# COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL ON THE 2011 INTEGRATED ENERGY POLICY REPORT TRANSPORTATION ENERGY FORECASTS: ANALYSIS OF THE LOW CARBON FUEL STANDARD

Docket Number 11-IEP-1L

2011 IEPR – Transportation Energy Forecasts: LCFS Specific Comments

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Submitted by: Simon Mui, Ph.D

NRDC appreciates the opportunity to provide comments to the California Energy Commission (CEC) on its draft transportation IEPR. This set of comment follows two earlier sets of comments provided to the CEC, the first set submitted on September 2, 2011 in response to the release of the draft transportation IEPR and the second set submitted on November 22, 2011 in response to the workshop held on November 14th, 2011(*Workshop on the Role of Alternative Fuels in California's Transportation Energy Future)*.

We are submitting these comments on the LCFS portion of the IEPR analysis presented at the November 14th workshop. These comments are being submitted earlier than expected in order to fulfill CEC staff's request to submit comments in advance of the November 30th deadline. However, we are also requesting additional time for further review and dialogue with CEC staff. We may submit additional sets of comments if allowed further time to review the CEC analysis and materials and based on staff's response.

## I. NRDC REQUESTS THAT THE CEC PROVIDE THE PUBLIC MORE TIME TO REVIEW ITS LOW CARBON FUEL STANDARD (LCFS) ANALYSIS, OBTAIN INPUT FROM A BROADER REPRESENTATION OF STAKEHOLDERS, AND PRESENT FORMAL RESPONSES TO THE MAJOR CONCERNS AND QUESTIONS THAT HAVE BEEN RAISED

CEC should provide itself with additional time and stakeholder input to generate an improved LCFS and transportation forecast analysis that is currently flawed. As we highlighted in verbal comments at the November 14th CEC workshop, staff did not address our main concerns or incorporate the recommendations proposed in our September 21st comments. NRDC also has requested meetings with CEC staff two times without response. We attribute this to the lack of adequate time given to staff to respond between analysis runs, and request that additional time be provided for this process to allow for improved engagement and dialogue with NRDC and other stakeholders.

In addition, NRDC is particularly concerned that many critical parties have not been involved in discussions on the CEC's Low Carbon Fuel Standard analysis. The majority of participants in the CEC's process have consisted of oil companies and oil trade group representatives providing input with virtually no representation from the alternative fuels industry or the public at large.

It is no secret that the oil industry is opposing California's LCFS as well as Oregon's LCFS and other state effort throughout the U.S. to implement clean fuel standards. In

California, the industry is currently arguing the standards should be weakened. We note that the CEC's draft LCFS analysis has already been used by the oil industry publically at the Air Resources Board and in the legislature to incorrectly argue that standards should be relaxed, alternative fuels are too costly, and commercial alternatives are not available, stating that CEC appears to share these concerns with the LCFS.[1] We do not believe that CEC's position or intent is to take a position either for or against the LCFS, given its decades of work and service on finding alternatives to conventional fuels, its efforts under the Alternatives & Renewable Fuel & Vehicle Technology Program (AB 118) and its role in implementing the State Alternative Fuels Plan (AB 1007). There are many stakeholders on the opposite side of the oil industry arguing that the industry has failed to invest, cleaner alternative fuels are viable and can be scaled-up in a cost-effective manner, and that the standards are necessary to ensure this is occurring.

We ask CEC to seek additional input and representation from the alternative fuels industry, as well as investors in this space, while providing additional time for public comment. In particular, the biofuels industry – which the CEC is focusing its price analysis on and compliance scenarios on – has been notably absent. The natural gas industry has been similarly conspicuously uninvolved. For example, the report developed by Environmental Entrepreneurs (E2) and submitted to the CEC, provided an inventory of the advanced biofuel companies, their status, and their potential volumes by 2015.[2] This study was not incorporated into the CEC's analysis despite the estimates being similar to those by industry consulting firms and reports including Biofuels Digest and Bloomberg.[3]

The CEC has also not provided adequate time or materials to review its analysis and NRDC respectfully requests more time be provided for review and input. The release of the spreadsheets used and the actual presentation – while helpful – were posted days after the November 14th, 2012 workshop, making it difficult for stakeholders to follow in real time or to respond before the Thanksgiving holiday.

