RFA RENEWABLE FUELS ASSOCIATION

October 21, 2015

Cory Ann Wind
Oregon Department of Environmental Quality
811 SW 6th Ave.
Portland, OR 97204-1390

**RE**: Comments of the Renewable Fuels Association (RFA) in Response to Proposed Amendments to Chapter 340 of the Oregon Administrative Rules ("Oregon Clean Fuels Program")

Dear Ms. Wind,

The Renewable Fuels Association (RFA) appreciates the opportunity to provide comments in response to the Department of Environmental Quality's (DEQ) proposed rule for amendments to the Oregon Clean Fuels Program (CFP). RFA is a national trade association representing the domestic ethanol industry. Our membership includes ethanol producers and marketers, vendors to the ethanol industry, agricultural organizations, and other groups dedicated to the continued expansion and promotion of fuel ethanol.

RFA has generally supported science-based public policies and regulations designed to reduce the carbon intensity (CI) of our transportation fuels. Specifically, RFA has enthusiastically supported low carbon fuel programs that use fair, consistent, and scientifically robust methods for evaluating the lifecycle CI of all transportation fuel options. Therefore, RFA was surprised and highly disappointed to learn that the recently proposed rule includes the addition of subjective penalty factors for hypothetical indirect land use changes (ILUC) for select biofuels, but no indirect effect penalty factors for any other fuel types. Inclusion of highly uncertain and prescriptive ILUC factors creates an asymmetrical and discriminatory framework for the CFP. Moreover, the ILUC factors DEQ is proposing to incorporate are entirely arbitrary and have nothing to do whatsoever with the expected actual carbon impacts of CFP implementation in Oregon in the 2016-2025 timeframe.

As detailed in the attached comments, we strongly recommend that DEQ exclude indirect effects from the CFP's carbon intensity scoring framework until such time as there is broad scientific agreement on the best methodology for estimating the indirect effects for *all fuels*. As the Rulemaking Advisory Committee process clearly demonstrated, such consensus and agreement on appropriate methods remains elusive.

Further, even if it was appropriate to include ILUC factors for biofuels in the CI scoring framework, DEQ is proposing to use factors that have been shown to be grossly exaggerated and based on outdated information and data. More recent and scientifically robust analyses conducted by the U.S. Department of Energy's Argonne National Laboratory, the University of Illinois-Chicago, and Purdue University have produced ILUC emissions estimates for corn ethanol that are roughly equivalent to just *one-third* of the

ILUC factor proposed by DEQ. In addition, a careful review of U.S. and global land use trends over the past decade conducted by economists at Iowa State University provides no evidence that the types of "biofuels-induced" land use changes predicted by general equilibrium economic models have in fact occurred.

Not only are DEQ's proposed ILUC penalties for corn ethanol scientifically unjustified, but they also significantly complicate compliance with the CFP in the early years of the program. Under the California LCFS, the use of readily available sources of grain-based ethanol helped regulated parties generate an amount of compliance credit sufficient to offset gasoline deficits in the early years of the standard, allowing for a gradual transition into CI reduction requirements. However, due to DEQ's proposed CI values for the gasoline (E10) baseline, gasoline blendstock, and grain ethanol (i.e., with artificially high ILUC factors included), most readily available sources of grain-based ethanol will result in net deficit generation when blended at the 10% level under the early years of the Oregon CFP. This will preclude meaningful levels of credit banking in early years.

The success of the Oregon CFP ultimately depends on having strong support and backing from affected industries and stakeholder groups. The U.S. ethanol industry will continue to support performance-based low carbon fuel programs that are grounded in the principles of fairness, sound science, and consistent analytical boundaries. However, introducing concepts that lack scientific integrity and balance into the regulatory framework (i.e., ILUC for biofuels but no indirect effects for other fuels) only creates stakeholder division and controversy. Again, we urge DEQ to exclude indirect effects from CI scoring in the Oregon CFP until more robust methods and broad consensus exist for addressing these potential effects. Alternatively, if DEQ feels it must proceed with ILUC factors at this time, we encourage the Agency to use the Argonne National Laboratory estimates for corn ethanol pathways at this time.

All of these concerns are addressed more fully in the attached comments. Thank you again for the opportunity to comment on the proposal.

Sincerely,

Geoff Cooper
Senior Vice President

# COMMENTS OF
# THE RENEWABLE FUELS ASSOCIATION
# IN RESPONSE TO PROPOSED AMENDMENTS TO THE OREGON CLEAN FUELS PROGRAM

The Oregon Department of Environmental Quality (DEQ) released its proposed rule for amendments to the Oregon Clean Fuels Program (CFP) on September 15, 2015. The Renewable Fuels Association (RFA) offers the following comments in response to the proposal.

