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

JAN 10 2014

OFFICE OF
AIR AND RADIATION

Ms. Sandra Lee
President and CEO
11 Good Energy, Inc.
35 Tuckahoe Road
Easton, Connecticut 06612

Dear Ms. Lee:

You petitioned the U.S. Environmental Protection Agency on behalf of 11 Good Energy, Inc. ("11 Good Energy"), to approve a pathway for the generation of advanced biofuel RINs (D-code 5) and/or biomass-based diesel RINs (D-code 4) under the renewable fuel standard ("RFS") program for the production of G2 Diesel product. G2 Diesel is a fatty acid ethyl ester ("FAEE") fuel and is produced from a transesterification process using soybean oil as feedstock, ethanol as reactant and only electricity from the grid for process energy (in amounts specified in the 11 Good Energy petition and associated correspondence), and generating co-product glycerin (the "11 Good Energy Pathway").

Through the petition process described under 40 CFR § 80.1416, 11 Good Energy submitted data to the EPA to perform a lifecycle greenhouse gas (GHG) emissions analysis of the 11 Good Energy Pathway. This analysis involved a straightforward application of the same methodology and much of the same modeling used for the final rule published on March 26, 2010 (75 FR 14670) (the "March 2010 RFS rule"). The difference between this analysis and the analyses completed for the March 2010 RFS rule was the evaluation of a modified fuel production process.

The attached document "11 Good Energy Request for Fuel Pathway Determination under the RFS Program" describes the data submitted by 11 Good Energy, the analysis conducted by the EPA, and our determination of the lifecycle GHG emissions associated with the fuel production pathway described in 11 Good Energy's petition.

Based on our assessment, fuel produced pursuant to the 11 Good Energy Pathway qualifies under the Clean Air Act (CAA) for advanced biofuel (D-code 5) RINs, provided the fuel meets the conditions and associated regulatory provisions discussed in the attached document, and the other definitional criteria for renewable fuel (e.g., production from renewable biomass, and used to reduce or replace petroleum-based transportation fuel, heating oil or jet fuel) specified in the CAA and EPA implementing regulations.

This approval applies specifically to 11 Good Energy, Inc., and to the process, materials used, fuel produced, and process energy sources as outlined and described in the petition request submitted by 11 Good Energy.

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow 11 Good Energy to register and generate RINs for "fatty acid ethyl ester" produced pursuant to the 11 Good Energy Pathway using soybean oil feedstock and a production process of "11 Good Energy Process."

Sincerely,

Christopher Grundler,
Office of Transportation and Air Quality

Enclosure

11 Good Energy Request for Fuel Pathway Determination under the RFS Program
Office of Transportation and Air Quality

Summary: 11 Good Energy, Inc. ("11 Good Energy") petitioned the Agency to approve their generation of advanced biofuel RINs (D-code 5) and/or biomass based diesel RINs (D-code 4) under the renewable fuel standard ("RFS") program for the production of their G2 Diesel product. G2 Diesel is a fatty acid ethyl ester ("FAEE") fuel and is produced from a transesterification process using soybean oil as feedstock, ethanol as reactant and only electricity from the grid for process energy (in amounts specified in the 11 Good Energy petition and associated correspondence), and generating co-product glycerin (the "11 Good Energy Pathway").

Through the petition process described under 40 CFR § 80.1416, 11 Good Energy submitted data to EPA to perform a lifecycle greenhouse gas (GHG) emissions analysis of the 11 Good Energy Pathway. This analysis involved a straightforward application of the same methodology and much of the same modeling used for the final rule published on March 26, 2010 (75 FR 14670)(the "March 2010 RFS rule"). The difference between this analysis and the analyses completed for the March 2010 RFS rule was the evaluation of a modified fuel production process. 11 Good Energy requires an individual pathway determination because they utilize a biofuel production process that differs from those used in pathways modeled for the RFS program. Although they utilize a traditional transesterification process as modeled for other pathways, they react soybean oil with ethanol rather than methanol. The result, as described in more detail below, is the G2 Diesel produced by 11 Good Energy does not meet the RFS definition in 40 CFR 80.1401of biomass-based diesel, but could potentially qualify as advanced biofuel.[1]

As outlined in the preamble to the March 2010 RFS rule, the 11 Good Energy Pathway is the type of new pathway that EPA envisioned would be evaluated by comparing the applicant's fuel pathway to pathway(s) that have already been analyzed. EPA performed its assessment of the 11 Good Energy Pathway based on the modeling done for the soybean biodiesel pathways performed as part of the March 2010 RFS rule ("the 2010 soybean biodiesel pathways"). 11 Good Energy's process consumes considerably less energy per gallon of fuel produced than the transesterification process modeled for the 2010 soybean biodiesel pathways. In the 2010 soybean biodiesel pathways, glycerin was assumed to replace residual oil on an energy-equivalent basis and thus a co-product credit was applied for the production of glycerin. The same credit was applied for the glycerin produced from 11 Good Energy's process. In EPA's assessment, the lifecycle GHG emissions associated with the 11 Good Energy Pathway includes the GHG emissions associated with the production, transport and use of the ethanol that is used as a reactant in the 11 Good Energy process. The Agency's analysis of the 11 Good Energy Pathway is conservatively based on the use of average corn ethanol produced in the

[1] Although the G2 Diesel may contain some amount of ethanol derived from cornstarch, the conditions associated with this pathway approval ensure that 11 Good Energy will not generate advanced biofuel RINs for such ethanol.