In addition, the CEC analysis is utilizing new methodologies, such as using the EPA Renewable Fuel Standard (RFS) credit prices (known as RINS) to forecast future biofuel prices. This methodology is new to NRDC and has not been utilized before based on our

[1] October 24, 2011, Senate Transportation and Housing Committee, testimony from the Western States Petroleum Association.
[2] http://www.e2.org/ext/doc/E2%20Advanced%20Biofuel%20Mkt%20Report%202011.pdf
[3] http://www.biofuelsdigest.com/

knowledge of the literature and regulatory analysis. As we comment upon below, it may also be fraught with problems that make the methodology questionable at best and likely incorrect. Economic analysis of market *prices* – particularly of fuel markets and prices – requires partial or computational equilibrium models with the ability to incorporate marginal cost and demand curves, as well as an understanding of how market participants will behave. The record on EPA's renewable fuels standard shows that they have not utilized the methodology that the CEC has chosen to utilize, even with numerous economic and input/output models such as the MARKAL, NEMS, Jacobs Refinery model as well as numerous agricultural sector models (FASOM, FAPRI) at their disposal. The CEC should request comments on, and consult with the academic community and other agencies about, the best methodology to utilize when conducting an economic price analysis of alternative fuels under the LCFS or RFS.

## II. THE CEC SHOULD MAKE AVAILABLE THE REFERENCES IT USED FOR ITS PRICE ASSUMPTIONS

The presentations and accompanying spreadsheets appear to be missing references or descriptions on how staff arrived at its current price estimates or those going forward (from 2012 to 2030). For instance, we point the spreadsheets provided online as well as the presentations posted following CEC's November 14, 2011 workshop.[4] The CEC staff should make clear the sources for each assumption for each fuel used in the analysis to allow for public review before finalizing the IEPR. It is only in "biofuels value data" cells A20 –A23 that some RIN credit data is provided, but the methodological reasoning is not provided and reviewers are left to attempt to understand based on equations and links to other Excel tabs.[5]

We note below that while RIN prices are useful information, it is insufficient to base the price forecast upon. Also, input from the respective alternative fuel industries, including their associations, should be sought for input on the price assumptions for fuels. If provided with additional time, NRDC could assist the CEC in this area based on available literature and financial statements by companies as well as refer the CEC to the appropriate EPA staff who run the RIN system to better understand whether it should be utilized to forecast prices.

[4] http://www.energy.ca.gov/2011_energypolicy/documents/2011-11-14_workshop/2011-11-14_Biofuel_Values.xls
http://www.energy.ca.gov/2011_energypolicy/documents/2011-11-14_workshop/presentations/Schremp-LCFS.pdf

[5] http://www.energy.ca.gov/2011_energypolicy/documents/2011-11-14_workshop/2011-11-14_Biofuel_Values.xls

## III. THE CEC SHOULD ADOPT EITHER A COST-OF PRODUCTION OR MARGINAL COST METHODOLOGY AS OPPOSED TO ITS CURRENT "ASSUMED PRICE" APPROACH.

The CEC analysis appears to translate 2010 RIN credit prices to serve as the "low case" for biofuel costs going forward and 2011 RIN credit prices to serve as the "high case" for biofuel costs, today and out to 2030. However, the CEC has not provided a rationale why current RIN values from the Renewable Fuels Standard should be used to forecast prices. While it is a good starting point to utilize OPIS data for the current year price for corn ethanol and sugarcane prices, it is inappropriate to use the RIN price and extract it forward beyond a year, let alone 20 years, for the purposes of calculating the price of biofuels. This is true for a number of reasons.

Historic EPA RFS credit prices, particularly in the first two years of the program, are more a reflection of where EPA decides to set the annual stringency level, rather than costs. For example, the estimated RIN value for cellulosic jumped from 33 cents to 104 cents from 2010 to 2011. This does not reflect a real change in production costs, but rather the change in EPA's annual target and whether there is enough demonstration-scale cellulosic available in the market. The CEC should not confuse RIN prices for the cost of production or competitive market price of biofuels going forward. For reference, www.rinbroker.com, lists the factors driving RIN prices as:

- EPA's current year mandate of renewable fuel
- Transportation costs
- Current vintage of the RIN
- Physical properties of the biofuel

More importantly, RIN prices are volatile and the cellulosic RIN values are in essence based on the waiver price set by the Energy Independence in Security Act of 2007 and implemented by EPA under the RFS2. Instead, the CEC should use the traditional cost-of-production approach which can be performed in a spreadsheet analysis as opposed to creating a new, untested methodology utilizing an "assumed price" approach with RINs. The best approach is to utilize is a marginal cost analysis using economic modeling. However, the CEC appears to have limited time to conduct this – and such analysis has already been conducted in the academic literature. NRDC could provide references if more time is provided.

