



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

APR 13 2017

**OFFICE OF
AIR AND RADIATION**

Mr. Chad Stone
Chief Financial Officer
Renewable Energy Group, Inc.
416 South Bell Avenue
Ames, Iowa 50010

Dear Mr. Stone:

You petitioned the Agency on behalf of Renewable Energy Group, Inc. (REG), to approve a pathway for the generation of advanced biofuel RINs for naphtha and liquified petroleum gas (LPG) made from non-food grade corn oil ("NFG corn oil") feedstock through a hydrotreating production process. REG's facility located in Geismar, Louisiana uses grid electricity, natural gas, and hydrogen produced from natural gas via steam methane reforming as energy sources, NFG corn oil as feedstock, and a hydrotreating production process to produce renewable diesel, naphtha and LPG fuel products (the "REG Geismar Process").

Through the petition process described under 40 CFR 80.1416, REG submitted data to EPA to perform a lifecycle GHG analysis of the naphtha and LPG fuel produced at the REG Geismar facility. This analysis involved a straightforward application of the same methodology and much of the same modeling used for the March 2010 RFS rule (75 FR 14670), the March 2013 RFS rule (78 FR 14190) and the October 2013 DGD determination.¹ The difference between this analysis and the modeling completed for these previous assessments is the evaluation of a modified fuel production process.

The attached document "Evaluation of Renewable Energy Group, Inc. Request for Fuel Pathway Determination under the RFS Program" describes the data submitted by REG, the analysis conducted by the EPA, and our determination of the lifecycle greenhouse gas emissions associated with the fuel production pathway described in REG's petition.

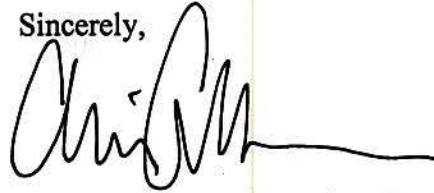
Based on our assessment, naphtha and LPG produced from NFG corn oil through the REG Geismar Process qualifies under the Clean Air Act (CAA) for advanced biofuel (D-code 5) RINs, assuming the fuel meets the other definitional criteria for renewable fuel (e.g., produced from renewable biomass, and used to reduce or replace the quantity of fossil fuel present in transportation fuel, heating oil or jet fuel) specified in the CAA and EPA implementing regulations.

This approval applies specifically to Renewable Energy Group, LLC, and to the process, materials used, fuels produced, and process energy types and amounts outlined and described in the petition request submitted by REG.

¹ <https://www.epa.gov/renewable-fuel-standard-program/diamond-green-diesel-llc-approval>

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow REG to register and generate RINs for naphtha and LPG produced from NFG corn oil through the REG Geismar Pathways using a production process of "REG Geismar Process."

Sincerely,



Christopher Grundler, Director
Office of Transportation and Air Quality

Enclosure

Evaluation of Renewable Energy Group, Inc. Request for Fuel Pathway Determination under the RFS Program

Office of Transportation and Air Quality

Summary: Renewable Energy Group, Inc. (REG) petitioned the Agency under the Renewable Fuel Standard (RFS) program to generate advanced biofuel (D-code 5) renewable identification numbers (RINs) for its naphtha and liquified petroleum gas (LPG) products. REG's facility located in Geismar, Louisiana uses grid electricity, natural gas, and hydrogen produced from natural gas via steam methane reforming as energy sources, non-food grade corn oil (NFG corn oil) as feedstock, and a hydrotreating production process to produce renewable diesel, naphtha and LPG fuel products (the "REG Geismar Process"). The REG Geismar Process utilizes a known renewable fuel production process called hydrotreating, which EPA has previously evaluated for the March 2010 RFS rule (75 FR 14670), the March 2013 RFS rule (78 FR 14190) and the October 2013 petition determination for Diamond Green Diesel, LLC (the "October 2013 DGD determination").² Based on the data submitted by REG, the evaluation of NFG corn oil feedstock for the March 2010 RFS final rule, and EPA's previous hydrotreating process modeling, EPA conducted a lifecycle assessment estimating that naphtha and LPG produced using the REG Geismar Process reduces lifecycle greenhouse gas (GHG) emissions compared to the statutory petroleum baseline by approximately 78 percent. Based on the results of our lifecycle GHG assessment, naphtha and LPG produced from NFG corn oil feedstock through the REG Geismar Process (the "REG Geismar Pathways") qualifies for advanced biofuel (D-code 5) RINs.