## I. INDIRECT LAND USE CHANGE (ILUC) AND OTHER INDIRECT EFFECTS

### *a. DEQ should exclude indirect effects, including indirect land use change (ILUC), from the program's carbon intensity scoring framework until such time as there is broad scientific agreement on the best methodology for estimating the indirect effects for all fuels.*

The ethanol industry has generally supported LCFS and CFP programs that are based on fair and symmetrical carbon intensity (CI) scoring principles. In fact, ethanol producers have cited British Columbia's Low Carbon Fuel Requirement Regulation and the first phase of Oregon's CFP as examples of "LCFS Policies Done Right," as both programs have, to date, based CI scoring for all fuels on verifiable direct emissions only. Given Oregon DEQ's careful and pragmatic approach to CI scoring during Phase 1 of the CFP, the ethanol industry was surprised and disappointed to see that the proposed amendments include indirect land use change (ILUC) penalty factors for certain biofuels, but no indirect effect penalty factors for any other fuel types. The inclusion of ILUC factors creates an asymmetrical and discriminatory framework for the CFP.

Six years after the concept of ILUC emissions was introduced in Searchinger *et al*., there is still no scientific consensus on the best methods for estimating ILUC or other indirect effects. While published estimates of ILUC emissions have trended downward over the past six years, the latest estimates still exhibit a wide range and high level of uncertainty. Further, the use of uncertain and subjective ILUC penalty factors for regulatory purposes (e.g., CI scoring under the California LCFS) remains highly controversial and polarizing. Indeed, as a result of California Air Resources Board's (CARB) decision in 2009 to include ILUC factors, the California LCFS lost the support of important industry, academic, and political stakeholders. In hindsight, numerous stakeholders have questioned the policy rationale, scientific robustness, and regulatory effectiveness of the ILUC penalties instituted by CARB (see for example Rajagopal (2015), Attachment 1). By proposing to include indirect effect penalties only for biofuels, Oregon runs the risk of similarly losing the backing of key stakeholder groups at a critical juncture for the program.

### *b. As a matter of fairness and consistency, DEQ should not assess penalties for indirect effects against only one class of fuels. If DEQ includes ILUC for biofuels, it must also include indirect emissions associated with all other regulated fuels (including baseline petroleum).*

As stated above, DEQ should exclude penalties for indirect effects until there is broad consensus on how best to estimate such effects for all fuels. The principles of lifecycle analysis require that consistent

analytical boundaries are used when evaluating and comparing the attributes of various competing products.[1] Thus, if DEQ decides to penalize biofuels for predicted ILUC emissions, it must also include penalty factors for other fuels based on their potential to induce additional emissions through indirect economic effects at the resource margin. It is inarguable that all forms of energy have associated indirect economic effects, many of which have implications for the fuel's lifecycle carbon intensity. The challenge for policymakers and regulators is isolating and quantifying those effects in a manner that is scientifically defensible and driven by consensus-based methodologies.

Despite requests from stakeholders and lifecycle experts that CARB and the U.S. Environmental Protection Agency undertake such analysis, there remains a substantial void of research on the potential indirect effects of transportation fuels other than crop-based biofuels. Indeed, in its January 2011 final report, the CARB-appointed Expert Work Group identified a number of potential indirect emissions sources from other fuels and recommended that CARB should, in the short-term:

> …conduct analysis, including but not limited to economic modeling, of the impact of the marginal barrel of oil[,]…the marginal supply of natural gas[,]…the potential market-mediated effect on electric power markets of using increased quantities of natural gas in the transportation sector[,]…reevaluation of marginal electricity[,]…[and] the impact of petroleum substitutes on refinery operations.[2]

To our knowledge, CARB has disregarded this recommendation to date. However, the scant body of existing research on indirect effects for other fuels does indicate the potential for significant indirect emissions that are not being captured in DEQ's proposed lookup table. For example, Liska & Perrin (2010) estimate that assigning military emissions related to protecting access to Persian Gulf oil would result in a CI value increase of 8.1 grams CO2e/megajoule (g/MJ) (a roughly 8.5 percent increase in the overall CI value of gasoline and diesel fuel derived from Persian Gulf oil under the California LCFS).[3] Similarly, Unnasch *et al*. (2009) identified a number of direct and indirect emissions sources that are excluded from most lifecycle analyses of petroleum-based fuels. According to the study:

> …to the extent that economic effects are considered a part of the life cycle analysis of alternative fuels, as is the case with iLUC for biofuels, their effect vis-à-vis petroleum is also of interest. The effect of changes in petroleum supply and price will affect global goods, their movement, and the use of resources and their related GHG emissions.[4]

---

[1] See ISO 14040:2006.

