

## **Comment on the Eco Solutions LCFS Method 2 Fuel Pathway Application**

The National Biodiesel Board (NBB) and the California Biodiesel Alliance submitted comments which are summarized below:

- South Korea imports most of its NG from overseas destinations which must be considered in the analysis of this pathway
- Total UCO feedstock available in South Korea may not be adequate to meet the feedstock requirements of this facility (in combination with the Dansuk pathway approved earlier by the LCFS team)
- Potential for fraud by improper classification of virgin oil as “waste” feedstock
- Social issues such as protection of labor rights are not enforced in some countries of the world
- GREET factors should consider regional factors in lifecycle accounting
- Rigorous monitoring and verification systems must be in place to ensure integrity of the program is preserved
- Lack of financial bonding (or other) requirements in the event of enforcement actions against the fuel supplier

The original submitted comments are available at the links below:

<http://www.arb.ca.gov/lists/com-attach/47-lcfs2a2bcomments-ws-VzJVMFwyWVVVIAhn.pdf>

<http://www.arb.ca.gov/lists/com-attach/50-lcfs2a2bcomments-ws-AGNWMIQ0WFRRNAIm.pdf>

### **Response submitted by Eco Solutions**

#### **Comment:**

As you know, the GREET model was developed by the U.S. Department of Energy’s Argonne National Laboratory to reflect energy use and other variables within the United States. As such, the model cannot be properly utilized for other nations—especially developing nations—without significant modifications. After reviewing the three applications referenced above, we do not believe this fundamental precept has been recognized, the result being inaccurate carbon intensity (CI) values for the respective applicants.

#### **Response:**

- 1) It is not true that GREET model was developed to solely reflect energy use and other variables within the United States. The GREET model has been used internationally by many users and has been used for many foreign pathways under the LCFS program.
- 2) Questions related to the calculations in the GREET model refer to parameters which have been in use for all applicants to the LCFS. There is an existing

precedent of using the current version of the GREET model as conformant with the current regulations which is applied equally to applicants.

**Comment:**

“With respect to the Eco Solutions Co. Ltd. application, the fact that Korea is the world’s second largest importer of high-CI liquefied natural gas is not accounted for.”

...

“The Eco Solutions pathway application makes no adjustment for the liquefaction of natural gas or the transport of the LNG from its source to Korea. It therefore underestimates the emissions for all processes that use natural gas for the production of biodiesel.”

**Response:**

The major portion of CI for both LNG and NG comes from the combustion stage, which is the same for 1 MJ of LNG and NG. This means LNG only has slightly higher CI than NG, as can be seen in CARB’s report ([http://www.arb.ca.gov/fuels/lcfs/092309lcfs\\_ing.pdf](http://www.arb.ca.gov/fuels/lcfs/092309lcfs_ing.pdf)). As South Korea is geologically closer to the major LNG exporting regions than the United States, it is easy to understand that LNG used in South Korea has a lower CI than that in the United States. Furthermore, even when we consider the CI of 77.50 g/MJ for CNG in the above cited report, the increase of UCO CI is only 2 g/MJ.

Eco Solutions has already adopted a conservative assumption that high-energy cooking is used for their UCO pretreatment, while in practice, they have little to none cooking for their UCO pretreatment. This more conservative estimates assigned a ~5 g/MJ higher CI value to the pathway which well exceeds any perceived underestimation of LNG use as discussed in the comment.

**Comment:**

“Nor is the fact that most, if not all, of the used cooking oil will need to be imported into the country before processing and later export to California. The correct carbon intensity of the fuels used for biodiesel processing and the true extent of the feedstock and fuel shuffling underpinning this business model are not reflected in the pathway application.”

...

“Since the Air Resources Board has already approved a UCO to biodiesel pathway for Dansuk Industrial that also requires 80,000 tonnes of domestic UCO, there does not appear to be sufficient domestic feedstock for both facilities.”

**Response**

It has been stated explicitly in the application that this Eco Solutions pathway only applies to the UCO feedstock that is collected domestically in South Korea. So it is not a fact that the UCO will need to be imported into the country for the biodiesel produced

under this pathway. In fact, any UCO which is imported into South Korea cannot be used for this pathway.

UCO production in South Korea is enough to cover the application volume proposed by Eco Solutions as their facility is producing at a lower rate than their capacity. The information provided by the comment referencing Biodiesel feedstock in South Korea (2006 – 2012) shows that there is sufficient domestic production of UCO to support Eco Solutions biodiesel production (<http://www.kbea.or.kr>). In addition, Eco Solutions followed the same procedure as other applicants to the LCFS and is subject to the same monitoring and verification processes as all other applicants to the LCFS.

**Comment:**

In our view, the ARB should not process foreign applications without fully understanding the key variables within each respective country. It seems improper to apply the highest possible level of scrutiny to domestic carbon intensity values—entire scientific workgroups have been devoted to this objective—only to then accept favorable gross generalizations for foreign producers. An equal degree of scientific rigor should be applied to all applications to ensure that the program is actually meeting its goals and to minimize fuel and feedstock shuffling.

**Response:**

It is not true that GREET model was developed to solely reflect energy use and other variables within the United States. The GREET model has been used internationally by many users and has been used for many foreign pathways under the LCFS program.

Eco Solutions Co. Ltd. followed the same procedure as all other applicants to the LCFS. Eco Solutions Co. Ltd. is subject all of the rules and reporting requirements presented in the Staff Summary for the Eco Solutions pathway.