Through the petition process described under 40 CFR 80.1416, REG submitted data to EPA to perform a lifecycle GHG analysis of the naphtha and LPG fuel produced at the REG Geismar facility. This analysis involved a straightforward application of the same methodology and much of the same modeling used for the March 2010 RFS rule, the March 2013 RFS rule and the October 2013 DGD determination. The difference between this analysis and the modeling completed for these previous assessments is the evaluation of a modified fuel production process.

The fuel pathways requested by REG are the type of new pathways that EPA described in the preamble to the March 2010 RFS rule as capable of being evaluated by comparing the applicant's fuel pathways to the pathways that have already been analyzed. In the March 2010 RFS rule, EPA analyzed and approved pathways for renewable diesel produced from NFG corn oil through a hydrotreating process. In the March 2013 RFS rule, EPA conducted more detailed process modeling using data representing an industry average hydrotreating production process maximized for diesel fuel output and the same process maximized for jet fuel output.³ Based on this analysis, EPA approved a pathway for the use of camelina oil feedstock to produce renewable diesel, jet fuel, naphtha and LPG with a hydrotreating process. (In the March 2013 RFS rule EPA also approved pathways for jet fuel

² The petition determination for Diamond Green Diesel, LCC is available at: <http://www.epa.gov/renewable-fuel-standard-program/diamond-green-diesel-llc-approval>

³ Pearlson, M., Wollersheim, C., Hileman, J. (2013). "A techno-economic review of hydroprocessed renewable esters and fatty acids for jet fuel production." *Biofuels, Bioproducts & Biorefining*, 7:89-96

and heating oil produced with a hydrotreating process using NFG corn oil feedstock.) In the October 2013 DGD determination, EPA evaluated DGD's hydrotreating facility located in Norco, LA. The GHG impacts related to the REG Geismar Process are similar to the corresponding impacts from the industry average and DGD hydrotreating processes that EPA previously evaluated. Based on EPA's assessment using conservative assumptions, the REG Geismar Process has lower fuel production emissions than the previous hydrotreating processes EPA evaluated, and the emissions reduction are sufficient to qualify the fuel produced as advanced biofuel.

This document is organized as follows:

- *Section I. Required Information and Criteria for Petition Requests:* 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 REG's request and applies to all petitions submitted pursuant to 40 CFR 80.1416.
- *Section II. Available Information:* Background information on REG, the information that REG provided and how it complies with the petition requirements outlined in Section I.
- *Section III. Analysis and Discussion:* Description of the lifecycle analysis done for this determination and how it differs from the analyses done for previous assessments. This section also describes how we have applied the lifecycle results to determine the appropriate D-code for the REG Geismar Pathways.
- *Section IV. Conditions and Associated Regulatory Provisions:* Registration, reporting, and recordkeeping requirements for the REG Geismar Pathways.
- *Section V. Public Participation:* Description of how this petition is an extension of the analysis done as part of the March 2010 RFS rule and the March 2013 RFS rule.
- *Section VI. Conclusion:* Summary of our conclusions regarding REG's petition, including the D-code REG may use in generating RINs for fuel produced through the REG Geismar Pathways.