United States in 2022, as evaluated by EPA for the March 2010 RFS rule. Overall, the combined impacts result in the 11 Good Energy Pathway having lifecycle GHG emissions that are similar (slightly higher), than the 2010 soybean biodiesel pathways. Based on the data submitted and the existing modeling for the March 2010 RFS rule, EPA conducted a lifecycle assessment and determined that the 11 Good Energy Pathway meets the 50% lifecycle GHG reduction threshold for advanced biofuels. For the 11 Good Energy Pathway, the result is a 54% reduction in GHG emissions compared to the diesel fuel baseline, using conservative assumptions as explained below. Based on our assessment, the non-ethanol component of the G2 Diesel produced from the 11 Good Energy Pathway qualifies for generating RINs for Advanced Biofuel (D-code 5). 11 Good Energy also petitioned the Agency to qualify their pathway to generate RINs for Biomass-Based Diesel (D-code 4). However, as discussed in Section II of this document, the G2 Diesel product does not meet the definition of biomass-based diesel, because it is neither biodiesel nor non-ester renewable diesel as defined in the RFS regulations and thus cannot qualify to generate D-code 4 RINs. EPA also evaluated the fate of ethanol used in the 11 Good Energy Pathway. As explained further in Section IV, for the ethanol received with RINs, 11 Good Energy must assign a number of the original RINs received with the ethanol to the G2 Diesel product corresponding to the amount of ethanol that ends up in the G2 Diesel, and 11 Good Energy must retire a number of the original RINs corresponding to the amount of ethanol that ends up in the glycerin co-product. To confirm the amount of ethanol that ends up in the G2 Diesel this document specifies certain conditions for fuel to qualify for the 11 Good Energy Pathway, including certain RIN accounting procedures (generation, assignment and retirement of RINs) and laboratory tests that 11 Good Energy must conduct and report to EPA.

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 11 Good Energy's request and applies to all petitions submitted pursuant to 40 CFR § 80.1416.
- *Section II. Available Information*: This section contains background information on 11 Good Energy and describes the information that 11 Good Energy 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 11 Good Energy Pathway and identifies how it differs from the analysis done for the 2010 soybean biodiesel pathways. This section also describes how we have applied the lifecycle results to determine the appropriate D-Code for the 11 Good Energy Pathway.
- *Section IV. Conditions and Associated Regulatory Provisions*: This section describes the regulatory provisions associated with this petition.
- *Section V. Public Participation*: This section describes our administrative process to consider 11 Good Energy's petition and explains how this petition analysis is an extension of the analysis done as part of the March 2010 RFS rule.

- *Section VI. Conclusion*: This section summarizes our conclusions regarding 11 Good Energy's petition, including the D-code 11 Good Energy may use in generating RINs for fuel produced using the 11 Good Energy Pathway.

I. Required Information and Criteria for Petition Requests

A. Background and Purpose of Petition Process

As a result of changes to the Renewable Fuel Standard program in Clean Air Act ("CAA") Section 211(o) required by the Energy Independence and Security Act of 2007 ("EISA"), EPA adopted new regulations, published at 40 CFR § 80.1400 *et. seq*. The RFS program 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 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); 77 FR 1320 (January 9, 2012); 77 FR 74592 (December 17, 2012); 78 FR 41703 (July 11, 2013); and 78 FR 62462 (October 22, 2013).

Pursuant to 40 CFR § 80.1426(f)(1):

> *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, paragraph (f)(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, assuming all requirements other than the 20% GHG reduction provision are satisfied.

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. In the event that EPA determines that the pathway described in a petition qualifies for a D-code, EPA will consider extending a similar approval to other petitioners utilizing the same fuel pathway upon verification that the pathway is indeed the same and assuming all other requirements are met.

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.
- 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, which is not the case for 11 Good Energy, 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 11 Good Energy

11 Good Energy submitted a petition requesting authorization to generate D-code 4 and 5 RINs for their G2 Diesel fuel produced through the 11 Good Energy Pathway. A petition is required because the 11 Good Energy Pathway is not included as an approved pathway in Table 1 to 40 CFR § 80.1426. Table 1 includes pathways for biodiesel fuel products and renewable diesel fuel products from certain feedstocks, including soybean oil. 11 Good Energy's process uses soybean oil as a feedstock for its transesterification process, which is similar to, but slightly different from, the transesterification process analyzed for the 2010 soybean biodiesel pathways. From its process, 11 Good Energy produces a fatty acid ethyl ester (FAEE) fuel, termed G2 Diesel. However, G2 Diesel does not meet either of the definitions for biodiesel or renewable diesel in the RFS regulations.

In 40 CFR 80.1401 biomass-based diesel is defined to include only fuels that satisfy the additional definitions of biodiesel or non-ester renewable diesel. Biodiesel is defined as "a mono-alkyl ester that meets ASTM D 6751." Although G2 Diesel shares several characteristics of biodiesel, the fuel does not meet ASTM D-6751 and thus cannot meet the regulatory definition of biodiesel. Non-ester renewable diesel is defined in § 80.1401 as "renewable fuel which is all of the following: (1) A fuel which can be used in an engine designed to operate on conventional diesel fuel, or be heating oil or jet fuel; (2) Not a mono-alkyl ester." G2 Diesel is a mono-alkyl ester, so it cannot be considered renewable diesel. As a result, the 11 Good Energy Pathway cannot qualify as biomass-based diesel and therefore cannot qualify for the generation of D-4 RINs.

By contrast, the definition for advanced biofuel in § 80.1401 is broader:

> *Advanced biofuel* means renewable fuel, other than ethanol derived from corn starch, that has lifecycle greenhouse gas emissions that are at least 50 percent less than baseline lifecycle greenhouse gas emissions.

While G2 Diesel does not meet the definitions of biodiesel or renewable diesel, it could meet the definition of advanced biofuel and qualify to produce D-5 RINs if the 11 Good Energy Pathway achieves the mandated 50% lifecycle GHG reduction for advanced biofuel and meets the other definitional criteria for renewable fuel.[2] Therefore, we have reviewed the 11 Good Energy Pathway to determine whether it achieves the 50% lifecycle GHG reduction required for advanced biofuel.

