethanol are as clean and green as possible. In order to ensure that happens, policy decisions need to be based on science and observable data, not rigid ideology or speculative models.