

## **Comment on the Universal Biofuels LCFS Method 2 Fuel Pathway Application**

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

- India imports some of its NG from overseas destinations which must be considered in the analysis of this pathway
- T&D losses in India are significantly higher than the GREET T&D losses for electricity
- Energy consumption in some Indian refineries are twice as large as the benchmark energy consumption
- 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 from Universal Biofuels**

California Air Resources Board  
1001 "I" Street  
Sacramento, CA 95814

RE: Public Comments on the Pathway Application for UCO, Tallow based biodiesel produced at Universal Biofuel Private Ltd.

To Whom It May Concern,

Thank you for the opportunity to respond to the public comments made by the NBB and CBA regarding Aemetis' application for a Carbon Intensity value for the biodiesel produced at Universal Biofuels located in Kakinada, India.

We would like to present some background information to put the questions presented in context, identify the points raised, and then address each to explain their non-applicability.

## **Company Background**

Universal Biofuels Private Ltd. is a wholly owned and operated subsidiary of Aemetis, Inc., a U.S. renewable fuels and biochemical company, headquartered in Cupertino, California. Aemetis owns and operates a 60 million gallon per year capacity ethanol and animal feed production facility in Keyes, California. In 2014 Aemetis revenues were \$208 million. The company has over 130 employees worldwide, and is publically traded on the NASDAQ stock market under the symbol AMTX.

Aemetis has, and will continue to, conduct its business with the highest ethical standards and business practices. A Code of Business Conduct and Ethics applies to all directors, officers and employees of Aemetis, Inc., as well as to directors, officers and employees of each subsidiary of Aemetis, Inc.<sup>1</sup> Furthermore, as a publically traded company, Aemetis is subject to all the rules which govern NASDAQ companies<sup>2</sup> which include extensive internal controls and quarterly audited financials, which are publically disclosed. Aemetis is vulnerable to the same consequences related to non-compliance as other U.S. companies.

Aemetis has 100% owned and operated the Universal plant since 2008 and employs all full-time employees worldwide. Universal Biofuels Private, Ltd, as a subsidiary of Aemetis, Inc., maintains the same strict ethical standards of controls, audits, and public disclosure.

## **UCO, Tallow Application Background**

The Universal Biofuels Ltd. (Universal) pathway for UCO and Tallow were calculated to incorporate the most conservative energy use for biodiesel production and feedstock used in said production. The facility operates two refining units: biodiesel, glycerin, as well as administration activities, all consume its share of the total energy purchased by the facility. However, in the CA-GREET model and in our application, the energy allocation at the facility has been entirely dedicated to biodiesel production even though the other refining units and administrative activities taking place at the facility make up approximately half of the energy consumed. Universal's conservative estimates result in a higher CI value to the pathway, and provides a significant buffer, which far exceeds the energy loss stipulated in the comment.

## **Comments Brought Forth by NBB, CBA**

The concerns of the commenters focus on the following:

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<sup>1</sup> Aemetis' Code of Ethics and processes for reporting suspected wrongdoing can be found at <http://www.aemetis.com/investors/governance/code-of-ethics/>

<sup>2</sup> <http://nasdaq.cchwallstreet.com/NASDAQTools/bookmark.asp?id=nasdaq-bylaw-secEquityRules&manual=/nasdaq/main/nasdaq-equityrules/>

1. The rate of energy loss during the transmission of electricity;
2. The difference in the CI of energy use caused by the use of LNG for India's utility infrastructure.

### **1. Rate of Energy Loss during Electricity Transmission**

The comments incorrectly cite India's overall electricity transmission and distribution citing (T&D) losses are almost 20%. The electricity T&D losses in the GREET model are assumed to be 8.1%, potentially underestimating actual T&D losses by a factor of 12% points, resulting in a lower CI value for the fuel produced at the Universal facility. The comments below correctly cite the EIA to support this case.

According to US EIA<sup>3</sup>, cited by NBB "India's T&D losses are almost 20% of electricity generation... some loss is inevitable, but in places with good technical efficiency and low theft, T&D losses generally range between 6% and 8%. Most of India's T&D losses result from theft, which occurs when consumed electricity is not accounted for. Electricity is typically stolen by bypassing or tampering with the meter, or by bribing utility meter readers or billing agents."

Based on this statement, most of the approximately 20% T&D losses result from theft, which means less than 10% of the losses result from technical inefficiency. This rate of T&D loss is reasonably in line with the 8.1% T&D loss in the GREET model used to model the Universal pathway.

According to the Government of India Power Finance Corporation Ltd., the total Aggregate Technical & Commercial losses (AT&C) were 15.27% for the Andhra Pradesh region<sup>4</sup> where the Universal facility is located. This narrows the suggested potential underestimation of T&D loss to approximately 7% points.

Further, according to the EIA<sup>5</sup>, "While it is true that India has one of the highest levels of electricity transmission and distribution (T&D) losses in the world... in places with good technical efficiency and low theft, T&D losses generally range between 6% and 8%." This rate of T&D loss is reasonably in line with the 8.1% T&D loss in the GREET model used to model the Universal pathway.