I. Required Information and Criteria for Petition Requests

A. Background and Purpose of Petition Process

As a result of changes to the RFS program in Clean Air Act section 211(o), as amended by the Energy Independence and Security Act of 2007 (EISA), EPA adopted new regulations, published at 40 CFR Part 80, Subpart M. The RFS regulations specify the types of renewable fuels eligible to participate in the RFS program and the procedures by which renewable fuel producers and importers may generate RINs for the qualifying renewable fuels they produce through approved fuel pathways.⁴

Pursuant to 40 CFR 80.1426(f)(1):

⁴ See EPA's website for information about the RFS regulations and associated rulemakings: <https://www.epa.gov/renewable-fuel-standard-program>

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 40 CFR 80.1426 lists the 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 RFS program, or a third party may petition for EPA to evaluate a new fuel pathway in accordance with 40 CFR 80.1416. In addition, producers of facilities identified in 40 CFR 80.1403(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 40 CFR 80.1426(f)(6) for a specified baseline volume of fuel (“grandfathered fuel”) assuming all other requirements are satisfied.⁵

The petition process under 40 CFR 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 40 CFR 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.

⁵ “Grandfathered fuel” refers to a baseline volume of renewable fuel produced from facilities that commenced construction before December 19, 2007 and which completed construction within 36 months without an 18-month hiatus in construction and is thereby exempt from the minimum 20% GHG reduction requirement that applies to general renewable fuel. A baseline volume of ethanol from facilities that commenced construction after December 19, 2007, but prior to December 31, 2009, qualifies for the same exemption if construction is completed within 36 months without an 18-month hiatus in construction and the facility is fired with natural gas, biomass, or any combination thereof.

- Any other relevant information, including information pertaining to energy saving technologies or other process improvements.
- The petition must be signed and certified as meeting all the applicable requirements of 40 CFR 80.1416 by the responsible corporate officer of the applicant company.
- 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 additional information. This information was not required for the REG Geismar petition because their proposed pathways use a feedstock, NFG corn oil, that EPA has previously evaluated.

II. Available Information

A. Background on REG

REG petitioned the Agency to approve an advanced biofuel pathway involving the production of naphtha and LPG from NFG corn oil feedstock through a hydrotreating production process. A petition is required because these are not approved pathways in Table 1 to 40 CFR 80.1426.

B. Information Available Through Existing Modeling

The process described in REG's petition would produce naphtha and LPG using a feedstock, NFG corn oil, that has already been evaluated as part of the March 2010 RFS rule and the March 2013 RFS rule (see Table 1). Therefore, no new feedstock modeling was required. Similarly, no new modeling of the emissions associated with the combustion of naphtha or LPG was required because that was previously evaluated as part of the March 2010 and 2013 RFS rules. This petition only required EPA to evaluate a modified fuel production process.

In the March 2010 RFS rule, EPA analyzed and approved biomass-based diesel (D-code 4) and advanced biofuel (D-code 5) pathways for the production of renewable diesel through a hydrotreating process using NFG corn oil feedstock. In the March 2013 RFS rule, EPA conducted more detailed process modeling using data representing an industry average hydrotreating production process maximized for diesel fuel output and the same process maximized for jet fuel output. In the October 2013 DGD determination, EPA evaluated mass and energy balance data for DGD's hydrotreating facility located in Norco, LA. Our analysis of the REG Geismar Pathways used the same analytical approach that was used to evaluate the lifecycle GHG emissions associated with the renewable fuel pathways using a hydrotreating process, as shown in Table 1 and in the DGD determination. In addition to producing renewable diesel from NFG corn oil, which is an existing pathway in rows F and H of Table 1 to 40 CFR 80.1426, REG also plans to produce naphtha and LPG from this feedstock. The REG Geismar Pathways use the same type of hydrotreating process previously studied by EPA in

the March 2013 RFS rule, with the difference being that the REG Geismar Process uses different amounts of process energy and does not produce jet fuel co-product.

EPA performed a comparison with the hydrotreating process modeling done for the March 2013 RFS rule and the October 2013 DGD determination. To do this comparison the amount of feedstock input, the amount of fuel outputs, and the amount of energy use and associated emissions were changed based on the data submitted by REG.

This was a straightforward analysis based on existing modeling done for previous rulemakings for the RFS program, and substituting REG’s process data, which only altered the amounts of inputs and outputs. The analysis completed for this petition utilized the same fundamental modeling approach as was used in previous rulemakings for the RFS program.