**Comment:**

More generally, we do not believe additional foreign pathways for waste feedstocks should be approved until a comprehensive Monitoring and Verification regulation has been developed and implemented to help ensure the integrity of these fuels.

**Response:**

Eco Solutions Co. Ltd. is subject all of the rules and reporting requirements presented in the Staff Summary for the Eco Solutions pathway.

**Comment:**

High credit prices of up to \$1 per gallon combined with little applicable enforcement, creates a fertile environment for fraud, especially from foreign companies. While current enforcement mechanisms seem adequate for domestic producers (who are also subject to criminal prosecution by U.S. EPA and the Internal Revenue Service), foreign entities

face no real threats since they operate outside the jurisdiction of U.S. and state governments. Furthermore, unlike EPA, the ARB does not require a detailed collection plan to demonstrate the integrity of used cooking oil pathways. Nor does ARB have in place a bonding requirement to ensure that funds are available to help pay government fines and restitution in the event of fraudulent activity

### **Response**

Eco Solutions is registered with the EPA, Company ID 6266 and Facility ID 83159. As part of the Engineering Review cycle required and enforced by the EPA, Eco Solutions has created and maintained a Separated Food Waste Plan which can demonstrate the integrity of the feedstock used for its LCFS pathway, which the comment itself indicates is a higher standard of recordkeeping.

Regarding enforcement and reporting under the LCFS, Eco Solutions Co. Ltd. is subject all of the rules and reporting requirements presented in the Staff Summary for the Eco Solutions pathway.

### **Comment:**

Beyond enforcement, there are lingering questions about social license that should be resolved. Biofuel facilities in India and Asia, for example, operate under a far different social contract than U.S. and Canadian producers. A July, 2015 Wall Street Journal article entitled “Palm Oil Migrant Workers Tell of Abuses on Malaysian Plantations” 1 sheds light on practices in developing nations that, according to the U.S. Department of Labor, include “forced labor.” In addition, the Roundtable for Sustainable Palm Oil was recently criticized for “widespread fraud, collusion,” and “conflicts of interest”

<http://www.wsj.com/articles/palm-oil-migrant-workers-tell-of-abuses-on-malaysian-plantations-1437933321>

[http://www.theecologist.org/campaigning/2986342/sustainable\\_palm\\_oil\\_rspos\\_greenwashing\\_and\\_fraudulent\\_audits\\_exposed.html](http://www.theecologist.org/campaigning/2986342/sustainable_palm_oil_rspos_greenwashing_and_fraudulent_audits_exposed.html)

All of this underscores concerns about how used cooking oil is defined and exactly what is being shipped from distant lands to California’s shores as a low carbon fuel. One would not have to think long nor hard to develop a scheme whereby virgin palm oil or palm fatty acid distillate (PFAD)<sup>3</sup> quickly and inexpensively became UCO fit for LCFS credit generation. This concern is highlighted when sizeable production facilities apply for UCO pathways from regions that produce (1) small volumes of used cooking oil and (2) large volumes of palm oil.

### **Response:**

1. Using a Malaysian example published by a non-scientific non-peer-reviewed journal does not make legitimate argument for labor practices at a facility in all of Asia, including the Republic of Korea.

2. South Korea is not a region that produces small volumes of used cooking oil, or large volumes of palm oil. In fact, virtually no production takes place in South Korea as seen at the following website which sources its data from the USDA:
3. <http://www.indexmundi.com/agriculture/?country=kr&commodity=palm-oil&graph=production>

## ARB Review and Action

Staff completed a review and an upward adjustment to the original posted carbon intensity is being proposed based on findings from the review. Staff is also in the process of initiating a rulemaking to consider comprehensive monitoring and third party verification for all pathways under the LCFS. Below is a summary of findings from the additional review:

- The CA-GREET model is a modified version of the Argonne GREET model. It includes modifications to account for regional differences for various regions and countries when supported by data. In cases where data is not readily available, staff use a conservative approach (potentially overestimating a pathway CI) to offset the likelihood of underestimating GHG emissions due to unavailability of regional factors in the estimation of a pathway carbon intensity.
- Although staff used a conservative approach for this pathway, based on findings for NG supply in South Korea<sup>1</sup>, staff made revisions to the CA-GREET model and is proposing an upward revision of the pathway CI from 20.37 g/MJ to 22.11 g/MJ.
- Staff will continue to monitor the LCFS system for potential 'fraud' or 'mislabeling' of feedstocks. Any evidence of such action will lead to appropriate enforcement action.
- The applicant attests to using only domestically sourced feedstock for the production of fuel that is shipped to California. Under the provisions being considered (see below), monitoring and verification protocols may be instituted to ensure the validity of the information stated in the pathway application.
- Monitoring and ensuring fair labor practice is not enforceable under the current regulatory framework of the LCFS.
- ARB is in the process of implementing a monitoring and verification program under the LCFS to ensure that all applicants comply with all stated information in their respective pathway applications. This will include traceability of feedstocks used in the production of transportation fuels for the LCFS program. In advance of rolling out such a program, ARB will exercise its rights to audit the applicant under the existing enforcement provisions in the regulation.

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<sup>1</sup> EIA, Beta, "South Korea: International energy data and analysis", Last Updated October 25, 2015. Accessed January 7, 2016. <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>

Staff proposes to certify the pathway with the updated CI listed above.