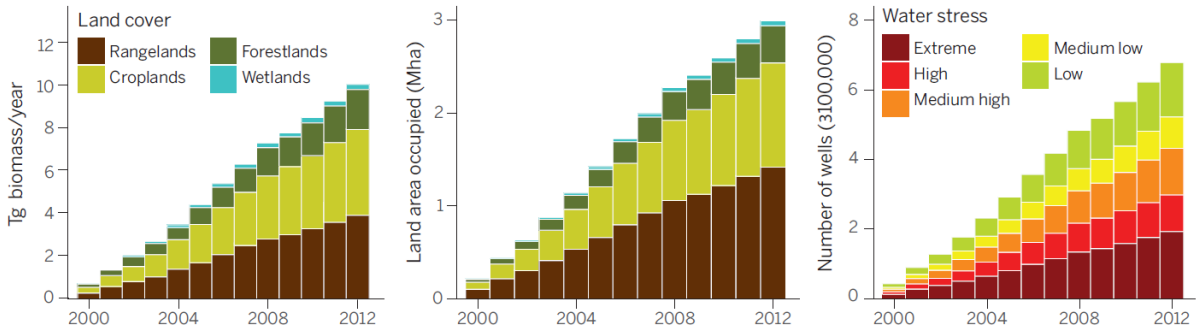
[2] Heirigs et al. (2011). Air Resources Board Expert Working Group. Final Recommendations: Subgroup on Indirect Effects of Other Fuels. Available at: http://www.arb.ca.gov/fuels/lcfs/workgroups/ewg/010511-final-rpt-alternative-modeling.pdf

[3] A.J. Liska & R.K. Perrin (2010). Securing Foreign Oil: A Case for Including Military Operations in the Climate Change Impact of Fuels. *Environment* 52:4 (July/August 2010), pp. 9–22. Available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1175&context=biosysengfacpub

[4] Unnasch. S., et al. (2009). Assessment of Life Cycle GHG Emissions Associated with Petroleum Fuels; Life Cycle Associates Report LCA-6004-3P. 2009. Prepared for New Fuels Alliance. Available at: http://www.newfuelsalliance.org/NFA_PImpacts_v35.pdf

As an example, Allred *et al.* (2015) (Attachment 2) found that higher crude oil prices induced significant land use change and loss of ecosystem services in the Great Plains region. The land area occupied by oil and gas development in the region expanded from less than 0.25 million hectares in 2000 to approximately 3 million hectares by 2012, leading to substantial losses in rangeland, forest, wetlands, and cropland. This land use response to higher crude oil prices is no different in theory than the land use response to higher grain prices driven, in part, by biofuel expansion. And, the *observed* land use change in the Great Plains region resulting from oil and gas activities is higher than the *predicted* corn ethanol-related land use change results from popular economic models.[5] Yet, DEQ and CARB have made no serious effort to quantify the CI effects of these market responses for petroleum.

**Oil and gas development impacts on ecosystem services**




Cumulative impacts of oil and gas development on ecosystem services in central North America 2000–2012. (Left) Reduction in NPP (biomass), per land cover type. (Middle) Land area occupied, per land cover type. (Right) Number of wells in water-stressed regions (22). See SM.

**Source**: Allred *et al.* (2015)

Similarly, the indirect effects of emerging alternative fuels/vehicles have been omitted from most lifecycle analyses because those effects are not well understood and have not been rigorously scrutinized. However, where research does exist on these effects, potentially significant indirect (and overlooked direct) effects are revealed. For example, the limited research available on the direct and consequential effects of increased reliance on electric vehicles (EVs) shows that widespread use of EVs could be worse for the climate than continued reliance on gasoline and diesel. According to Hawkins *et al.* (2012), when the impacts of EV production, battery production, battery disposal, and expansion of electricity demand are properly included in lifecycle emissions inventories, some EV pathways perform worse than gasoline and diesel. The authors concluded:

> EVs are poised to link the personal transportation sector together with the electricity, the electronic, and the metal industry sectors in an unprecedented way. Therefore the developments of these sectors must