[2] Although the G2 Diesel may contain some amount of ethanol derived from cornstarch, the conditions associated with this pathway approval ensure that 11 Good Energy will not generate advanced biofuel RINs for such ethanol.

B. Information Available Through Existing Modeling

A fuel pathway under the RFS regulations is defined by three components: (1) fuel type; (2) feedstock; and (3) production process. The pathway addressed in 11 Good Energy's petition would use a feedstock – soybean oil – that has already been analyzed as part of the March 2010 RFS rule, and appears as an approved feedstock for biodiesel and renewable diesel in Table 1 of § 80.1426. As a result, no new feedstock modeling was required as modeling for soybean oil was already done as part of the March 2010 RFS rule.

The pathway addressed in 11 Good Energy's petition would use ethanol as a reactant with soybean oil in the transesterification process. To evaluate the lifecycle GHG emissions associated with the ethanol used in the 11 Good Energy Pathway, EPA relied on the modeling and analysis of corn ethanol completed for the March 2010 RFS Rule. As a result, no new corn starch ethanol modeling was required to evaluate the 11 Good Energy's petition.

11 Good Energy's process would produce G2 Diesel, a fuel that was not analyzed as part of the March 2010 RFS rule, but because G2 Diesel bears similarities to biodiesel and renewable diesel, and 11 Good Energy's process is similar to the transesterification process considered for biodiesel, we have compared 11 Good Energy's process to the existing soybean oil biodiesel pathways, as shown in Table 1.

Table 1: Relevant Existing Fuel Pathways from 40 CFR § 80.1426

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

The same analytical approach that was used to evaluate the lifecycle GHG emissions of the pathways noted above (see Table 1) was used to analyze the 11 Good Energy Pathway. The only difference is that the fuel production process step was adjusted to reflect the differences in 11 Good Energy's process, including the use of ethanol as a reactant instead of methanol. Included below is a description of the modeling approach used, highlighting the changes that were made from the analysis used in the March 2010 RFS rule to analyze the 11 Good Energy petition request.

The preamble to the March 2010 RFS rule describes the modeling approach used to estimate lifecycle GHG emissions of the soybean biodiesel pathways analyzed for that rule. 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 2010 soybean biodiesel pathways analysis to reflect the 11 Good Energy fuel pathway, the only changes required were replacing the transesterification production process data with the 11 Good Energy process data, and adjusting the emissions related to fuel use to reflect the energy content of G2 Diesel. This resulted in the following changes to the modeling (described in more detail in the following sections):

- Amount of energy used from the point of delivery of feedstocks to 11 Good Energy's facility, through feedstock processing, and fuel and co-product production, to the point of final storage of the end product fuel and co-products at 11 Good Energy's facility ("feedstock, fuel and co-product operations") and associated emissions was changed to reflect 11 Good Energy'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 was changed to reflect 11 Good Energy's data provided in their mass balance. In particular, the use of ethanol as reactant instead of methanol.
- Amount of glycerin co-product produced was changed to reflect 11 Good Energy's process.
- The lifecycle GHG emissions, including emissions from use of the fuel, were adjusted to reflect the energy content of G2 Diesel fuel compared to biodiesel.

This was a straightforward analysis based on existing modeling done for the March 2010 RFS rule and substituting 11 Good Energy's proprietary process data, which only altered the amounts of inputs and outputs. The analyses completed for EPA's response to 11 Good Energy's petition utilizes the same fundamental modeling approach as was used in the March 2010 RFS rule analyses.

C. Information Submitted by 11 Good Energy

11 Good Energy has supplied all the required information on their production process that EPA needed to analyze the lifecycle GHG emissions associated with the 11 Good Energy Pathway. Information submitted includes a technical justification that has a description of the fuel, feedstocks used, and their 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 greenhouse gas assessment.

III. Analysis and Discussion

A. Lifecycle Analysis

Determining a fuel pathway's compliance with the lifecycle GHG reduction thresholds specified in the CAA 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 the CAA, 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 fuel 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 of the 11 Good Energy Pathway 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 information regarding 11 Good Energy's production process that was submitted under a claim of Confidential Business Information (CBI) by 11 Good Energy on May 30, 2012. Clarifications on the data submitted were subsequently provided by phone and email. The information provided included the mass and energy balances necessary for EPA to evaluate the lifecycle GHG emissions of the 11 Good Energy Pathway.

The lifecycle GHG emissions of fuel produced pursuant to the 11 Good Energy Pathway were determined as follows:

Feedstock production – The 11 Good Energy Pathway uses soybean oil as a feedstock for the production of G2 Diesel. As previously noted, soybean oil is one of the feedstocks already listed in Table 1 to § 80.1426 of the RFS regulations. Since soybean oil has already been evaluated as part of the March 2010 RFS rule, no new feedstock production modeling was required.

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 results representing the emissions from an increase in soybean oil production that were generated as part of the March 2010 RFS rule analysis of the soybean biodiesel pathways were used in this analysis of the 11 Good Energy Pathway. These results represent agriculture / feedstock production emissions for a certain quantity of soybean oil produced. For the analysis in the March 2010 RFS rule, this was roughly 4,100 million pounds of soybean oil used to produce 540 million gallons of fuel,[3] and we calculated GHG emissions from feedstock production for that amount of soybean oil. For the 2010 soybean biodiesel pathways, the use of 4,100 million pounds of soybean oil resulted in approximately 63,720,000 mmBtu of soybean biodiesel produced, based on a yield of 1 gallon of biodiesel per 7.6 pounds of oil and a lower

[3] 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.

heating value (LHV) of 118,000 Btus per gallon 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 of biodiesel. We believe 11 Good Energy's alternative process for converting soybean oil into G2 Diesel will not materially affect the total amount of soybean oil used for biofuels and modeled as part of the March 2010 RFS rule. Therefore, the existing agricultural sector modeling analyses for soybean oil as a feedstock remain valid for use in estimating the lifecycle impact of renewable fuel produced using the 11 Good Energy Pathway.

