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

OCT 24 2017

OFFICE OF
AIR AND RADIATION

Mr. Steve Roe
President
Little Sioux Corn Processors
4808 F Ave.
Marcus, Iowa 51035

Dear Mr. Roe:

On May 23, 2017, you submitted an *Efficient Producer* petition to the Agency on behalf of Little Sioux Corn Processors (LSCP), requesting a modification of the November 26, 2014, EPA pathway approval applicable to the Little Sioux Corn Processors facility in Marcus, Iowa (the "LSCP Marcus facility"). In the November 2014 determination document, EPA approved a pathway for the generation of renewable fuel (D-code 6) Renewable Identification Numbers (RINs) under the renewable fuel standard (RFS) program for non-grandfathered corn starch ethanol produced at the LSCP Marcus facility (the "November 2014 determination").

One of the conditions specified in the November 2014 determination is, "[t]he ethanol was produced by a dry mill process, using only corn starch as feedstock, during the averaging time period." Your May 2017 petition asks EPA to make modifications to the November 2014 determination to allow the LSCP Marcus facility to generate renewable fuel RINs for non-grandfathered corn starch ethanol when the facility also produces ethanol from corn kernel fiber and generates cellulosic biofuel RINs for such ethanol, during the averaging time period used in assessing the lifecycle greenhouse (GHG) emissions of the corn starch ethanol. In response to this request, we have developed a new category under the Efficient Producer petition process for dry mill ethanol plants that produce corn starch ethanol and cellulosic ethanol from corn kernel fiber. As a conservative and simplifying measure, we have attributed all of the fuel production energy use and associated GHG emissions to the corn starch ethanol that is produced. We are therefore issuing a modified determination to LSCP, which is attached.

The formulas specified for calculating the lifecycle GHG emissions associated with the corn starch ethanol produced at the LSCP Marcus facility have been modified to account for the possible production of corn kernel fiber ethanol, and generation of cellulosic biofuel RINs for such ethanol, during the averaging period. With these modifications, plus additional efficiency improvements that have been implemented by LSCP since the 2014 approval, the updated lifecycle GHG reduction calculated for corn starch ethanol produced pursuant to the approved pathway is 26.8% as shown in Table 2 of the attachment, as compared to 23.6% calculated in the context of the November 2014 determination.

Upon submission to and acceptance by EPA of a registration update that meets the requirements specified in the attachment, the modified pathway approval will go into effect, and at that time will supersede the November 2014 determination. An email will be sent to the Responsible Corporate Officer to indicate acceptance of the update.

Sincerely,

Christopher Grundler, Director
Office of Transportation and Air Quality

Attachment

Little Sioux Corn Processors Fuel Pathway Determination under the RFS Program
Office of Transportation and Air Quality

Summary: Little Sioux Corn Processors (LSCP) submitted an *Efficient Producer* petition (the "LSCP petition") dated, May 23, 2017, to the Agency to approve their generation of renewable fuel (D-code 6) Renewable Identification Numbers (RINs) under the Renewable Fuel Standard (RFS) program for non-grandfathered corn starch ethanol produced through a dry mill process[1] at their production facility located in Marcus, IA (the "LSCP Marcus Process").

Along with ethanol produced from corn starch, the LSCP Marcus facility also produces ethanol from corn kernel fiber. This determination allows the LSCP Marcus facility to generate renewable fuel RINs for non-grandfathered ethanol made from corn starch when the facility also produces cellulosic ethanol from corn kernel fiber, and generates cellulosic biofuel (D-code 3) RINs for such ethanol, during the averaging time period used in assessing the lifecycle GHG emissions of the corn starch ethanol. The methodology specified in this document for calculating the lifecycle GHG emissions associated with the corn starch ethanol produced at the LSCP Marcus facility accounts for the possible production of cellulosic ethanol from corn kernel fiber during the averaging period.

Although LSCP intends to document on an ongoing basis that the non-grandfathered corn starch ethanol it produces at the LSCP Marcus facility meets the appropriate greenhouse gas (GHG) emissions reduction requirements, EPA has performed a threshold lifecycle GHG emissions analysis based on the information in the LSCP petition to determine if it appears that the corn starch ethanol produced at the facility may achieve the required GHG reductions, if certain conditions are met. This lifecycle analysis, the results of which are explained in this document, involved a straightforward application of the same methodology and 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 more efficient fuel production process, in terms of the amount of feedstocks and amount/type of energy used to produce a certain quantity of ethanol. Based on the data provided in the LSCP petition, our analysis found that non-grandfathered corn starch ethanol produced through the LSCP Marcus Process may be able to qualify as renewable fuel if LSCP satisfies all of the conditions specified in this document to demonstrate that such ethanol meets the minimum 20% lifecycle GHG reduction requirement of the Clean Air Act (CAA).[2]

In this determination EPA is specifying certain conditions designed to ensure that RINs are only assigned to volumes of non-grandfathered corn starch ethanol produced through the LSCP Marcus Process if the fuel satisfies the corresponding GHG reduction requirements. EPA is specifying