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

Row	Fuel Type	Feedstock	Production Process Requirements	D-Code
F	Renewable diesel, jet fuel and heating oil	Non-food grade corn oil	Hydrotreating (Excluding processes that co-process renewable biomass and petroleum)	4 (Biomass-based diesel)
H	Renewable diesel, jet fuel and heating oil	Non-food grade corn oil	Hydrotreating (Includes only processes that co-process renewable biomass and petroleum)	5 (Advanced)
I	Naphtha, LPG	<i>Camelina sativa</i> oil	Hydrotreating	5 (Advanced)

C. Information Submitted by REG

REG supplied all the information as required in 40 CFR 80.1416 that EPA needed to analyze the lifecycle GHG emissions associated with the REG Geismar Pathways. The information submitted included a technical justification describing the fuel, feedstocks used, and REG’s proprietary production process with modeling flow charts, 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 GHG assessment.

III. Analysis and Discussion

A. Lifecycle Analysis

Determining a fuel pathway's compliance with the lifecycle GHG reduction thresholds specified in the CAA 211(o) for different types of renewable fuel 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 CAA 211(o), the lifecycle 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 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 RFS 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 related to the REG Geismar Pathways under this petition request is consistent with the CAA's applicable requirements, including the definition of lifecycle GHG emissions and threshold evaluation requirements. It was based on previous lifecycle analysis modeling that EPA completed for the March 2010 and 2013 RFS rules, the October 2013 DGD determination, and the information submitted in REG's petition.

Feedstock Production – The REG Geismar Pathways use NFG corn oil as feedstock, which was evaluated as part of previous assessments; therefore, no new feedstock production modeling was required.⁶ REG's petition included their process yields in terms of pounds of feedstock used per pound of finished fuel product (renewable diesel, naphtha and LPG). Upstream feedstock GHG emissions were adjusted considering the specific data provided by REG related to the yield of fuel products per pound of feedstock using the REG Geismar Process.

Feedstock Transport – REG's petition included information about the distance and mode of transport to collect and move NFG corn oil to REG's hydrotreating facility in Geismar, LA. Based on the same analytical approach used in the March 2010 RFS rule, this data was considered in our lifecycle GHG assessment of the REG Geismar Pathways.

⁶ Based on the information in the REG Geismar petition, the corn oil feedstock REG intends to use is consistent with EPA's current interpretation of the NFG corn oil feedstock listed in Table 1 to 40 CFR 80.1426, i.e., the corn oil is produced at dry mill corn ethanol plants by extraction from distillers grains. This corn oil feedstock would also be consistent with the proposed regulatory revisions in the November 16, 2016 Renewable Enhancement and Growth Support Rule, which would change the name of the feedstock from "NFG corn oil" to "oil form corn oil extraction" (81 FR 80828).

Feedstock Pretreatment – After the NFG corn oil feedstock is trucked to the REG production facility and loaded into storage tanks it is pretreated to remove naturally occurring minerals which are known to deactivate the downstream hydrotreating catalyst. REG uses electricity and natural gas for process energy to pretreat the NFG corn oil feedstock. Based on the same analytical approach used in the March 2010 RFS rule, this data was considered in our lifecycle GHG assessment of the REG Geismar Pathways.

Fuel Distribution – As part of the March 2010 RFS rule, EPA estimated the lifecycle GHG emissions associated with the petroleum gasoline and diesel baselines, including the lifecycle GHG emissions associated with transporting the finished petroleum products from domestic refineries to bulk storage terminals, and then distributing the products from the terminals to consumers. As a conservative approach, our assessment of the REG Geismar Pathways assumed the same modes of transport and distances as the petroleum gasoline and diesel baselines evaluated in the March 2010 RFS rule.⁷ This was a conservative assumption because the REG Geismar Pathways will produce naphtha and LPG in close proximity to existing domestic refineries for blending with conventional fuel products. The only difference was that the fuel distribution lifecycle GHG emissions were adjusted to account for the differing energy densities of renewable naphtha and LPG compared to gasoline and diesel fuel.

