UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 6 2011

OFFICE OF
AIR AND RADIATION

Mr. Luke Ice - President and Partner
Global Energy Resources
7415 Nelson Rd.
Fort Wayne, Indiana 46803

Dear Mr. Ice:

You requested a determination of whether Global Energy Resources (GER) proprietary renewable diesel fuel products, when made with electricity as a process energy source and feedstocks such as soybean oil, would qualify as biomass-based diesel and advanced biofuel under the Renewable Fuel Standard Program (RFS2).

The GER fuel pathway is not described under the existing approved fuel pathways in the RFS2 regulations. Through the petition process described under 40 CFR 80.1416, GER submitted data to EPA necessary to perform a lifecycle greenhouse gas analysis of the GER fuel pathway. In conducting our detailed assessment, my staff largely relied on the soy biodiesel modeling that we conducted for the RFS2 final rule, adjusting the analysis to account for GER's unique production process. The enclosed document "Global Energy Resources Request for Fuel Pathway Determination under the RFS2" describes the data submitted by GER, the analysis conducted by EPA, and our determination of the lifecycle greenhouse gas emissions associated with the fuel production pathway described in GER's petition.

Based on our assessment, the proposed GER renewable diesel pathway qualifies for Biomass-Based Diesel and Advanced Biofuel (D-codes 4 & 5, respectively) RINs under the RFS2. The pathway has been determined to qualify based on an analysis of soybean oil as a feedstock. However, our approval also covers certain other feedstocks that have been analyzed as part of the RFS2 rule and determined to have lower GHG emissions than soybean oil. These additional feedstocks are:

- Oil from annual cover crops;
- Algal oil;
- Biogenic waste oils/fats/greases;
- Non-food grade corn oil

This approval applies specifically to Global Energy Resources, and to the process, materials used, fuel produced, and process energy sources as specified in the petition request submitted by GER.

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow GER to register and generate RINs for the production of renewable diesel from the above feedstocks using a production process identified in EMTS as "GER Process."

If you have additional questions about this or related issues, please contact Robert Larson of my staff at 734-214-4277.

Sincerely,

Margo Tsirigotis Oge
Director
Office of Transportation and Air Quality

Enclosure

Global Energy Resources Request for Fuel Pathway Determination under the RFS2
Office of Transportation and Air Quality
March 22, 2011

**Summary:** Global Energy Resources (GER) petitioned the Agency to generate biomass based diesel and advanced biofuel RINs (D-code 4 & 5) under the RFS2 program for the production of a non-ester renewable diesel fuel using electricity for process energy and, for feedstock, soy bean oil, oil from annual cover crops, algal oil, biogenic waste oils/fats/greases and/or non food grade corn oil (the proposed "GER renewable diesel pathway.")

Through the petition process described under 40 CFR 80.1416, GER submitted data to EPA to perform a lifecycle greenhouse gas emissions analysis of the GER renewable diesel pathway. This involved a straightforward application of the same methodology, and much of the same modeling, used for the RFS2 final rule (75 FR 14670, March 26, 2010). GER's proprietary process begins with the blending of soy oil or other vegetable oil product with denatured ethanol and a proprietary ethyl based catalyst. GER uses denatured ethanol that has RINs attached or denatured ethanol that had RINs attached and separated prior to its use by GER. (GER will not be authorized to generate RINs for the ethanol portion of their fuel as determined on the basis of feedstock energy content according to 40 CFR 80.1426.[1]) The blended product is processed through a high-pressure pump to achieve a complete molecular bond that will not separate under extreme heat or cold temperature. Finally, the blended product is filtered before it is ready for distribution and use. GER utilizes a unique biofuel production process, but the GER renewable diesel pathway does not otherwise significantly differ from certain of the pathways modeled for the RFS2 final rule.