[5] For example, CARB's latest GTAP analysis (which uses arbitrarily selected elasticity values for key parameters) predicts that an increase in ethanol production of 11.59 billion gallons (2004 to 2015) leads to less than 2 million Ha of land conversion in the U.S., with 85%+ coming from cropland-pasture. See http://www.arb.ca.gov/regact/2015/lcfs2015/lcfs15appi.pdf

> be jointly and consistently addressed in order for EVs to contribute positively to pollution mitigation efforts.[6]

Further, Tahil (2007) found that resource constraints for certain rare earth minerals used in EV battery production will present economic and environmental challenges not currently considered in lifecycle analyses of EV emissions. Tahil writes:

> Analysis of Lithium's geological resource base shows that there is insufficient economically recoverable Lithium available in the Earth's crust to sustain Electric Vehicle manufacture in the volumes required…Depletion rates would exceed current oil depletion rates and switch dependency from one diminishing resource to another. Concentration of supply would create new geopolitical tensions, not reduce them.[7]

Clearly, all fuels have associated indirect effects. If DEQ opts to include ILUC penalties for biofuels, it must also analyze and include economically-derived indirect effects penalties for all other fuels as well.

***c. Even if it was appropriate to include ILUC factors for biofuels in the CI scoring framework, DEQ is proposing to use factors that have been shown to be grossly exaggerated and based on outdated information and data. If DEQ proceeds with inclusion of ILUC, it should use factors recently developed by the U.S. Department of Energy's Argonne Laboratory.***

DEQ has taken its proposed ILUC factors from CARB's recently re-adopted LCFS regulation without performing any due diligence or modeling to determine whether the CARB factors are accurate or appropriate. As discussed during the advisory committee process, a number of stakeholders do not believe CARB's most recent ILUC values for corn ethanol are credible or scientifically defensible. While CARB's revised ILUC values for corn ethanol represent a slight improvement over the original penalties adopted by CARB in 2009, the values still remain well outside the range of recent estimates from Argonne National Laboratory (developer of the GREET model), Purdue University, the European Commission, Michigan State University, Oak Ridge National Laboratory and others.

RFA shared detailed technical concerns with CARB during the LCFS re-adoption process regarding its ILUC analysis (Attachment 3).[8] Further, in a March 2014 letter to CARB Chair Mary Nichols (Attachment

---

[6] Hawkins, T. R., et al. (2013). Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles. *Journal of Industrial Ecology*, 17: 53–64. doi: 10.1111/j.1530-9290.2012.00532.x. http://onlinelibrary.wiley.com/doi/10.1111/j.1530-9290.2012.00532.x/full

[7] Tahil, W. (2007) Meridian International Research. The Trouble with Lithium: Implications of Future PHEV Production for Lithium Demand. Available at: http://www.meridian-int-res.com/Projects/Lithium_Problem_2.pdf

[8] Additional comments submitted by RFA outline a number of technical concerns with CARB's preliminary ILUC analyses presented at public workshops in March and September 2014. RFA comments are available at: http://www.arb.ca.gov/fuels/lcfs/regamend14/rfa_04092014.pdf; http://www.arb.ca.gov/fuels/lcfs/regamend14/rfage_10142014.pdf (with Growth Energy); and http://www.arb.ca.gov/fuels/lcfs/regamend14/rfa_10152014.pdf

4), 14 leading bioenergy researchers (*including five members of CARB's Expert Work Group on ILUC*) wrote:

> Many of us continue to believe the use of point-estimate ILUC factors is inappropriate for the purposes of regulation. However, to the extent that CARB continues to rely upon the use of ILUC factors in calculating CI scores for the LCFS, we believe the Board should be familiar with the most recent independent modeling results. In general, our recent work—and analyses conducted by other experts in the field—indicates that CARB's existing CI factors significantly overestimate the GHG emissions associated with potential ILUCs resulting from corn ethanol expansion. Analyses conducted since CARB adopted the LCFS in 2009 show that potential ILUC emissions associated with corn ethanol are more likely in the range of 6-15 grams per megajoule of CO2 equivalent (g/MJ), compared to CARB's estimate of 30 g/MJ (emphasis added).

The most recent and scientifically robust model-derived estimates of potential corn ethanol ILUC emissions come from Argonne National Laboratory and have been integrated into the latest versions of the Argonne GREET model. For the reasons outlined above, we do not believe DEQ should move forward at this time with inclusion of ILUC or other indirect effects for CI scoring under the CFP. However, if the agency does proceed with its proposal to include ILUC, we believe the Argonne GREET/CCLUB values should be used for corn ethanol.