Fuel Use – The lifecycle GHG emissions associated with using renewable naphtha fuels was evaluated as part of the March 2010 RFS rule. The GHG emissions associated with using renewable LPG fuel product were considered as part of the March 2013 RFS rule. The fuel use emissions calculated as part of these previous rules were applied in our analysis of the REG Geismar Pathways.

Fuel Production – REG’s fuel production method fits in the category of a hydrotreating process already analyzed for the March 2010 and 2013 RFS rules and the October 2013 DGD determination. As discussed above, there are existing approved pathways under the RFS program for renewable diesel, jet fuel and heating oil produced from NFG corn oil using a hydrotreating production process, and there are also approved pathways for renewable diesel, jet fuel, heating oil, naphtha and LPG produced from camelina oil feedstock using a hydrotreating process. EPA’s most detailed hydrotreating process analysis was conducted for the March 2013 RFS rule using data representing an industry average hydrotreating process maximized for diesel fuel output and a hydrotreating process maximized for jet fuel output.⁸ The REG Geismar Process is similar to the hydrotreating processes

⁷ The purpose of lifecycle assessment under the RFS program is not to precisely estimate lifecycle GHG emissions associated with particular biofuels, but instead to determine whether or not the fuels satisfy specified lifecycle GHG emissions thresholds to qualify as one or more of the four types of renewable fuel specified in the statute. Where there are a range of possible outcomes and the fuel satisfies GHG reduction requirements for the optimum RFS renewable fuel qualification when “conservative” assumptions are used, then a more precise quantification of the matter is not required for purposes of a pathway determination.

⁸ Pearlson et al. 2013

previously studied by EPA, with the difference being that the REG Geismar Process uses different amounts of process energy, does not produce jet fuel co-product, and has different process yields in terms of the amount of fuel produced per pound of feedstock input.

As discussed in the March 2010 and 2013 RFS rules, EPA's lifecycle analyses account for the various uses of the co-products. In previous analyses, we have used two general approaches to account for co-products: the allocation approach and the displacement approach. As discussed in the March 2013 RFS rule,⁹ for analysis of hydrotreating processes we have applied the allocation approach for RIN-generating co-products that qualify as renewable fuel. For this evaluation of the REG Geismar Pathways we used the allocation approach, as REG Geismar is proposing to generate RINs for all of its fuel products (renewable diesel, naphtha and LPG). For the REG Geismar Process, and other hydrotreating processes that EPA has evaluated, the allocation approach results in the highest lifecycle GHG emissions for each of the fuel products, hence in this case it can be viewed as a conservative approach.

In the allocation approach used in our analysis all the emissions from the hydrotreating process are allocated across all co-products. There are a number of ways to do the allocation, for example on the basis of energy, mass or economic value. Consistent with the approach taken in the hydrotreating analysis for the March 2013 RFS rule, for this analysis of the REG Geismar Process we allocated emissions to the renewable diesel, naphtha and LPG based on the energy content (using lower-heating values) of the products produced. Emissions from the process were allocated equally to all of the British thermal units (Btus) of fuel produced. Therefore, on a per Btu basis all of the primary products coming from the process have the same emissions from the fuel production stage of the lifecycle. For this analysis the energy content was the most appropriate basis for allocating emissions because all of the fuel products are used as sources of energy. Energy content also has the advantage of being a fixed factor as opposed to market prices which fluctuate over time.

Table 2 compares our lifecycle GHG analysis of the REG Geismar Process with the hydrotreating modeling completed for the March 2013 RFS rule and the October 2013 DGD determination, using the allocation approach for co-products described above.¹⁰ Consistent with analyses for previous RFS rulemakings, results are presented in terms of kilograms of carbon-dioxide equivalent emissions per million British thermal unit of fuel product outputs (kgCO₂e/mmBtu). The REG petition provided aggregated energy use data for feedstock pretreatment and fuel production, thus the GHG emissions in Table 2 represent the emissions for both of these activities. Based on these results, the REG Geismar Process results in lower GHG emissions than other hydrotreating processes EPA has evaluated.