As outlined in the preamble to the final RFS2 rule, this is the type of pathway that EPA envisioned would be evaluated by comparing the petitioner's fuel pathway to pathway(s) that had already been analyzed. EPA's evaluation of the GER renewable diesel pathway did not require significant new analysis. EPA performed its assessment based on the modeling done for the soybean biodiesel pathway performed as part of the RFS2 rulemaking. Compared to soybean biodiesel[2], the GER process is more efficient and therefore had less GHG impacts related to feedstocks, but does not produce a co-product like soybean biodiesel so had higher GHG impacts comparative to the soybean oil fuel production process. Based on the data submitted and the existing soy biodiesel modeling, EPA conducted a lifecycle assessment and determined that the GER renewable diesel pathway meets the 50% lifecycle GHG threshold requirement defined in EISA for biomass-based diesel and advanced biofuels. For the GER renewable diesel pathway, the midpoint of the range of results is a 55% reduction in GHG emissions compared to the diesel fuel baseline. Based on our assessment, the GER

[1] To avoid double counting, the lifecycle GHG emissions related to producing and delivering the ethanol feedstock to the GER process are not included in our lifecycle assessment for today's new fuel pathway determination.

[2] GER produces a "non-ester renewable diesel", rather than "biodiesel," as defined in 40 CFR 80.1401. However, the soybean biodiesel pathway analyzed for the RFS2 final rulemaking is the closest modeled pathway to the GER process, and was therefore used to evaluate the GER process where appropriate.

renewable diesel pathway qualifies for generating RINs for Biomass-Based Diesel and Advanced Biofuel (D-codes 4 & 5, respectively).

This document is organized as follows:

- *Section I. Required Information and Criteria for Petition Requests*: This section contains information on the background and purpose of the petition process, the criteria EPA uses to evaluate the petitions and the information that is required to be provided under the petition process as outlined in 40 CFR 80.1416. This section is not specific to GER's request and applies to all petitions submitted pursuant to 40 CFR 80.1416. .
- *Section II. Available Information*: This section contains background information on GER and describes the information that GER provided and how it complies with the petition requirements outlined in Section I.
- *Section III. Analysis and Discussion*: This section describes the lifecycle analysis done for the GER renewable diesel pathway and identifies how it differs from the analysis done for soybean biodiesel in the RFS2 final rule. This section also describes how we have applied the lifecycle results to determine what category of D-Codes the GER renewable diesel pathway qualifies for.
- *Section IV. Public Participation*: The section describes how this petition is an extension of the analysis done as part of the RFS2 final rulemaking.
- *Section V. Conclusion*: The section summarizes our conclusions regarding GER's petition, including the D-codes GER may use in generating RINs for fuel produced using the GER renewable diesel pathway.

## I. Required Information and Criteria for Petition Requests

### A. Background and Purpose of Petition Process

As part of changes to the Renewable Fuel Standard program (RFS2), EPA adopted new regulations that specify the types of renewable fuels eligible to participate in the RFS2 program and the procedures by which renewable fuel producers and importers can generate Renewable Identification Numbers (RINs) for the qualifying renewable fuels they produce through approved fuel pathways. See 75 FR.14670 (March 26, 2010); 75 FR 26026 (May 10, 2010); 75 FR 37733 (June 30, 2010); 75 FR 59622 (September 28, 2010); 75 FR 76790 (December 9, 2010); 75 FR 79964 (December 21, 2010).

Pursuant to § 80.1426(f) (1) of the RFS2 regulations:

*Applicable pathways. D codes shall be used in RINs generated by producers or importers of renewable fuel according to the pathways listed in Table 1 to this section, subparagraph 6 of this section, or as approved by the Administrator.*

Table 1 to § 80.1426(f) of the RFS2 regulations lists three critical components of a fuel pathway: (1) fuel type, (2) feedstock, and (3) production process. Each specific combination of the three components, or fuel pathway, is assigned a D code. EPA may also independently approve

additional fuel pathways not currently listed in Table 1 for participation in the RFS2 program, or a third party may petition for EPA to evaluate a new fuel pathway in accordance with § 80.1416. In addition, producers of facilities identified in 40 CFR 1403(c) and (d) that are exempt from the 20% GHG emissions reduction requirement of the Act may generate RINs with a D code of 6 pursuant to 80.1426(f)(6).