## IV. THE CEC ANALYSIS APPEARS TO HAVE MADE A CRITICAL ERROR IN ASSIGNING BIOFUELS THE LCFS CREDIT "COST" AS OPPOSED TO THE LCFS CREDIT "INCENTIVE."

The CEC staff analysis appears to confuse LCFS credit values (i.e. $/ton) with the actual transaction prices for biofuels. For example, the analysis currently assumes that biofuel prices will be higher due to a LCFs credit. Based on our understanding of the LCFS, this is incorrect.

A biofuel producer, natural gas provider, or utility that generates LCFS credits will be able to provide that product at a lower cost. The two extremes are either (1) the producer passes on the entire LCFS credit value to the fuel purchaser or (2) keeps it entirely for itself and does not pass it on to the consumer. In either case, the price would be lower or the same, not higher as CEC staff has assumed. For example, utilities under the LCFS will be required to pass through the LCFS credit value to their fuel customers (whether direct residential customers, electric vehicle charging service providers, or businesses, etc). Thus, a $0.12/kWh price for consumers might fall down to $0.10/kWh. A biofuel producer that receives $0.25/gallon LCFS credit value, for example by selling that credit to an obligated party could now sell that biofuel gallon by $0.25/gallon less than it would have otherwise or use it as additional profit to reinvest in producing additional volumes or in R&D.

The CEC staff appears to incorrectly assume the prices for biofuels will actually increase because of the LCFS credit; however it is unlikely that a biofuel producer would receive the incentive value from the credit, and then decide to raise the prices of their product. If the CEC is attempting to show refinery costs for purchasing those credits, it should do so separately as a line-item as opposed to trying to reflect it in fuel prices. This would simply be the assumed LCFS credit value multiplied by the number of credits required to comply.

Predicting prices is a much more challenging and is largely a guess without an economic model with a well built fuels module. CEC needs to be careful in presuming how and if compliance costs will be passed on to consumer. The two extremes are that obligated parties can either absorb the LCFS compliance costs fully or pass it on to consumers partially or fully. By the same token, the alternative fuel producers can pass on the LCFS credit value they receive either partially or fully to consumers, or not at all. The CEC should not assume however that compliance costs will be passed on entirely to consumers any more than it assumes LCFS value will be passed on to consumers by alternative fuel providers. NRDC

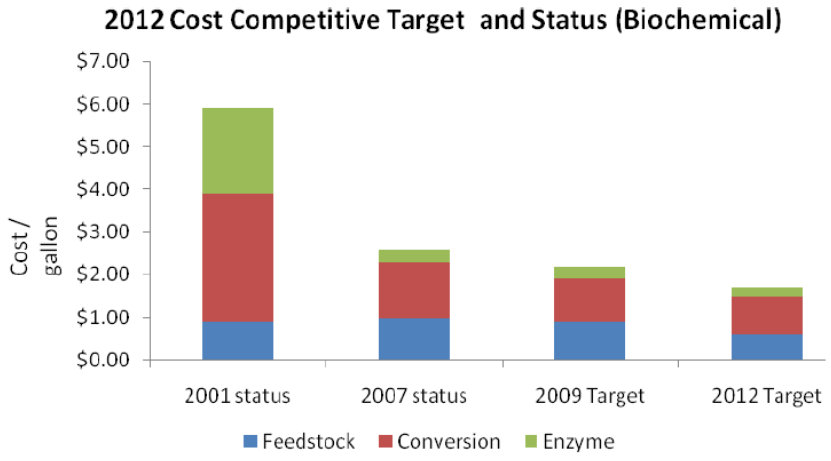
suggests that sensitivity cases be run with a middle of the road scenario as the primary case.