11 Good Energy provided, as part of the information claimed CBI, their process yield in terms of gallons of fuel produced per pound of oil as well as the heating value of their fuel in Btus per gallon. Based on that data, 11 Good Energy's process yield is significantly more efficient than the 2010 soybean biodiesel pathways in terms of gallons of fuel produced per pound of soybean oil used. As such, the lifecycle GHG emissions associated with soybean oil production are less for the 11 Good Energy Pathway than the 2010 soybean biodiesel pathways. Specifically, the amount of lifecycle GHG emissions associated with producing, harvesting and delivering the soybean oil feedstock is 38 $kgCO_2e$/mmBtu for 11 Good Energy compared to 41 $kgCO_2e$/mmBtu for the 2010 soybean biodiesel pathways.

Fuel production – To analyze the GHG impacts of 11 Good Energy's production process, EPA utilized the same approach used to analyze the transesterification process used in the 2010 soybean biodiesel pathways, taking into account several differences discussed below. 11 Good Energy's fuel production method utilizes a process similar to transesterification, but ethanol rather than methanol is used as reactant. 11 Good Energy's process results in considerably less energy consumed than the transesterification process modeled for the 2010 soybean biodiesel pathways. In particular, a small amount of electricity and no natural gas is used in the process.

The GHG emissions for the fuel production component of the 11 Good Energy pathway were based on an assessment of the following:

- Type and amount of energy used and associated emissions per mmBtu of fuel produced.
- Type and amount of raw materials used and associated emissions per mmBtu of fuel produced.
- Use of any co-products produced.

Regarding energy use for fuel production, 11 Good Energy's process uses a small amount of electricity and no natural gas. 11 Good Energy's process uses considerably less energy than the 2010 soybean biodiesel pathways per amount of fuel produced. This is because "free" ethanol (ethanol that is not chemically bound to fatty acids) is acceptable in the G2 Diesel finished product, so no energy is expended to purify the fuel or recover ethanol. By contrast, the 2010 soybean biodiesel pathways assumed a significant amount of energy in purifying the finished biodiesel product and in recovering

methanol. The amount and type of energy used in 11 Good Energy's fuel production process was taken from information submitted to EPA on 11 Good Energy's mass balance and energy balance. Individual process input and output mass and energy flows within the production plant were not needed for this analysis; rather, as was done for the March 2010 RFS Rule analysis, total input and output mass and energy flows from the entire plant were used. This included all energy used from the point of delivery of feedstocks to 11 Good Energy's Magnolia, OH facility, through feedstock processing, and fuel and co-product production, to the point of final storage of the end product fuel and co-products at the Magnolia, OH facility.

11 Good Energy uses electricity from the grid to run pumps and other equipment. For our analysis, the emissions factor for electricity representing the average U.S. grid was 219,824 gCO2e/mmBtu, the same factor used in the March 2010 RFS rule analysis.

Regarding material inputs used in the fuel production process, the 11 Good Energy Pathway uses ethanol instead of methanol as a reactant for the production of G2 Diesel. Our analysis used the conservative assumption that the 11 Good Energy Pathway will use ethanol derived from corn starch feedstock. This is a conservative assumption because, based on EPA's assessment in the March 2010 RFS rule and December 2012 Grain Sorghum rule (77 FR 74592), on average corn ethanol has higher lifecycle GHG emissions than other sources of ethanol, such as cellulosic ethanol, sugarcane ethanol and grain sorghum ethanol.

In the March 2010 RFS rule, EPA evaluated approximately 64 different corn ethanol production process technologies, with varying lifecycle GHG emissions associated with each technology.[4] For this petition determination, EPA's analysis assumed that 11 Good Energy would use corn ethanol produced with the average process technologies projected to be in use in 2022, as modeled for the March 2010 RFS rule.[5] This approach is consistent with the way that EPA has conducted other pathway assessments, which looked at lifecycle GHG emissions on an industry average basis, as projected for the year 2022. Furthermore, 11 Good Energy indicated that they do not plan to source their ethanol from one particular ethanol plant. Instead, they plan to purchase ethanol from marketers that collect and distribute ethanol from various sources. As such, we believe it is appropriate to assume that 11 Good Energy will use industry average corn ethanol in their process. More discussion of the impact of this assumption is included in Section III.B.

[4] For more information about the corn ethanol production processes evaluated, see for example Table 2.4-55 in EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. http://www.epa.gov/otaq/renewablefuels/420r10006.pdf

[5] For more information about EPA's evaluation of average corn ethanol processing technologies in 2022, see for example Sections 1.5.1.3 and 2.7 in the March 2010 RFS2 Regulatory Impact Analysis, http://www.epa.gov/otaq/renewablefuels/420r10006.pdf.

We believe that 11 Good Energy's use of ethanol as a reactant to produce G2 Diesel will not materially affect the total amount of ethanol used for biofuels as modeled as part of the March 2010 RFS Rule. Therefore, the lifecycle analysis modeling for the 2010 corn ethanol pathways remains valid for use in estimating the lifecycle impact of renewable fuel produced using the 11 Good Energy Pathway.

The amount of ethanol used as reactant in 11 Good Energy's process is much greater than the amount of methanol used in the 2010 soybean biodiesel pathways, per Btu of fuel product. Based on the analysis for the March 2010 RFS rule, the amount of upstream GHG emissions (i.e., emissions associated with production and delivery but not including combustion of the finished product) associated with average corn ethanol are greater than such emissions for methanol, on a per pound basis. Overall, the amount of upstream lifecycle GHG emissions associated with the ethanol used in 11 Good Energy's process is significantly greater than the upstream emissions associated with the methanol used in the 2010 soybean biodiesel pathways.