The petition process under § 80.1416 allows parties to request that EPA evaluate a new fuel pathway's lifecycle GHG reduction and provide a determination of the D code for which the new pathway may be eligible.

**B. Required Information in Petitions**

As specified in 40 CFR 80.1416(b)(1), petitions must include all of the following information, and should also include as appropriate supporting documents such as independent studies, engineering estimates, industry survey data, and reports or other documents supporting any claims:

- The information specified under § 80.76 (Registration of refiners, importers or oxygenate blenders).
- A technical justification that includes a description of the renewable fuel, feedstock(s), and production process. The justification must include process modeling flow charts.
- A mass balance for the pathway, including feedstocks, fuels produced, co-products, and waste materials production.
- Information on co-products, including their expected use and market value.
- An energy balance for the pathway, including a list of any energy and process heat inputs and outputs used in the pathway, including such sources produced off site or by another entity.
- Any other relevant information, including information pertaining to energy saving technologies or other process improvements.
- Other additional information as requested by the Administrator to complete the lifecycle greenhouse gas assessment of the new fuel pathway.

In addition to the requirements stated above, parties who use a feedstock not previously evaluated by EPA must also include the following, and should also include as appropriate supporting information such as state, county, or regional crop data, commodity reports, independent studies, industry or farm survey data, and reports or other documents supporting any claims:

- Type of feedstock and description of how it meets the definition of renewable biomass.
- Market value of the feedstock.
- List of other uses for the feedstock.

- List of chemical inputs needed to produce the renewable biomass source of the feedstock and prepare the renewable biomass for processing into feedstock.
- Energy needed to obtain the feedstock and deliver it to the facility. If applicable, identify energy needed to plant and harvest the source of the feedstock and modify the source to create the feedstock.
- Current and projected yields of the feedstock that will be used to produce the fuels.
- Other additional information as requested by the Administrator to complete the lifecycle greenhouse gas assessment of the new fuel pathway.

## II. Available Information

### A. Background on GER

GER requested authorization to generate D code 4 and 5 RINs for the GER renewable diesel pathway. A petition is required because the GER renewable diesel pathway is not included as an approved process under the Advanced Biofuel or Biomass-Based Diesel categories in Table 1 to § 80.1426(f) of the RFS2 regulations. The Table includes renewable diesel made from soybean oil, but only if the production process is trans-esterification or hydrotreating. The GER fuel production process is not considered either trans-esterification or hydrotreating. GER has a proprietary process that subjects soybean oil or other feedstocks to high shear and temperature conditions in the presence of ethanol and catalyst, producing a renewable diesel.[3]

### B. Information Available through Existing Modeling

In terms of GER's petition to generate Biomass-Based Diesel and Advanced Biofuel RINs from soy bean oil, oil from annual cover crops, algal oil, biogenic waste oils/fats greases and non-food grade corn oil, there are two relevant existing pathways excerpted from Table 1 to 80.1426, as shown below:

[3] In accordance with GER's registration under 40 CFR Part 79, their fuel additives ("New Generation Diesel") may only be blended up to 5 percent by volume with diesel fuel used for on-road transportation fuel purposes.