⁹ See 78 FR 14198-9

¹⁰ In the table, the hydrotreating process maximized for diesel fuel and jet fuel are labeled as "industry average" hydrotreating processes, because the data used to model them from Pearson et al. 2013 was intended as a generic process based on data available in the literature and standard petrochemical support processes such as storage tanks, hydrogen gas production, cooling water towers, etc.

Table 2: Feedstock Pretreatment and Hydrotreating Process Lifecycle GHG Emissions (kgCO_{2e}/mmBtu)

Hydrotreating Process Modeled	Feedstock Pretreatment and Fuel Production Lifecycle GHG Emissions	Fuel Products
REG Geismar Process	18.3	Renewable diesel, naphtha, LPG
DGD Process	25.1	Renewable diesel, naphtha, LPG
Industry Average Hydrotreating Process Maximized for Diesel Fuel	21.5	Renewable diesel, naphtha, jet fuel, LPG
Industry Average Hydrotreating Process Maximized for Jet Fuel	26.2	Renewable diesel, naphtha, jet fuel, LPG

Lifecycle GHG Results – Based on our analysis of the full fuel lifecycle for the REG Geismar Pathways, described above, we estimated the lifecycle GHG emissions associated with naphtha and LPG produced from NFG corn oil through the REG Geismar Process. Table 3 shows the lifecycle GHG emissions related to the REG Geismar Pathways. To evaluate the REG Geismar Pathways we compared the lifecycle GHG emissions from REG’s naphtha product to the 2005 gasoline baseline because renewable naphtha is a gasoline blendstock replacement. Since LPG can be used in a range of applications, including heating oil and transportation fuel, it was less clear which baseline to compare it to. Section 211(o) of the CAA says that the baseline lifecycle GHG emissions are “for gasoline or diesel (whichever is being replaced by the renewable fuel).” Since LPG may replace either gasoline or diesel, as a conservative approach, in this case we compared REG Geismar’s renewable LPG product to baseline diesel. This is viewed as a conservative approach because for the March 2010 RFS rule EPA determined that the lifecycle GHG emissions for baseline diesel are slightly lower than for baseline gasoline (see Table 3 below). As shown in the table, naphtha and LPG produced through the REG Geismar Process exceed the CAA 50% GHG reduction threshold for advanced biofuel.

Table 3: Lifecycle GHG Emissions from the REG Geismar Pathways (kgCO_{2e}/mmBtu)¹¹

¹¹ Totals may not be the sum of the rows due to rounding.

	Naphtha produced from NFG corn oil through the REG Geismar Process	LPG produced from NFG corn oil through the REG Geismar Process	2005 Gasoline Baseline	2005 Diesel Baseline
Feedstock transport	0.3	0.3	*	*
Feedstock Pretreatment and Fuel production	18.3	18.3	19.2	18.0
Fuel distribution	1.1	1.1	*	*
Tailpipe	1.7	1.7	79.0	79.0
Net emissions	21.4	21.4	98.2	97.0
Percent GHG reduction relative to baseline	78.2%	77.9%	--	--

* Emissions included in the Fuel Production stage.

B. Application of the Criteria for Petition Approval

REG's petition request involved a production process, feedstock and fuel products already considered as part of the March 2010 and 2013 RFS rules and the October 2013 DGD determination. REG provided all necessary information that was required for this type of petition request.

Based on the data submitted and information already available through analyses conducted for previous RFS rulemakings, EPA conducted a lifecycle assessment and determined that renewable naphtha and LPG produced pursuant to the REG Geismar Pathways meets the 50% lifecycle GHG threshold requirement specified in the CAA for advanced biofuel RINs.

The lifecycle GHG results presented above justify authorizing the generation of advanced biofuel RINs for naphtha and LPG produced through the REG Geismar Pathways, assuming that the fuel meets the other definitional criteria for renewable fuel (e.g., produced from renewable biomass, and used to reduce or replace the quantity of fossil fuel present in transportation fuel, heating oil or jet fuel) specified in the CAA and EPA implementing regulations.