The 11 Good Energy Pathway uses a very small amount of additives relative to the amount of soybean oil and ethanol used in the process. The amount and type of additives used in the 11 Good Energy's process were based on the data provided in 11 Good Energy's proprietary mass and energy balance. The amount of types of such chemicals used in the 11 Good Energy process differed only slightly compared to the 2010 soybean biodiesel pathways.

Regarding co-products, the 11 Good Energy Pathway produces co-product glycerin. For the 2010 soybean oil pathways EPA assigned a co-product credit for glycerin based on the assumption that it would displace residual oil used in industrial boilers. The biodiesel glycerin co-product determination made as part of the March 2010 RFS final rule took into consideration the possible range of co-product credit results. The replacement of an energy equivalent amount of residual oil was a simplifying assumption determined by EPA to reflect the mid-range of possible glycerin uses in terms of GHG credits, and EPA believed that it was appropriately representative of GHG reduction credit across the possible range without necessarily biasing the results toward high or low GHG impact. The glycerin co-product from the 11 Good Energy Pathway is somewhat different than glycerin from biodiesel production because 11 Good Energy's glycerin includes a significant amount of pure ethanol mixed in with the glycerin ("free ethanol"). Based on information provided by 11 Good Energy, the co-product credit for glycerin replacing residual oil remains valid because the presence of free ethanol in the glycerin does not negatively impact its ability to be combusted as an industrial boiler fuel. The glycerin co-product credit is slightly higher for the 11 Good Energy Pathway than what was modeled for the 2010 soybean biodiesel pathways, because the 11 Good Energy Pathway produces more glycerin per mmBtu of fuel product than soybean biodiesel, based on the proprietary mass and energy balance data submitted as part of 11 Good Energy's petition.

Overall, based on these differences the 11 Good Energy process has higher lifecycle GHG emissions from the fuel production stage than the 2010 soybean biodiesel pathways. Table 2 compares the fuel production lifecycle GHG emissions from the two fuel production processes. The results are reported as kilograms of carbon dioxide-equivalent emissions per mmBtu of fuel produced ($kgCO_2e$/mmBtu). Emissions from material inputs include the upstream lifecycle GHG emissions associated with the ethanol, methanol and other chemicals used in the processes. Emissions from energy inputs include GHGs from the production and use of grid electricity and natural gas. The co-product credit is for the glycerin co-product displacing residual oil.

Table 2: Fuel Production Emissions for 11 Good Energy

Lifecycle Stage	**11 Good Energy Pathway ($kgCO_2e$/mmBtu)**	**Soybean Biodiesel Pathways Analyzed in 2010 ($kgCO_2e$/mmBtu)**
Material Inputs	13	2
Energy Inputs	0	3
Co-Product Credit	-8	-6
Total Fuel Production Emissions:	**5**	**-1**

Fuel and feedstock distribution – We used the same feedstock distribution emissions considered for the soybean biodiesel pathways analyzed in the March 2010 RFS rule for 11 Good Energy's soybean oil feedstock. Therefore, the existing feedstock distribution lifecycle GHG impacts for soybean oil and biodiesel were applied to our analysis of the 11 Good Energy Pathway.

11 Good Energy states in their petition that tanker trucks and/or rail will be used to transport G2 Diesel to fueling stations within a 50-mile radius. In the March 2010 RFS Rule, our lifecycle analysis assumed a combination of barge, rail, and truck were used to transport biodiesel from plant to terminal, with transport distances varying from 50 to 800 miles. We assumed that biodiesel would then be trucked an additional 30 miles from the terminal to a retail location (see Table 2). As a result, the fuel transportation emissions impact of using biodiesel as a transportation fuel calculated as part of the March 2010 RFS Rule serves as a conservative estimate of the emissions associated with distributing G2 Diesel.

Table 3: Biodiesel Assumptions for Transport from Plant to Terminal in March 2010 RFS Rule

Mode	Percentage	Distance (miles)
Barge	5%	520
Rail	45%	800
Truck	50%	50

Use of the fuel – 11 Good Energy's process produces a fuel that is similar to the biodiesel fuel that was analyzed as part of the March 2010 RFS rule. Thus, we applied the fuel combustion emissions calculated as part of the March 2010 RFS rule for biodiesel to our analysis of the 11 Good Energy Pathway, adjusted for the different energy content per gallon of G2 Diesel compared to biodiesel. There could be small differences in non-CO_2 GHG emissions between G2 Diesel and biodiesel, but we believe these differences are so small that assuming the same non-CO2 GHG emissions as biodiesel, per Btu of fuel, is justifiable for this analysis.

Lifecycle GHG Reduction Relative to the Petroleum Baseline – 11 Good Energy's fuel was compared to baseline diesel, using the same value for baseline diesel as in the March 2010 RFS rule analysis. The analysis indicates that the G2 Diesel fuel produced pursuant to the 11 Good Energy Pathway results in a GHG emissions reduction of 54% compared to the diesel fuel it would replace, based on the analysis and assumptions described above.

B. Application of the Criteria for Petition Approval

11 Good Energy's petition request involved a fuel pathway with a modified production process and using similar feedstocks already considered as part of the March 2010 RFS rule. 11 Good Energy provided all the necessary information that was required for this type of petition request.

Based on the data submitted and information already available through analyses conducted for the March 2010 RFS rule, EPA conducted a lifecycle assessment and determined that the G2 Diesel fuel produced pursuant to the 11 Good Energy Pathway meets the 50% lifecycle GHG threshold requirement specified in the CAA for advanced biofuel.