**Table 1: Excerpts of Existing Fuel Pathways from 40 CFR 80.1426**

| Fuel Type | Feedstock | Production Process Requirements | D-Code |
|---|---|---|---|
| Biodiesel, and renewable diesel | Soy bean oil;<br>Oil from annual cover crops;<br>Algal oil;<br>Biogenic waste oils/fats/greases;<br>Non-food grade corn oil | One of the following:<br>Trans-Esterification<br>Hydrotreating<br>*Excluding processes that co-process renewable biomass and petroleum* | 4 (Biomass-Based Diesel) |
| Biodiesel, and renewable diesel | Soy bean oil;<br>Oil from annual cover crops;<br>Algal oil;<br>Biogenic waste oils/fats/greases;<br>Non-food grade corn oil | One of the following:<br>Trans-Esterification<br>Hydrotreating<br>*Includes only processes that co-process renewable biomass and petroleum* | 5 (Advanced Biofuel) |

A fuel pathway under RFS2 is defined by three components: (1) fuel type, (2) feedstock, and (3) production process. For the GER renewable diesel pathway addressed in GER's petition, GER would use feedstock and produce a fuel that has already been analyzed as part of the RFS2 final rule and included in Table 1 to § 80.1426(f) of the RFS2 regulations. Therefore no new feedstock modeling was required as that was already done as part of the RFS2 final rule. Similarly, EPA has already evaluated the end use tailpipe emissions impact of using renewable diesel as a transportation fuel. This petition only requires EPA to evaluate a new fuel production process.

The same analytical approach that was used to evaluate the lifecycle GHG emissions of the two existing pathways noted above was used to analyze the GER renewable diesel pathway. The only difference is that the fuel production process step was adjusted to reflect the GER process. The GER fuel production process was evaluated for its direct emissions and its impact on the amount of feedstock and fuel produced which in turn impacts other parts of the analysis as described in the following sections. Included below is a description of the modeling approach used, highlighting the changes that were made from the analysis used in the RFS2 final rule to analyze the GER petition request.

The preamble to the RFS2 final rule describes the modeling approach used to estimate lifecycle GHG emissions from soybean-based biodiesel. The preamble describes the models and data used as well as the input and output streams from those models to calculate the emissions for each of the lifecycle stages. To modify the soybean-based biodiesel analysis to reflect the GER fuel pathway, the biggest change required was replacing the biodiesel production process data with the GER process data. This resulted in the following changes to the modeling (described in more detail in the following sections):

- Amount of soybean oil used in the fuel production process reduced to reflect GER's efficiency in terms of oil input per Btu of fuel produced
- Amount of soybeans needed in feedstock transport and production also reduced to reflect GER's yield efficiency
- Amount of energy used by the fuel production process and associated emissions from fuel production and use changed to reflect GER's data provided in their energy balance
- Amount and type of materials used in the fuel production process and associated emission factors for production of those materials changed to reflect GER's data provided in their mass balance
- Elimination of co-product produced in the fuel production process to reflect the fact that GER's process does not produce a co-product
- Amount and type of fuel product produced changed to reflect GER's yield and type of fuel produced

This was a straightforward analysis based on existing modeling done for the RFS2 final rule and substituting GER's proprietary process data, which for the most part only altered the amounts of inputs and outputs and not the fundamental modeling approach.

### C. Information Submitted by GER

GER has supplied all the required information on their production process for EPA to analyze their product and make a determination. Information submitted includes fuel and facility registration information, a technical justification that has a description of the fuel, feedstocks used, their proprietary production process, a detailed mass and energy balance of the process with information on co-products as applicable, and other additional information as needed to complete the lifecycle greenhouse gas assessment.[4]

## III. Analysis and Discussion

### A. Lifecycle Analysis

Determining a fuel pathway's compliance with EISA's lifecycle GHG reduction thresholds requires a comprehensive evaluation of the renewable fuel, as compared to the gasoline or diesel that it replaces, on the basis of its lifecycle GHG emissions. As mandated by EISA, the GHG emissions assessments must evaluate the aggregate quantity of GHG emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes) related to the full

[4] GER neglected to include process flow charts in its petition, as required by 80.1416(b)(1)(ii). However, EPA was able to fully evaluate the merits of the petition without this information, so is waiving this petition requirement.

lifecycle, including all stages of fuel and feedstock production, distribution, and use by the ultimate consumer.