IV. Conditions and Associated Regulatory Provisions

The authority for REG Geismar to generate RINs for fuel produced through the REG Geismar Pathways is expressly conditioned on REG Geismar satisfying all of the applicable requirements for renewable fuel producers set forth in the RFS regulations and all of the conditions set forth in this document. The conditions specified herein are enforceable under the CAA. They are established pursuant to the informal adjudication reflected in this decision document, and also pursuant to regulations cited below and 40 CFR 80.1416(b)(1)(vii), 80.1450(i), and 80.1451(b)(1)(ii)(W). In addition or in the alternative to bringing an enforcement action under the CAA for any violations, EPA may revoke this pathway approval if it determines that REG Geismar has failed to comply with any of the conditions specified herein.

The description of REG Geismar's renewable fuel that is required for registration pursuant to 40 CFR 80.1450(b)(1)(ii) shall contain a Compliance Monitoring Plan detailing how REG Geismar will ensure that RINs are only generated for volumes of LPG and naphtha sold for use as transportation fuel and for no other purpose.¹² For example, the Compliance Monitoring Plan shall detail how the LPG will be distributed to end users, and the records that REG Geismar will keep to demonstrate the volume of LPG that was sold for use as transportation fuel.

V. Public Participation

The definition of advanced biofuel in CAA 211(o)(1) specifies that the term means renewable fuel that has "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 March 2010 and 2013 RFS rules, we took public comment on our lifecycle assessment of pathways involving the production of renewable diesel from NFG corn oil feedstock using a hydrotreating process, including all models used and all modeling inputs and evaluative approaches. We also took comment on pathways that involved the production of naphtha and LPG including an assessment of GHG emissions associated with the distribution and tailpipe emissions from this fuel. In the March 2010 RFS rule we acknowledged that it was unlikely that our final regulations would address all possible qualifying fuel production pathways, and we took comment on allowing the generation of 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 previous assessments, whereas rulemaking would typically be conducted to respond to petitions requiring new modeling. See 75 FR 14797 (March 26, 2010).

In responding to this petition, we have largely relied on the same modeling that we conducted for the March 2010 and 2013 RFS rules, and have simply adjusted the analysis to account for REG's process data. This includes use of the same emission factors and types of emission sources that were

¹² All of the registration materials required by 80.1450(b)(1), including those specifically described in this document, must be reviewed and verified pursuant to the independent third party engineering review required in 80.1450(b)(2).

used in the March 2010 and 2013 RFS rules. Thus, the fundamental analyses relied on for this decision have been made available for public comment as part of previous rulemakings, consistent with the reference to notice and comment in the statutory definitions of “advanced biofuel.” Our approach today is also consistent with our description of the petition process in the preamble to the March 2010 RFS Rule, as our work in responding to the petition was a logical extension of analyses already conducted.

VI. Conclusion

Based on our assessment, naphtha and LPG produced from NFG corn oil through the REG Geismar Process qualifies under the CAA for advanced biofuel (D-code 5) RINs, assuming the fuel meets the other definitional criteria for renewable fuel (e.g., produced from renewable biomass, and used to reduce or replace the quantity of fossil fuel present in transportation fuel, heating oil or jet fuel) specified in the CAA and EPA implementing regulations.

This approval applies specifically to Renewable Energy Group, LLC, and to the process, materials used, fuels produced, and process energy types and amounts outlined and described in the petition request submitted by REG.¹³ This approval is effective as of signature date. RINs may only be generated for non-grandfathered naphtha and LPG produced pursuant to the REG Geismar Pathways that is produced after the date of activation of REG’s registration for the new pathway(s).¹⁴

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow REG to register and generate RINs for naphtha and LPG produced from NFG corn oil through the REG Geismar Pathways using a production process of “REG Geismar Process.”

¹³ As with all pathway determinations, this approval does not convey any property right of any sort, or any exclusive privilege.

¹⁴ “Activation” refers to the day that the pathway is allowed to be used in EMTS, i.e., the date of activation of REG’s registration for one or more of the new pathways described in this document.