11 Good Energy's pathway results in a 54% reduction in GHG emissions compared to the diesel fuel baseline. These results justify authorizing the generation of advanced biofuel RINs for the G2 Diesel fuel produced by the 11 Good Energy 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 the CAA and EPA implementing regulations.

The use of ethanol in the 11 Good Energy Pathway raised questions about what type of ethanol to assume would be used in the process. As discussed above, EPA took the conservative approach of assuming that 11 Good Energy would use corn ethanol, but in the March 2010 RFS rule the Agency evaluated 64 different corn ethanol pathways based on different fuel production technologies with different GHG emissions impacts. As described above, EPA's lifecycle analysis of the 11 Good Energy Pathway assumed the use of corn ethanol produced using industry average process technologies in 2022. Industry average corn ethanol process technologies in 2022 were based on the projections explained in Section 1.5 of the "Renewable Fuel Standard Program (RFS2) Regulatory

Impact Analysis."[6] As a sensitivity analysis, we also looked at how the results would change if 11 Good Energy used corn ethanol produced via specific processing technologies. In only two cases did the type of corn ethanol used in the analysis bring the 11 Good Energy Pathway below the 50% lifecycle GHG reduction threshold: use of only corn ethanol from a coal-fired dry mill plant with no advanced technologies and use of only corn ethanol from a coal-fired wet mill. In these two scenarios 11 Good Energy's Pathway achieved lifecycle GHG reductions of 49% and 48% respectively compared to the 2005 gasoline baseline. Considering the weight of evidence, including EPA registration data showing that a relatively small share of corn ethanol is currently produced at coal-fired facilities, and 11 Good Energy's stated intention to purchase ethanol on the open market rather than from specified producers, we believe this is a strong basis for determining that the 11 Good Energy Pathway achieves the 50% lifecycle GHG reduction threshold for advanced biofuel. As a precautionary measure, Section IV of this document includes a condition for approval of the 11 Good Energy Pathway stipulating that the ethanol used in the pathway may not be sole sourced from a plant fired with coal.

The use of ethanol as a reactant also raised questions about how to keep the accounting separate for ethanol versus the G2 Diesel produced by 11 Good Energy. For example, there are questions about potential double-counting of lifecycle GHG emissions because the GHG emissions associated with the ethanol used in the 11 Good Energy's process were already accounted for in our assessment of ethanol for the March 2010 RFS rule. As such, a sensitivity analysis was conducted to look at the lifecycle GHG emissions associated with only the non-ethanol portion of 11 Good Energy's fuel product, with the non-ethanol portion determined with energy allocation based on the energy content of ethanol as a share of the energy from all feedstocks used in the process. This sensitivity analysis estimated a 61% reduction for the non-ethanol portion of 11 Good Energy's G2 Diesel fuel. Our evaluation was primarily based on the approach described above, which included lifecycle GHG emissions associated with the ethanol used in the 11 Good Energy Pathway. We primarily relied on the assessment that included ethanol in the lifecycle analysis in part because ethanol is chemically integrated into the G2 Diesel fuel, i.e., it would not be possible to produce G2 Diesel fuel if the ethanol were removed from the process without replacement. However, we did not need to decide the questions about separate accounting for ethanol and G2 Diesel in this determination because 11 Good Energy's pathway passed the 50% threshold in both of the scenarios evaluated, when looking at the lifecycle GHG emissions associated with the entire fuel product or only the non-ethanol portion.

Table 4 shows lifecycle GHG emissions by stage for the 11 Good Energy Pathway as compared to the soybean biodiesel pathways analyzed as part of the March 2010 RFS 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.

[6] http://www.epa.gov/otaq/renewablefuels/420r10006.pdf

Table 4: Lifecycle GHG Emissions for the 11 Good Energy Pathway ($kgCO_2e$/mmBtu fuel produced)

Fuel Type	Soybean Biodiesel Pathways Analyzed in 2010	11 Good Energy Pathway	2005 Diesel Baseline
Feedstock Production & Transport, Mean (*Low/High*)	41 (*13/75*)	38 (*12/70*)	*
Fuel Production	-1	5	18
Fuel Distribution	1	1	*
Fuel Use	1	1	79
Total Emissions, Mean *(Low/High)*	**42 *(14/76)***	**45 *(19/76)***	**97**
Percent Reduction Compared to Baseline	**57%**	**54%**	**--**

*Emissions included in fuel production stage.

IV. Conditions and Associated Regulatory Provisions

Based on our assessment, a portion of the fuel produced pursuant to the 11 Good Energy Pathway qualifies for the generation of advanced biofuel RINs (D-code 5), but for every batch of G2 Diesel produced, 11 Good Energy must also assign and retire a number of the original RINs received with the ethanol to account for the ethanol used in its process. Because 11 Good Energy receives RINs with the ethanol used in its process, the volume of ethanol that ends up in the G2 Diesel fuel is not eligible for the generation of additional RINs pursuant to 40 CFR 80.1426(c)(6).[7] Pursuant to § 80.1426(c)(6)(A), 11 Good Energy must assign a number of the original RINs received with the ethanol to the G2 Diesel corresponding to the amount of ethanol that ends up in the G2 Diesel, and must subtract the volume of any such ethanol from the volume of its product that qualifies for the generation of advanced biofuel RINs. Furthermore, pursuant to § 80.1429(f), 11 Good Energy must retire a number of the original RINs corresponding to the amount of ethanol that ends up in the glycerin co-product, because the glycerin co-product is not used as transportation fuel, heating oil or jet fuel, as defined at § 80.1401.