In examining the full lifecycle GHG impacts of renewable fuels for the RFS2 program, EPA considers the following:

- Feedstock production – based on agricultural sector models that include direct and indirect impacts of feedstock production.
- Fuel production – including process energy requirements, impacts of any raw materials used in the process, and benefits from co-products produced.
- Fuel and feedstock distribution – including impacts of transporting feedstock from production to use, and transport of the final fuel to the consumer.
- Use of the fuel – including combustion emissions from use of the fuel in a vehicle.

EPA's evaluation of the lifecycle GHG emissions of the GER renewable diesel pathway under this petition request was consistent with EISA's applicable requirements, including the definition of lifecycle greenhouse gas emissions and threshold evaluation requirements. It was based on information that GER submitted on its production process under a claim of Confidential Business Information (CBI) via email on June 30, 2010, September 14, 2010 and February 17, 2011.

GER's mass and energy balance was provided in terms of mass and energy balance per gallon of product. GER's fuel lifecycle GHG emissions were determined as follows:

**Feedstock production** – GER's fuel product utilizes the renewable feedstocks noted above in Table 1 to § 80.1426(f) of the RFS2 regulations, which have already been evaluated as part of the RFS2 final rule lifecycle GHG determinations, and therefore no new renewable feedstock production modeling was required. For the analysis of GER's process, EPA chose soybean oil to use as the base feedstock from which to analyze the GER renewable fuel pathway because it is one of the existing feedstocks proposed for use by GER and is also the feedstock proposed for use by GER with the highest GHG emissions. This conservative approach assumes that if GER's renewable diesel pathway passed the 50% lifecycle GHG thresholds for biomass based diesel and advanced biofuel with soybean oil, it could be determined that the pathway would also qualify using other lower GHG emitting feedstocks.

As discussed in the RFS2 final rule, the FASOM and FAPRI models were used to analyze the GHG impacts of the feedstock production portion of a fuel's lifecycle. The same FASOM and FAPRI raw results representing the emissions from an increase in soybean oil production that were generated as part of the RFS2 final rule analysis of soybean biodiesel were used in this analysis of the GER renewable diesel pathway. These results represent agriculture / feedstock production emissions for a certain quantity of soybean oil produced. For the RFS2 analysis, this was roughly 4,100 million lbs of

soybean oil used for fuel[5]. We have calculated GHG emissions from feedstock production for that amount of soybean oil. We do not believe GER's alternative process for converting soy oil into renewable diesel will materially affect the total amount of soy oil used for biofuels and modeled as part of the RFS2 final rule. Therefore, the existing agricultural sector modeling analyses for soy oil as a feedstock remain valid for use in estimating the lifecycle impact of renewable fuel produced using the GER renewable diesel pathway. (See discussion of scaling adjustments, below).

For the soybean biodiesel case this resulted in approximately 63,720,000 mmBtu of soybean biodiesel produced, based on a yield of 7.6 lb of oil/gal of biodiesel and a heating content of 118,000 Btu/gal of biodiesel. The FASOM and FAPRI agricultural sector GHG results were divided by the total energy value of fuel produced to get emissions per mmBtu.

To avoid double counting, the lifecycle GHG emissions related to the production and delivery of denatured ethanol to GER were not considered in our assessment because, as discussed above, the GER process uses denatured ethanol that has (or had) RINs attached.

GER provided, as part of the information they claim is CBI, data on the process yield in terms of pound of oil per gal of fuel produced as well as the heating content of their fuel in Btu/gal. Based on that data, GER's process yield is more efficient than soybean biodiesel production in terms of gallons produced per lb of soybean oil used and the energy content of GER's fuel product is greater than soybean oil biodiesel. Therefore, compared to biodiesel already analyzed, the GER process results in ~5% more Btus of fuel produced for the same amount of soybean oil feedstock. Therefore the FASOM and FAPRI results were scaled down by ~5% based on the greater amount of energy produced by the GER process compared to soybean biodiesel to get new feedstock production emission for GER.