In 2012, Wang *et al.* published a new version of GREET that, for the first time ever, integrated a methodology (called CCLUB) to estimate ILUC emissions for corn ethanol. The GREET/GTAP/CCLUB modeling array represents a marked advancement over the CARB CA-GREET/GTAP/AEZ-EF model array for the following reasons:

- The land use change data entered into CCLUB comes from the latest version of Purdue's GTAP model, with elasticity values recommended by Purdue, Iowa State University, N.C. State University, and others (vs. elasticity values arbitrarily chosen by CARB staff);

- CCLUB treats LUC emissions with a much higher spatial resolution than CARB's AE-ZEF approach (e.g., county-level vs. broad regional);

- CCLUB emission factors are based on actual field measurements of carbon fluxes via the CENTURY/ DAYCENT tools, which are recognized as the "gold standard" for measuring site-level C fluxes; and

These improvements lead to estimates of corn ethanol LUC emissions of 6.4-9.3 g/MJ (Attachment 5, slide 18), compared to DEQ's proposed value of 19.8 g/MJ. In short, the Argonne GREET/GTAP/CCLUB framework represents the state-of-the-art for lifecycle GHG analysis of corn ethanol. Oregon DEQ has

previously committed to using the "best available science" to instruct and inform its CI scoring for the CFP, and disregarding the Argonne GREET/GTAP/CCLUB framework would abdicate that commitment.

Below we address several comments[9] that were made during the July 27 advisory committee meeting regarding the use of the Argonne GREET/CCLUB model for corn ethanol ILUC estimates:

- **"Argonne doesn't have numbers for many fuels coming to Oregon - soybean or canola biodiesel or sorghum or sugarcane ethanol."** This is not a sufficient reason to ignore the Argonne results for fuel pathways that are included in the Argonne GREET/CCLUB model. DEQ has committed to using the best available science and data to guide its CI scoring, and it is indisputable that the Argonne GREET/CCLUB model represents a significant advance in corn ethanol ILUC analysis over the latest CARB analysis. It should also be noted that the Argonne work represents the expertise and collaboration of a broad group of experts and institutions, including Argonne itself, Oak Ridge National Lab, Purdue University, University of Illinois-Chicago, Iowa State University, N.C. State University, and others. In other words, the Argonne model is much closer to a consensus-based approach than the CARB model. ILUC factors for biofuel pathways that are not included in the new Argonne model could be taken from CARB. It is not at all uncommon for fuel regulations to incorporate or reference parameters, specifications, etc. that were developed by different institutions using different methodologies.

- **"There shouldn't be different models for different fuels."** We disagree with this statement and the rationale behind it was not clearly articulated during the advisory committee meeting. The ILUC factors used by DEQ for each fuel should represent the best available science and, to the extent possible, consensus methods. It is not relevant that the best available science for one fuel pathway may come from a different institution than the best available science for other fuel pathways, especially if the same analytical boundary conditions were used. Indeed, both Argonne and CARB use the GREET and GTAP models, and the only major differences between the Argonne model arrangement and the CARB model are: 1) Argonne used GTAP parameters/elasticities recommended by Purdue and other academicians; and 2) Argonne used a more spatially explicit and detailed emissions factor model (CCLUB).

- **"Fuels compete with each other, so using the same model for all fuels makes sense."** While it is technically true that biofuels will compete with petroleum and each other under the CFP, fuel competition is *not* considered in CARB's modeling work. CARB's ILUC scenario analysis isolates each individual biofuel pathway and does not consider the fact that production and use of multiple biofuels expanded simultaneously in the real-world. Rather, CARB's modeling was meant to derive ILUC factors for individual biofuels without regard for how those emissions might change with cross-commodity effects and competition from other fuels. Thus, the CARB ILUC values do not represent land use emissions that would be expected to occur in response to a scenario where multiple biofuels are expanding and competing simultaneously. This has been

[9] Comments taken from DEQ meeting summary.
http://www.oregon.gov/deq/RulesandRegulations/Documents/072715CleanFuelsSummary.pdf

identified as weakness of both CARB's and EPA's ILUC analyses and was discussed in the TIAX final report on ILUC to DEQ in 2010.[10] In any case, CARB's ILUC factors do not represent the expected ILUC emissions that would occur as a specific result of implementation of the Oregon CFP (nor, for that matter, do they represent the expected specific ILUC impacts of implementation of the CA LCFS). In this sense, the individual CARB ILUC factors are somewhat generic and arbitrary and have no bearing or relationship to ILUC factors for other individual fuels. Thus, there is no defensible rationale for suggesting that all ILUC factors should come from the same model for the sake of reflecting "competition" in the Oregon market.