The amount of ethanol that will end up in the G2 Diesel if 11 Good Energy produces large volumes of fuel is uncertain at this point, because the facility is not currently producing renewable

[7] § 80.1426(c)(6) specifies that RINs are not generated when, "The fuel has been produced from a chemical conversion process that uses another renewable fuel as feedstock, the renewable fuel used as a feedstock was produced by another party and RINs were received with the renewable fuel."

fuel.[8] Based on discussions with 11 Good Energy, EPA has determined that the RINs can be properly accounted for if the amount of ethanol in batches of G2 Diesel (both free and bound ethanol) is determined with Gas Chromatography-Mass Spectrometry testing. The number of original RINs received with the ethanol to be assigned to the G2 Diesel can be determined based on this testing. Based on this information, the amount of ethanol in the glycerin can be conservatively calculated, as well as the corresponding amount of ethanol RINs that must be retired.[9] Using this information the equivalence value for G2 Diesel fuel can also be determined. The details of how these values will be determined are specified below.

In consultation with 11 Good Energy, EPA has determined that the RIN accounting (including generation, assignment and retirement of RINs) for a batch of fuel produced pursuant to the 11 Good Energy Pathway shall be determined as follows, including the following conditions and associated regulatory provisions:

1. 11 Good Energy shall purchase only denatured ethanol with assigned RINs for use in producing fuel pursuant to the 11 Good Energy Pathway.

2. 11 Good Energy shall not intentionally purchase significant quantities of ethanol from a coal-fired ethanol production facility for use in producing fuel pursuant to the 11 Good Energy Pathway.[10]

3. A number of the original gallon-RINs received with the ethanol used to produce a batch of renewable fuel shall be assigned to the batch of renewable fuel corresponding to the amount of ethanol that ends up in the batch of renewable fuel, and shall be calculated using the following formula (unless as specified in condition 4 in this document):

   $V_{RIN,E,A} = (V_{S,S,E} / V_{S,S,G}) * V_{S,G}$

   Where:

   $V_{RIN,E,A}$ = RIN volume, in gallons, of the original RINs received with ethanol that shall be assigned to the batch of renewable fuel.

[8] Small amounts of G2 Diesel have been produced for testing purposes.

[9] All of the ethanol used in 11 Good Energy's process ends up either in the G2 Diesel or in the glycerin. There may be trace amounts that stay in the tanks and related equipment after a batch is produced, thus making 11 Good Energy retire RINs for any ethanol that does not end up in the G2 Diesel is a conservative approach.

[10] 11 Good Energy shall not enter a contract to purchase ethanol directly from a coal-fired production facility. This condition would not be violated if 11 Good Energy purchases ethanol that is generally available in the market from a distributor who may distribute ethanol from coal-fired facilities in addition to a number of other facilities that are not coal-fired.

$V_{S,S,E}$ = Standardized volume of ethanol at 60-degrees fahrenheit, in gallons, calculated in accordance with § 80.1426(f)(8),[11] in the sample of G2 Diesel from the batch of renewable fuel for which RINs are generated, measured using Gas Chromatography-Mass Spectrometry testing performed by a licensed laboratory using standard and accepted laboratory procedures ("standard GC-MS testing"). The value for $V_{S,S,E}$ shall include both free and bound ethanol. The volume of free ethanol shall be determined based on the chemical composition of the fuel sample as reported by the standard GC-MS testing results. The volume of bound ethanol cannot be measured directly with GC-MS testing, so instead it shall be calculated based on the type of fatty acids in the fuel sample (e.g., linoleic, oleic) as determined with the standard GC-MS testing, and assuming every fatty acid molecule is bound with ethanol.[12]

$V_{S,S,G}$ = Standardized volume of G2 Diesel at 60-degrees fahrenheit, in gallons, sampled from the batch of renewable fuel to measure $V_{S,S,E}$ using standard GC-MS testing.

$V_{S,G}$ = Standardized volume of the batch of renewable fuel for which RINs are generated at 60-degrees fahrenheit, in gallons.

4. 11 Good Energy shall conduct standard GC-MS testing on every batch of G2 Diesel for which it generates RINs and submit the results to EPA within 20 business days of receiving the laboratory results or according to such other schedule as EPA may specify, until and unless the Agency determines, based on good engineering judgment, that the test results are stable from batch to batch and therefore testing of every batch is not required to know the volume of ethanol in batches of fuel produced pursuant to the 11 Good Energy Pathway with a reasonable degree of certainty. If the Agency determines that testing on every batch is no longer required, 11 Good Energy shall submit standard GC-MS test results at least once per quarter, on a calendar year basis, or at such other frequency as EPA may specify. If EPA determines that testing on every batch is no longer required, the value for $V_{RIN,E,A}$ for use as part of condition 3 in this document shall be calculated using the following formula:

$V_{RIN,E,A} = V_{S,E} * A$

Where:

$V_{RIN,E,A}$ = RIN volume, in gallons, of the original RINs received with ethanol that shall be assigned to the batch of renewable fuel.

$V_{S,E}$ = Standardized volume of denatured ethanol at 60-degrees fahrenheit, in gallons, used to produce the batch of renewable fuel.

[11] All standardized volumes in Section IV of this document shall be calculated in accordance with 40 CFR 80.1426(f)(8).

[12] This is a conservative approach because it will return the largest amount of ethanol. It should be accurate if the 11 Good Energy Process is working effectively.

A = A value between 0 and 1 determined by EPA based on good engineering judgment representing the ratio of the volume of denatured ethanol that ends up in the batch of renewable fuel to the volume of denatured ethanol used to produce the batch of renewable fuel.

5. A number of original gallon-RINs received with the ethanol used to produce a batch of renewable fuel shall be retired pursuant to § 80.1429(f), corresponding to the amount of ethanol that ends up in glycerin co-product, and shall be calculated using the following formula:

   $V_{RIN,R} = V_{S,E} - V_{RIN,E,A}$

   Where:

   $V_{RIN,R}$ = RIN volume, in gallons, of the original RINs received with ethanol that shall be retired pursuant to § 80.1429(f), corresponding to the amount of ethanol that ends up in the glycerin co-product.