The scaling down of the agricultural sector results impacted several components of the GER fuel lifecycle analysis. It impacted feedstock production, direct and indirect emissions as well as the indirect land use change emissions. The following components were impacted:

- Domestic Livestock
- Domestic Farm Inputs and Fertilizer N2O
- Domestic Rice Methane
- Domestic Land Use Change
- International Livestock
- International Farm Inputs and Fertilizer N2O
- International Rice Methane
- International Land Use Change

[5] The actual amount was slightly different between the FASOM and FAPRI models due to slightly different volumes of fuel modeled. FAPRI results are used for illustrative purposes.

Overall, compared to soybean biodiesel production, the GER renewable diesel pathway is more efficient, meaning there is less land use change (with associated greenhouse gas emissions) and fewer agricultural sector impacts per Btu of fuel produced. Table 2 highlights the differences between the agricultural and land use change results of the GER renewable diesel pathway and the soybean biodiesel pathway.

**Table 2: Comparison of Agricultural Sector and Land Use Change Impacts for GER Renewable Diesel and Soybean Biodiesel**

| Lifecycle Stage | Soybean Biodiesel (g $CO_2$-eq./mmBtu) | GER Renewable Diesel (g $CO_2$-eq./mmBtu) |
|---|---|---|
| Domestic Livestock | -2,100 | -1,980 |
| Domestic Farm Inputs and Fertilizer $N_2O$ | 106 | 100 |
| Domestic Rice Methane | -7,950 | -7,494 |
| Domestic Land Use Change | -8,896 | -8,386 |
| International Livestock | -6,436 | -6,194 |
| International Farm Inputs and Fertilizer $N_2O$ | 5,402 | 5,199 |
| International Rice Methane | 2,180 | 2,098 |
| International Land Use Change | 42,543 | 40,947 |
| **Total Feedstock Production Emissions:** | **24,848** | **24,290** |

**Fuel production** – GER's fuel production method is different than the two approved production processes (trans-esterification and hydrotreating) already analyzed for the RFS2 final rule. GER's proprietary process begins with the blending of soy oil or other vegetable oil product with denatured ethanol and a proprietary ethyl based catalyst. The blended product is processed through a high-pressure pump to achieve a complete molecular bond that will not separate under extreme heat or cold temperature. Finally, the blended product is filtered before it is ready for distribution and use. The yield of biofuel per pound of soy oil and the amount of energy and raw materials used are different than production methods that were analyzed. One difference is that GER's process results in more fuel produced per amount of raw materials used. Another difference is that no co-product is produced, unlike the soybean biodiesel production process. To analyze the GHG impacts of GER's process, EPA utilized the same approach that was used to determine the impacts of processes considered as part of the RFS2 final rule.

The GHG emissions for the fuel production component of GER's fuel lifecycle determination were based on the following emission sources:

- Type and amount of energy used and associated emissions per mmBtu of fuel produced

petroleum diesel fuel baseline. In the figure, the zero on the x-axis represents the lifecycle GHG emissions equivalent to the 2005 petroleum diesel fuel baseline. The y-axis in the figure represents the likelihood that possible results would have a specific GHG reduction value shown. The area under the curve represents all the possible results. No new uncertainty analysis was done for the GER process; rather the uncertainty ranges developed as part of the RFS2 final rule analyses were scaled based on the differences in the GER process as were described previously.

For GER's fuel pathway, the midpoint of the range of results is a 55% reduction in GHG emissions compared to the diesel fuel baseline. The 95% confidence interval around that midpoint results in range of a 21% reduction to an 83% reduction compared to the 2005 petroleum diesel fuel baseline. These results justify authorizing the generation of biomass-based diesel and advanced biofuel RINs for fuel produced by the GER renewable diesel pathway, assuming that the fuel meets the other definitional criteria for renewable fuel (e.g., produced from renewable biomass, and used to reduce or replace petroleum-based transportation fuel, heating oil or jet fuel) specified in EISA.