- **"Regional consistency is valuable when applying LUC values. Prevents shuffling of fuels."** Regional consistency on CI scores is not a sufficient reason to ignore the best available science on specific fuel pathways. Commercial fuel providers deal with regulatory inconsistencies across state lines every single day. For example, different states (and even different cities) often have different fuel taxes and tax incentives, different requirements for gasoline volatility, different gasoline aromatics content maximums, different maximums for ethanol content, and a number of other properties and considerations. These inconsistencies are a commercial reality, and fuel providers have proven that they can and will quickly adjust to different requirements in different markets. Moreover, use of CARB's ILUC factors would contribute to *greater* fuel shuffling—not *less*—as larger volumes of imported sugarcane ethanol and imported renewable diesel would be diverted to Oregon, while biofuels currently used in Oregon would be dislocated and forced into new markets. In fact, use of the CARB ILUC factors could ultimately result in grain ethanol that is currently used in Oregon being supplanted by imported sugarcane ethanol, and being rerouted to Brazil to backfill the volume of sugarcane ethanol that was shipped to Oregon. It is simply incorrect to suggest that adopting CARB's ILUC factors would result in less fuel shuffling when the experience in California has clearly shown otherwise.

***d. Recent analysis of empirical global land use change data by Iowa State University suggests the CARB ILUC modeling results are not reliable for predicting potential land use change emissions associated with biofuel expansion.***

CARB's ILUC analysis, upon which DEQ's proposed ILUC penalty factors are based, is meant to simulate the land use effects of total U.S. biofuels growth from 2004 to 2015.[11] Obviously, the time period in question is drawing to a close. Thus, *actual* land use data is available for most of the simulation period. A recent independent analysis of empirical land use change data by Babcock & Iqbal (2014) (Attachment 6) indicates the following:

- "…the primary land use change response of the world's farmers in the last 10 years has been to use available land resources more efficiently rather than to expand the amount of land brought into production."

[10] http://www.deq.state.or.us/aq/committees/docs/lcfs/appendixG.pdf

[11] CARB's results are based on a corn ethanol increase of 11.59 billion gallons, meant to correspond with the increase from 3.41 billion gallons (2004 actual production) to 15 billion gallons (the statutory limit for corn starch-based ethanol, which begins in 2015, under the federal Renewable Fuel Standard).

- "The pattern of recent land use changes suggests that *existing estimates of greenhouse gas emissions caused by land conversions due to biofuel production are too high* because they are based on models that do not allow for increases in non-yield intensification of land use."

Unfortunately, CARB's ILUC analysis does not take into account the methods of intensification (e.g., double-cropping, increases in the share of planted area that is harvested, return of fallowed land to production) that have been observed in the real world over the past decade.

According to Babcock & Iqbal, GTAP and other models "…do not capture intensive margin land use changes so they will tend to ***overstate land use change at the extensive margin and resulting emissions***." This finding is corroborated by Langeveld et al (2013) (Attachment 7), who found GTAP and other models have "…limited ability to incorporate changes in land use, ***notably cropping intensity***," and "[t]he increases in multiple cropping have often been overlooked and should be considered more fully in calculations of (indirect) land-use change (iLUC)."

Ultimately, the Babcock & Iqbal work calls into question the plausibility of CARB's GTAP results and demonstrates that CARB's ILUC results are directionally inconsistent with real-world data and observed market behaviors in many regions. The data and discussion presented in the paper challenge the very underpinnings of CARB's analysis and are simply too important for the agency to ignore. Thus, RFA and other stakeholders continue to encourage CARB to better calibrate its GTAP model using the real-world land use data made available by Babcock & Iqbal.

***e. The ILUC factors DEQ is proposing to incorporate do not represent in any way the carbon effects expected to actually occur as a result of CFP implementation in Oregon.***

It is important to reflect upon what is actually represented by the CARB ILUC factors that DEQ is proposing to adopt. CARB's ILUC factors are based on the predicted land use effects of expanding *national* corn ethanol production from 2004 levels to 15 billion gallons (i.e., current levels). In other words, the CARB analysis penalizes current biofuels for hypothetical ILUC emissions that may or may not have actually occurred in the past as ethanol production expanded to the current 15-billion gallon level. Thus, the CARB factors do not in any way reflect the expected land use emissions of specifically implementing the re-adopted California LCFS in the 2016-2020 timeframe, and they certainly do not simulate the land use effects of implementing an Oregon CFP in the 2016-2025 timeframe.