   $V_{S,E}$ = Standardized volume of denatured ethanol at 60-degrees fahrenheit, in gallons, used to produce the batch of renewable fuel.

   $V_{RIN,E,A}$ = RIN volume, in gallons, of the original RINs received with ethanol that shall be assigned to the batch of renewable fuel.

Regarding the Equivalence Value for fuel produced pursuant to the 11 Good Energy Pathway, based on the fuel energy content data provided as part of 11 Good Energy's petition, EPA estimates that, in accordance with § 80.1415(c), the equivalence value for G2 Diesel fuel equals 1.5 when the ethanol is considered part of the renewable fuel. However, the energy content of G2 Diesel could change depending on the amount of free ethanol that slips in to the G2 Diesel. Therefore, based on discussions with 11 Good Energy, EPA has determined that future energy content testing on G2 Diesel shall be conducted by 11 Good Energy on a regular basis and the results submitted to EPA. The equivalence value for G2 Diesel and generation of advanced biofuel (D-code 5) RINs shall be determined as follows, including the following conditions and associated regulatory provisions:

6. The number of advanced biofuel (D-code 5) gallon-RINs that shall be generated for a batch of renewable fuel produced pursuant to the 11 Good Energy Pathway shall be equal to a volume calculated according to the following formula:

   $V_{RIN,G} = (EV_G * V_{S,G}) - V_{RIN,E,A}$

   Where:

   $V_{RIN,G}$ = The number of advanced biofuel (D-code 5) gallon-RINs that shall be generated for a batch of renewable fuel produced pursuant to the 11 Good Energy Pathway.

EV_G = Equivalence value for the batch of G2 Diesel produced pursuant to the 11 Good Energy Pathway, which shall be equal to 1.5 unless otherwise specified pursuant to condition 7 in this document.

$V_{S,G}$ = Standardized volume of the amount of G2 Diesel produced pursuant to the 11 Good Energy Pathway at 60-degrees fahrenheit, in gallons.

$V_{RIN,E,A}$ = RIN volume, in gallons, of the original RINs received with ethanol that shall be assigned to the batch of renewable fuel, determined according to condition 3 in this document.

7. 11 Good Energy shall test the energy content of a sample of renewable fuel produced pursuant to the 11 Good Energy Pathway and submit the results to EPA on a quarterly basis, including a certificate of analysis from a licensed laboratory that verifies the lower heating value in Btu per gallon of the renewable fuel. Based on the results from this testing EPA may adjust the value EV_{G2}, as appropriate to determine an appropriate equivalence value for G2 Diesel in accordance with § 80.1415(c).[13]

8. 11 Good Energy shall keep records documenting the calculations done to satisfy the conditions specified above, including documentation for all of the values used in the specified formulas, for each batch of renewable fuel for which RINs are generated pursuant to the 11 Good Energy Pathway.

If 11 Good Energy fails to comply with the conditions specified above, or fails to meet the elements of the approved 11 Good Energy Pathway for any amount of fuel for which it generates RINs pursuant to the 11 Good Energy Pathway, all such RINs shall be considered improperly generated under 40 CFR 80.1431(a). EPA may modify the conditions and associated regulatory provisions specified above, as necessary, to make them align with any future changes to the RFS regulations, including but not limited to registration, recordkeeping and reporting requirements. If EPA makes any changes to the conditions and associated regulatory provisions for the 11 Good Energy Pathway, the Agency will explain such changes in a public determination letter, similar to this one, and specify in that letter the effective date for any such changes.

IV. 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 RFS rule, we took public comment on our lifecycle

[13] Note that although the energy content of a batch of G2 Diesel will be lower if it contains more ethanol, this would reduce the number of D-code 5 RINs generated, per condition 5

assessment of the 2010 soybean biodiesel pathways, 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 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 be conducted to respond to petitions requiring significant new modeling. *See* 58 FR 14797 (March 26, 2010).

In responding to 11 Good Energy's petition, we have largely relied on the soybean biodiesel modeling that we conducted for the March 2010 RFS rule, and have simply adjusted the analysis to account for 11 Good Energy's 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 March 2010 RFS rule to represent feedstock production. This also includes use of the same emission factors and types of emission sources that were used in the March 2010 RFS rule analysis. Thus, the fundamental analyses relied on for this decision have already been made available for public comment as part of the March 2010 RFS rule, consistent with the reference to notice and comment in the statutory definition 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. Our evaluation in response to the petition is a logical extension of analyses already conducted for the March 2010 RFS rule.

V. Conclusion

Based on our GHG assessment, fuel produced pursuant to the 11 Good Energy Pathway satisfies the 50% GHG reduction requirement for the generation of advanced biofuel (D-code 5) RINs. The fuel must also meet the conditions specified in this document, as well as other applicable requirements specified in the CAA or EPA implementing regulations to qualify for RIN generation. For example the fuel must be produced from renewable biomass, and for use as transportation fuel, heating oil or jet fuel.

This approval applies specifically to 11 Good Energy and to the process, materials used, fuel produced, and process energy sources as outlined and described in the petition request submitted by 11 Good Energy. EPA will consider extending a similar approval to other petitioners utilizing the same fuel pathway as 11 Good Energy upon verification that the pathway is indeed the same, assuming all other requirements are met. This approval is effective as of signature date. Fuel produced pursuant to the 11 Good Energy Pathway does not meet the requirements for delayed RIN generation outlined in 40 CFR § 80.1426(g)(1)(ii), because the complete petition was not received by EPA by January 31, 2011, as required by 40 CFR § 80.1426(g)(1)(i)(A).

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow 11 Good Energy to register and generate RINs for "fatty acid ethyl ester" produced pursuant to the 11 Good Energy Pathway using soybean oil feedstock and a production process of "11 Good Energy Process."