**Figure 1: Distribution of LCA Results for the GER Renewable Diesel Pathway**

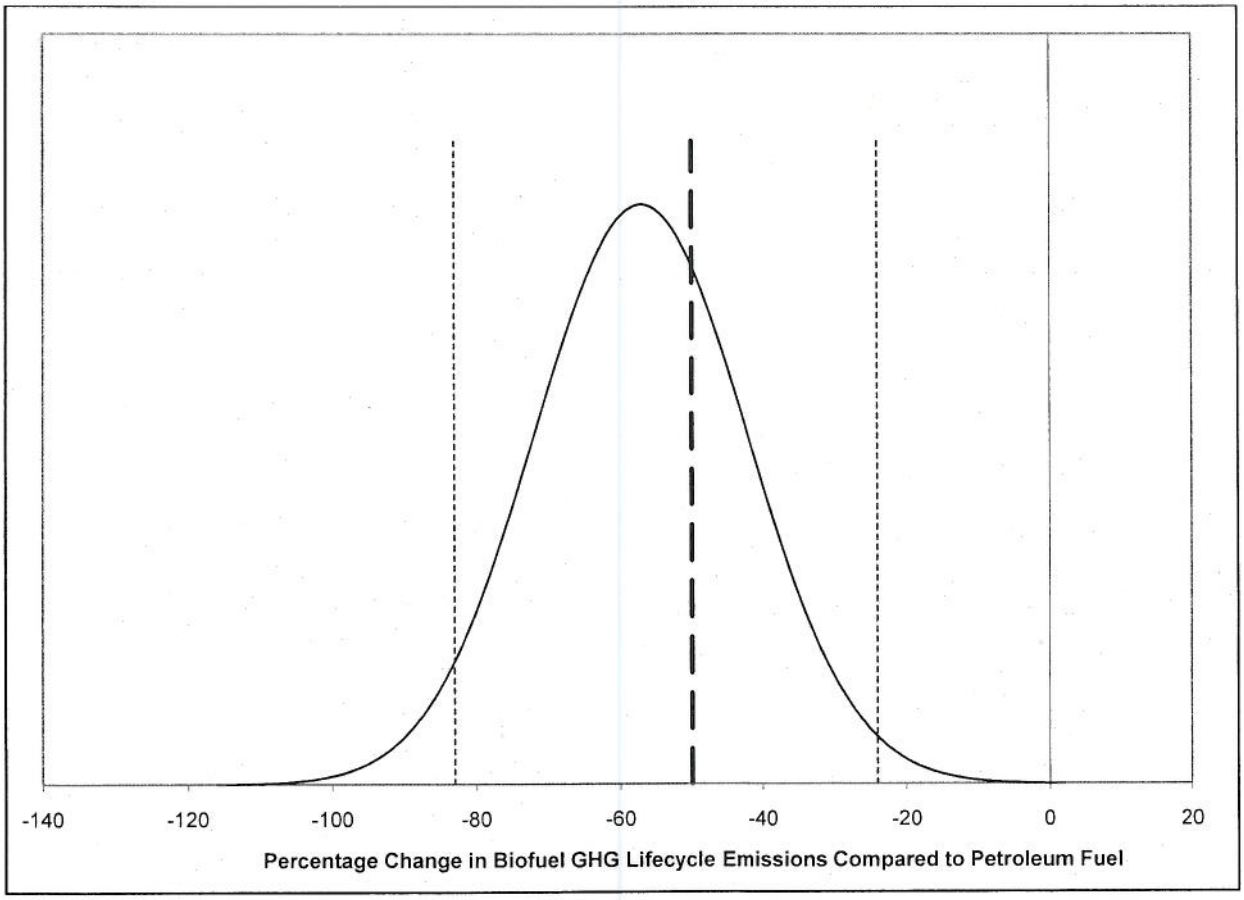


Table 4 below breaks down by stage the lifecycle GHG emissions for the GER renewable diesel pathway, the soybean biodiesel fuel pathway done as part of the RFS2 final rule, and the 2005 diesel baseline. This table demonstrates the contribution of each stage in the fuel pathway and its relative significance in terms of GHG emissions.