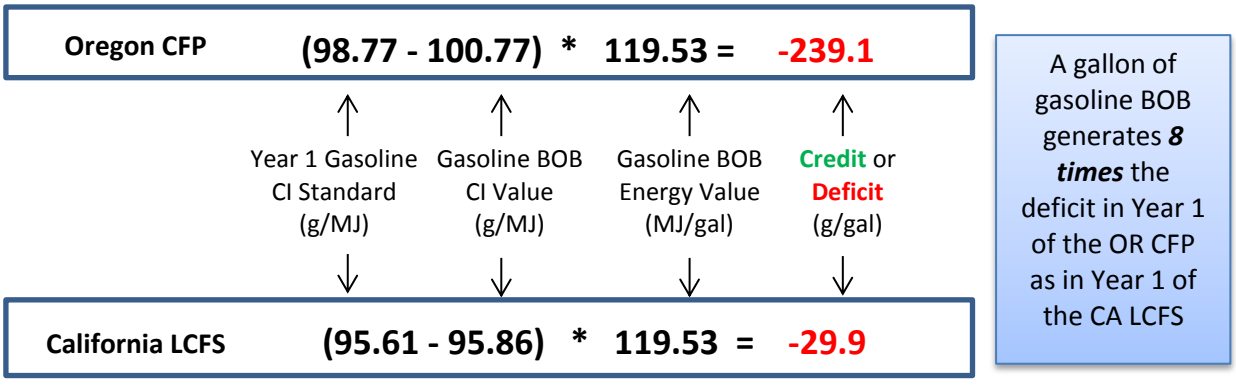
In reality, U.S. corn ethanol production has leveled off over the past four years in the 13-15 billion-gallon-per-year range and is expected to remain in that range through the duration of the CFP program. Accordingly, it seems illogical to suggest that implementation of the CFP in the 2016-2025 timeframe would somehow induce additional corn ethanol ILUC emissions. If the purpose of including ILUC in the CFP program is to account for the policy's potential unintended environmental impacts, adopting the CARB ILUC factors is plainly the wrong approach.

## II. ADOPTION OF THE PROPOSED CI VALUES WOULD SIGNIFICANTLY COMPLICATE COMPLIANCE IN THE EARLY YEARS OF THE CFP

### *a. The proposed CI values for baseline gasoline (E10), gasoline blendstock, and corn ethanol pathways mean compliance with the CFP will be difficult immediately, whereas the compliance stringency of the California LCFS was far more gradual*

Some stakeholders have suggested that the early years of the Oregon CFP will likely unfold similarly to the early years of the California LCFS. Under the California program, deficit generation on gasoline blendstock was relatively modest in Year 1 because of the small difference (0.25 g/MJ) between the CI value of gasoline blendstock and the Year 1 gasoline CI standard. Thus, gasoline blendstock deficits were relatively easy to offset with credits generated through the blending of 10% corn ethanol in the first few years of the LCFS program. This also allowed for banking of surplus credits in the early years, which CARB has stated will be crucial for complying with the more stringent CI reduction requirements in the later years of the program.

Conversely, there is a relatively large difference (2.0 g/MJ) between the CI of gasoline blendstock and the Year 1 gasoline CI standard under the proposed Oregon CFP. In other words, a gallon of gasoline blendstock used in Oregon generates *eight times* as much deficit in Year 1 as a gallon of gasoline blendstock generated in Year 1 of the California LCFS (see calculations below). Obviously, this means Oregon CFP regulated parties will need to immediately generate or otherwise acquire far more credits to offset deficits in Year 1 than was the case for California LCFS regulated parties in Year 1. However, due to the imposition of CARB's ILUC factors, most forms of grain ethanol used in Oregon will not provide sufficient credits to offset gasoline blendstock deficits in a 10% ethanol blend. This will substantially complicate CFP compliance and will greatly reduce opportunities for credit banking in the early years of the program.




Excluding ILUC penalties for biofuels (or using the Argonne ILUC factors for corn ethanol) would not only be more scientifically justifiable, but (as discussed in the following section) it would also ensure a more gradual compliance "glide path" in the early years of the CFP and would help facilitate credit banking.