Assuming, theoretically, the alleged T&D loss figure is actually higher than the input in the GREET model, it would contribute to a very small increase in the CI value for the pathway. However, because Universal has conservatively assigned all the electricity use at the Universal facility to biodiesel production, the potential increase in CI represented by any T&D loss, higher than the value assumed in GREET, would only minimally effect the CI score for the UCO and Tallow pathways. This is because the biodiesel refining unit's portion of the Universal facility only consumes approximately half of the total energy consumed there. The other half is consumed by the glycerin and

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<sup>3</sup> <https://www.eia.gov/todayinenergy/detail.cfm?id=23452>

<sup>4</sup> <http://www.pfcindia.com/writereaddata/userfiles/file/ResearchReport/Report%20on%20the%20Performance%20of%20State%20Power%20Utilites%20for%20the%20years%202009-10%20to%202011-12.pdf>

<sup>5</sup> <https://www.eia.gov/todayinenergy/detail.cfm?id=23452>

administrative operations. This conservative value outweighs any potential increase from greater T&D losses in electricity.

## **2. LNG Use Impact on CI Score**

The comments further suggest that India's high levels of LNG imports could raise the CI value of Universal's biodiesel. The increase of CI caused by use of LNG imported by ocean tanker instead of NG transported by pipeline will be small, and is easily covered by the conservative assumptions taken for the Universal Biofuels Private Ltd. pathways as described in the previous sections.

The major portion of Carbon Intensities for both LNG and NG come from the combustion stage, which is the same for 1 MJ of LNG and NG. The contribution of liquefaction and transport to the CI results in only a slightly higher CI for LNG relative to NG<sup>6</sup>: The contribution of overseas liquefaction is the same for US and foreign LNG use. And, as India is geographically closer to the major LNG exporting regions than the United States, the LNG imported into India will have a lower CI than LNG imported into the United States.

Even if a more conservative CI was used (from LNG imported into the United States in the above cited report) for LNG in our GREET model, the increase of CI for biodiesel produced at Universal is minimal and is outweighed by the conservative values taken for processing and feedstock CI values. Further, reports published by International Energy Agency (IEA)<sup>7</sup>: state: "India's natural gas demand reached 65 billion cubic metres (bcm) in 2011 and accounted for only 8% of India's energy mix. As with oil, India's natural gas reserves are considered to be quite small. It produced around 40 bcm of natural gas in 2012, and imports the remaining 17.5 bcm in the form of liquefied natural gas (LNG) from Qatar, mainly to its two terminals located off its western coast." Universal's major energy sources are biodiesel, diesel, rice husks and electricity. Natural gas use is not a primary source of energy and therefore the alleged fraction of an increase in the LNG is once more a fraction of the total energy production of Universal's plant which is once more a fraction of the energy mix of Andhra Pradesh. Additional cited reports contained in this response further support these fact based assumptions.

## **Conclusion**

As stated previously, the Universal Biofuels Ltd. pathway has been calculated to incorporate the most conservative energy use for biodiesel production. The energy allocation at the facility has been entirely dedicated to biodiesel production. In addition, the Universal tallow pathway uses the most conservatively high energy rendering tallow and UCO values available. These conservative values are much greater than any adjustments suggested by NBB and CBA, and therefore would have no effect on the posted pathways.

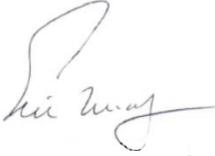
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<sup>6</sup> [http://www.arb.ca.gov/fuels/lcfs/092309lcfs\\_lng.pdf](http://www.arb.ca.gov/fuels/lcfs/092309lcfs_lng.pdf)

<sup>7</sup> [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_India.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_India.pdf)

Thank you in advance for your consideration. If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,



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### **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.
- Electricity losses in Andhra Pradesh province in India where this facility is based is estimated by ARB staff to be 15.3 percent.<sup>8</sup> Although pilferage of electricity is widespread in India, staff was not able to conclusively split the losses into T&D losses and theft. To be conservative, staff proposes to update the CA-GREET electricity to reflect the 15.3 percent T&D losses for this pathway.
- An online search of relative energy use by regional petroleum refineries in India (Andhra Pradesh province) did not provide any energy consumption information. The use of refined products for these pathways is negligible and no adjustment was deemed necessary.

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<sup>8</sup>"The Performance of State Power Utilities for the years 2009-10 to 2011-12", Power Finance Corporation Ltd. (A Govt. of India Undertaking).

- 29 percent of NG used in India is imported as LNG<sup>9</sup> and this was included in the CA-GREET analysis for the two pathways.
- The CA-GREET analysis was updated to reflect the higher T&D losses and the imported LNG and the proposed upward revision in CIs for the two pathways is shown in the Table below:

	Posted CI (g/MJ)	Proposed revised CI (g/MJ)
UCO to Biodiesel	24.21	24.45
Tallow to Biodiesel	55.42	57.84

- 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.
- 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 rulemaking to consider adding enhanced monitoring and a third-party verification program under the LCFS. This may 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.

Staff proposes to certify the two pathways with the revised CIs listed above.

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<sup>9</sup> EIA, Beta, “India: International energy data and analysis”, Last Updated June 26, 2014. Accessed January 7, 2016. <https://www.eia.gov/beta/international/analysis.cfm?iso=IND>