The analogy on the vehicles side is corporate average fuel economy standards. Within a specific vehicle footprint (i.e. size class), automaker who build gas guzzlers face a higher cost and offset these costs with more fuel efficient vehicles. If they chose to pass on these costs to consumers, the consumer purchasing the gas guzzler will have a higher cost while the consumer purchasing the fuel efficient vehicle will have a lower cost.

## V. THE CEC ANALYSIS SHOULD ACCOUNT FOR ECONOMIES-OF-SCALE AND INNOVATION THAT WOULD OCCUR UNDER A BUSINESS AS USUAL CASE AS WELL AS A CASE SPURRED BY THE LCFS

The CEC analysis actually has cellulosic and other biofuel prices rising over time, contradicting the general experience in the industry that cost-of-production of fuel actually decrease over time due to innovation, doing-by-learning, and scaling. The example below shows U.S. Department of Energy data and targets for cellulosic ethanol. In contrast, the CEC has under its high price scenario cellulosic ethanol starting at $5.02 per gallon in 2012 and increasing to $7.18 per gallon in 2030. This is very puzzling and should be resolved.

**Department of Energy, USA**




Source: DOE EERE Office of the Biomass Program, Multi-year Program Plan, Appendix C.

One of the main features of the LCFS program is that it provides additional incentive for lowering the carbon-intensity score. This will reward innovation rates for cleaner fuels beyond the business-as-usual as well as lead to greater volumes than would otherwise have been produced. The CEC should consider analyzing incorporating improvement rates. Clearly, assuming there will be no improvement is incorrect and a "negative" improvement rate is even

more incorrect.

## VI. The CEC analysis appears to assume that no additional alternative fuel use will be generated by the LCFS, implying there is no value to the program

The CEC analysis appears to assume that all biofuels will be "shuffled" into the state and that no actual additional volumes will be produced above the U.S. Annual Energy Outlook's reference case scenario. At the same time, the CEC assumes that the LCFS credit has value (i.e. there is additional value to providing low-carbon fuels). These two assumptions appear to be contradictory and should be resolved.

As explained above, the LCFS credit mechanism serves to reduce costs for alternative fuel providers and push prices downward for customers of alternative fuels. If the CEC agrees with this assumption, then supply will increase beyond where it would have been. For example, if electricity rates are lower for EV drivers due to the LCFS, in theory they will replace more gasoline driving with electric driving while new EV drivers will be more motivated by better payback periods.

## VII. THE CEC SHOULD INCORPORATE OR ADDRESS NRDC COMMENTS AND CONCERNS ON THE LCFS COMPLIANCE SCENARIOS.

NRDC provided extensive comments on CEC's compliance scenarios in our September 2, 2011 comments. These do not appear to have been incorporated or addressed. We flag again several of the larger issues that CEC should address the following:

- The assumption that no additional alternative fuels will be provided due to the LCFS and that the "biofuel availability" limit is the EIA's Annual Energy Outlook reference case for cellulosic or advanced biofuels. This implies no additional value for the LCFS is created, in direct conflict with CEC's assumption that LCFS credits rise to $200 per metric ton.

- Whether the carbon-intensity (CI) of fuels is assumed to be fixed over time in the analysis without improvement for individual fuel pathways. CI scores are expected to improve, spurred by the LCFS but also business as usual process improvements due to efficiency gains and innovation as well as fuel switching. Even corn ethanol producers have improved their carbon-intensity by 10% since 2005 to 2011, as cited by POET, and are planning to improve another 10% by 2020.[6]
- The potential for oil producers to receive credit value for reductions they undertake which is currently ignored in the analysis.
- The assumption that no new biofuel facilities beyond those that have been completed or pending will be built in California, forcing the biofuel volumes to be artificially limited. As discussed before, if the LCFS program creates value for biofuel producers, then supply curves will be shifted upwards.

Thank you for the opportunity to comment on the issues relating to the Transportation Energy Forecasts workshop and the CEC Draft Staff Report and for considering our recommendations. We look forward to continuing to work with the CEC to ensure the accurate and successful forecast analysis of transportation energy in California.

Sincerely,

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[6] http://biofuelsdigest.com/bdigest/2011/11/18/poet-to-chop-ghg-intensity-of-ethanol-10-percent-by-2020/