### *b. DEQ's failure to conduct or provide updated compliance scenarios demonstrates that the Agency has not carefully analyzed the feasibility of long-term compliance with the CFP.*

DEQ contracted with ICF to conduct CFP compliance scenarios and results were made publicly available in late 2014.[12] Based on the ICF reports, DEQ concluded that compliance with the CFP is achievable through 2025, as the balance of credits outweighs the balance of deficits. Throughout the advisory committee process in 2015, DEQ continued to cite the ICF reports as evidence that the CFP, as proposed, is feasible. However, DEQ did not conduct or release updated compliance scenarios following *major* proposed changes to the regulation including addition of CARB ILUC values to biofuel CI scores, revisions to the baseline gasoline (E10) CI value, changes to the gasoline BOB CI value, revisions to the entire compliance schedule and other important modifications.

RFA inquired with DEQ on multiple occasions as to whether updated compliance scenario analysis would be conducted and ultimately was informed that no additional compliance scenarios or analysis would be performed. To assist in our evaluation of the CFP proposal, RFA conducted two simple compliance scenarios to estimate potential credit and deficit generation through 2025. The results are provided in Attachment 8. Our analysis clearly shows that using the Argonne ILUC factor for corn ethanol rather than the CARB penalty, and holding all other assumptions constant, results in significantly extended durability for the CFP and allows for more credit banking in the early years of the program.

## III. SELECTIVE INCLUSION OF ILUC PENALTIES FOR FIRST-GENERATION BIOFUELS UNDERMINES THE DEVELOPMENT OF LOWER-CARBON ADVANCED AND CELLULOSIC BIOFUELS

Some stakeholders have suggested that levying carbon intensity penalties for ILUC against first-generation biofuels will help stimulate growth and investment in second-generation biofuels with lower CI scores. This theory is extremely shortsighted and disregards the fact that the success of second-generation biofuels is largely dependent on a stable and certain market for first-generation biofuels. Indeed, 12 companies engaged in the commercial development of advanced and cellulosic biofuels (including all of the companies responsible for the first four commercial-scale cellulosic ethanol facilities) wrote DEQ in August (Attachment 9) to encourage the Agency to continue excluding indirect emissions from the CFP CI scoring framework until consensus methodologies exist to analyze indirect emissions for all fuels. The companies wrote:

> ILUC policy that is not based on the best data and science, or is enforced inequitably, will have the unintended consequence of undermining the profitability of first generation biofuel projects, which in turn will reduce the amount of capital available for innovation and contribute to a negative and unpredictable investment sentiment for building new

[12] See http://www.oregon.gov/deq/RulesandRegulations/Documents/T3m3.pdf and http://www.oregon.gov/deq/RulesandRegulations/Documents/compliance.pdf

> capacity with emerging technologies. …the most scientifically defensible outcome would be for DEQ to exclude indirect emissions factors from the CFP until indirect effects can be assessed and applied equitably across all primary fuel types.

The synergies between first- and second-generation biofuels were further examined in a recent report by Third Way (Attachment 10), a centrist public policy think tank. The report found that proposals to weaken the federal Renewable Fuel Standard (RFS) requirements for conventional biofuels like corn ethanol would also have the effect of weakening investment in, and support for, cellulosic ethanol. According to the report:

> Development of cellulosic ethanol technology has taken longer than policymakers hoped. But the pace of innovation has been impressive nonetheless, and the first commercial facilities are now up and running—thanks in large part to the engagement of the corn ethanol industry. By capitalizing on their existing resources, relationships, and industry knowledge, these first generation biofuels companies are able to overcome the economic and technological challenges that continue to stump others seeking to "crack the cellulosic code". Continued investment from these companies in facilities and innovation would provide a needed jumpstart to cellulosic commercialization in the U.S. But a number of proposed changes to the RFS, however innocuous they may seem, would remove any incentive for the first generation industry to continue supporting cellulosic ethanol. At this critical stage in their development, cellulosic fuels can hardly afford to lose the closest friend they have.

Similarly, DEQ's proposal to include CARB's ILUC factors will immediately weaken demand and profitability for grain ethanol, decreasing the ability of companies engaged in first-generation biofuels to invest in second-generation technologies and innovation.

* * * * *

In closing, we again encourage DEQ to exclude indirect effects from CI scoring in the Oregon CFP until more robust methods and broad consensus exist for addressing these potential effects. Alternatively, if DEQ feels it must proceed with ILUC factors at this time, we encourage the Agency to use the Argonne National Laboratory estimates for corn ethanol at this time.