**Table 4: Lifecycle GHG Emissions for GER's Fuel Pathway, 2022 (kg CO2-eq./mmBtu)**

| Fuel Type | Soybean Oil Biodiesel | GER | 2005 Diesel Baseline |
|---|---|---|---|
| Net Domestic Agriculture (w/o land use change) | -10 | -9 | |
| Net International Agriculture (w/o land use change) | 1 | 1 | |
| Domestic Land Use Change | -9 | -8 | |
| International Land Use Change, Mean *(Low/High)* | 43 *(15/76)* | 41 *(14/73)* | |
| Fuel Production | 13 | 15 | 18 |
| Fuel and Feedstock Transport | 3 | 3 | * |
| Tailpipe Emissions | 1 | 1 | 79 |
| **Total Emissions, Mean *(Low/High)*** | **42 *(14/76)*** | **44 *(17/76)*** | **97** |

*Emissions included in fuel production stage.

## IV. Public Participation

The definitions of biomass based diesel and advanced biofuel in CAA 211(o)(1) specify that the term means renewable fuel that have "lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, that are at least 50 percent less than the baseline lifecycle greenhouse gas emissions..." As part of the RFS2 rulemaking process, we took public comment on our lifecycle assessment of soy biodiesel, including all models used and all modeling inputs and evaluative approaches. We also acknowledged that it was unlikely that our final regulations would address all possible qualifying fuel production pathways, and we took comment on allowing parties to generate RINs using a temporary D code in certain circumstances while EPA was evaluating such new pathways and updating its regulations. After considering comments, we finalized the current petition process, where we allow for EPA approval of certain petitions without going through additional rulemaking if we can do so as a reasonably straightforward extension of the assessments conducted as part of the RFS2 rule, whereas rulemaking would be conducted to respond to petitions requiring significant new modeling. See 58 FR 14797 (March 26, 2010).

In responding to this petition, we have largely relied on the same soy biodiesel modeling that we conducted for the RFS2 final rule, and have simply adjusted the analysis to account for GER's unique production process. This includes relying on the same agricultural sector modeling (FASOM and FAPRI results) that was conducted and commented on as part of the RFS2 final rule to represent feedstock production. This also includes use of the same emission factors and types of emission sources that were used in the RFS2 final rule analysis. Thus, the fundamental analyses relied on for this decision have been made available for public comment as part of the RFS2 final rule, consistent with the reference to notice and comment in the statutory definitions of "advanced biofuel " and "biomass based diesel." Our approach today is also consistent with our description of the petition

process in the preamble to the final RFS2 rule, as our work in responding to the petition was a logical extension of analyses already conducted.

## V. Conclusion

Based on our assessment, fuel produced using the GER renewable diesel pathway qualifies for Biomass-Based Diesel and Advanced Biofuel (D-codes 4 & 5, respectively) RINs under the RFS2. The pathway has been determined to qualify based on an analysis of soybean oil as a feedstock. However, our approval also covers certain other feedstocks that have been analyzed as part of the RFS2 rule and determined to have lower GHG emissions than soybean oil. These additional feedstocks are:

- Oil from annual cover crops;
- Algal oil;
- Biogenic waste oils/fats/greases;
- Non-food grade corn oil

This approval applies specifically to GER Energy LLC, and to the process, materials used, fuel produced, and process energy sources as outlined and provided in the petition request submitted by GER. EPA will extend a similar approval to other petitioners utilizing the same fuel pathway as GER upon verification that the pathway is indeed the same.

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow GER to register and generate RINs for the production of renewable diesel from the above feedstocks using a production process of "GER Process."