[1] For purposes of this decision document a "dry mill process" is a process as defined in section I.C. of this document.
[2] Per the RFS regulations at 40 CFR 80.1401, ethanol derived from corn starch does not qualify as advanced biofuel.

the condition that to generate renewable fuel (D-code 6) RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process, LSCP must demonstrate that the corn starch ethanol produced during a 365-day averaging period,[3] using the assessment techniques specified herein that take into account the possible additional co-production of cellulosic ethanol, meets the 20% GHG reduction requirement. To make these demonstrations, LSCP must keep records on the feedstocks used and the lifecycle GHG emissions associated with the corn starch ethanol produced by the LSCP Marcus facility, based on the monitoring requirements, emissions factors and lifecycle analysis methodology and other requirements specified in this document.

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 for *Efficient Producer* petitions. This section is not specific to the request submitted by LSCP.
- *Section II. Available Information*: This section contains background information on LSCP and describes the information that LSCP 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 non-grandfathered corn starch ethanol produced through the LSCP Marcus Process and identifies how the analysis conducted differs from the analysis done for the March 2010 RFS rule. This section also describes how we have applied the lifecycle results to determine the appropriate D-code for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process.
- *Section IV. Conditions and Associated Regulatory Provisions*: This section describes the conditions and associated regulatory provisions that must be satisfied to generate RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process.
- *Section V. Public Participation*: This section describes our administrative process to consider the LSCP 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 the LSCP petition, including the D-code LSCP may use in generating RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process.

I. Required Information and Criteria for Petition Requests

A. Background and Purpose of Petition Process

[3] The full definition of the "averaging time period," is specified in section IV of this document.

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):

> *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 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 qualify for an exemption 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"[5]) assuming all other requirements 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.

On September 30, 2014, EPA announced a new expedited *Efficient Producer* petition process for corn starch and grain sorghum ethanol producers using a dry mill process that can demonstrate superior process efficiency through reduced onsite energy consumption, increased fuel output and/or use of biomass or biogas from certain sources to reduce process energy greenhouse gas emissions. For example, this *Efficient Producer* process, intended to cover a subset of the petitions received pursuant to 40 CFR 80.1416, would provide a streamlined, facility-specific review for certain ethanol producers petitioning to generate RINs for the production of ethanol beyond their grandfathered volume. EPA considers *Efficient Producer* petitions to be those seeking EPA evaluation of fuel pathways involving

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[4] See EPA's website for information about the RFS regulations and associated rulemakings: http://www2.epa.gov/renewable-fuel-standard-program/statutes-and-regulations-under-renewable-fuel-standard-program

[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.

certain fuel types, feedstocks and fuel production technologies that EPA has evaluated previously. Petitions that seek EPA evaluation of new/creative fuel production technologies will require additional analysis, and therefore will not be able to use this expedited review process.

With this determination document, EPA has created a new category under the *Efficient Producer* petition process for petitions involving corn starch ethanol producers that may also co-produce cellulosic ethanol from corn kernel fiber, and generate cellulosic biofuel (D-code 3) RINs for such ethanol. This determination document will serve as a template for any future *Efficient Producer* petitions from ethanol producers that meet these criteria.

Corn starch ethanol producers that co-produce cellulosic ethanol from corn kernel fiber, who seek a new pathway approval on terms different than are specified herein may petition the Agency pursuant to 40 CFR 80.1416 and request different treatment. However, such petitions will not be eligible for the expedited *Efficient Producer* petition process, and will therefore take significantly longer to review. The review time will depend on the number and type of other higher priority petitions under review by the EPA.[6]

B. Information to be Provided in Petitions

As specified in 40 CFR 80.1416(b)(1), petitions are to 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.

[6] The prioritization criteria are discussed on EPA's website: https://www.epa.gov/renewable-fuel-standard-program/renewable-fuel-petition-review-process#step3

C. Information Needed for Efficient Producer Petitions

Since *Efficient Producer* petitions are for a dry mill process with standard co-products, EPA does not need detailed information on the production process or co-products. The focus of an *Efficient Producer* petition is on efficient energy use and/or high ethanol yield per bushel of feedstock. Therefore, for these petitions the regulatory requirements for a mass balance (which demonstrates fuel yield) and an energy balance (which demonstrates energy use), are particularly important. In the context of an *Efficient Producer* petition involving corn starch ethanol producers that may also co-produce cellulosic ethanol from corn kernel fiber, the regulatory requirements for information on the production process and co-products can be satisfied by submission of the following certifications:

- Certification by the petitioner that the production process for the requested pathway is an ethanol production process where corn feedstock is ground into a coarse flour, also known as "meal"; the meal is cooked into a hot slurry with the addition of enzymes to produce a mixture commonly known as "mash"; the mash is fermented with the addition of yeast to produce ethanol, carbon dioxide and solids from the grain and yeast, known as "fermented mash"; the fermented mash is distilled to produce a mixture of ethanol and water, and a residue of non-fermentable solids, also known as "stillage"; the mixture of ethanol and water is dehydrated to produce 200-proof ethanol; and co-products produced include distillers grains, but may also include carbon dioxide, solubles syrup and vegetable oil (a "dry mill process").
- Certification by the petitioner that the co-product distillers grains are intended for use as animal feed.
- Certification by the petitioner that the dry mill process for the requested pathway uses one or a combination of the following sources for all of its process energy: electricity from the grid, natural gas, coal, biogas or biomass, and that any biomass used as process energy meets the RFS regulatory definition for crop residue at 40 CFR 80.1401.
- Certification by the petitioner that the ethanol production facility uses only corn starch, corn kernel fiber, or other minor components of corn kernels as feedstocks to produce ethanol.[7]
- Certification by the petitioner that all of the information provided in the petition is accurate and complete.

II. Available Information

A. Background on the Petitioner

[7] In cases where a facility uses corn kernel fiber as a feedstock to produce ethanol, and seeks to generate cellulosic biofuel (D-code 3) RINs for such ethanol, the Efficient Producer petition for such a facility must include reference to the petitioner's registration application to generate cellulosic biofuel (D-code 3) RINs for ethanol produced from corn kernel fiber that has been activated by EPA.

LSCP submitted an *Efficient Producer* petition, requesting EPA approval of a fuel production pathway that would allow their generation of RINs for non-grandfathered corn starch ethanol produced by a dry mill process at their Marcus, IA facility. A petition was required because the pathway associated with the LSCP Marcus Process is not included in Table 1 to 40 CFR 80.1426, and has not otherwise been approved by EPA. Table 1 (relevant portions of which are reproduced below) includes pathways for ethanol from corn starch, but provides only three options for fuel producers using a dry mill process and natural gas, biomass or biogas for process energy: (1) use two advanced technologies from Table 2 to 40 CFR 80.1426, (2) dry no more than 50% of the distillers grains with solubles (DGS) that they produce, or (3) dry no more than 65% of the DGS they produce and use one of the advanced technologies listed in Table 2 to 40 CFR 80.1426. The LSCP Marcus Process does not match any of the pathways in Table 1 to 40 CFR 80.1426 because it dries more than 65% of the DGS it markets annually and does not use two of the advanced technologies in Table 2 to 40 CFR 80.1426.

Table 1: Relevant Existing Fuel Pathways from 40 CFR 80.1426

Row	Fuel Type	Feedstock	Production Process Requirements	D-Code
A	Ethanol	Corn Starch	All of the following: Dry mill process, using natural gas, biomass, or biogas for process energy and at least two advanced technologies from Table 2 to this section	6 (Renewable Fuel)
B	Ethanol	Corn Starch	All of the following: Dry mill process, using natural gas, biomass, or biogas for process energy and at least one of the advanced technologies from Table 2 to this section plus drying no more than 65% of the distillers grains with solubles it markets annually	6 (Renewable Fuel)
C	Ethanol	Corn Starch	All of the following: Dry mill process, using natural gas, biomass, or biogas for process energy and drying no more than 50% of the distillers grains with solubles it markets annually	6 (Renewable Fuel)

B. Information Submitted by Little Sioux Corn Processors

LSCP provided all of the required information in the petition, including all of the data needed for EPA to perform a threshold determination of the potential for corn starch ethanol produced through the LSCP Marcus Process to satisfy the minimum 20% lifecycle GHG reduction requirement applicable to non-grandfathered renewable fuel if all conditions in this document are satisfied. LSCP included information on their process yield (bushels of feedstock per gallons of fuel) and the energy used. In addition, LSCP certified that their requested fuel pathway involves the use of corn starch feedstock, a dry mill process, ethanol fuel, distillers grain co-products, and the types of process energy that EPA previously modeled for the March 2010 RFS rule. LSCP certified that the only feedstocks used to produce ethanol at the LSCP Marcus facility are corn starch, corn kernel fiber or other minor components of corn kernels. LSCP's petition also referenced their registration application to generate cellulosic biofuel (D-code 3) RINs for ethanol produced from corn kernel fiber that has been activated by EPA.

C. Information Available Through Existing Modeling

For the pathway addressed in their petition, LSCP would use a feedstock (corn starch) that has already been analyzed as part of the March 2010 RFS rule, as noted in Table 1. LSCP also uses corn kernel fiber feedstock to produce ethanol, a fuel pathway that EPA previously evaluated in the final rule published on July 18, 2014 (79 FR 42128) ("the July 2014 Pathways II rule").[8] As a result, no new feedstock modeling was required to evaluate the ethanol produced through the LSCP Marcus Process, as modeling for corn starch was already done as part of the March 2010 RFS rule, and analysis of corn kernel fiber was done for the July 2014 Pathways II rule. Similarly, no new emissions impact modeling of using ethanol as a transportation fuel was required as that was already done as part of the March 2010 RFS rule. This petition only requires EPA to evaluate a modified fuel production process for an existing fuel type, taking into account that the facility may also be co-producing corn kernel fiber ethanol.

The same analytical approach that was used to evaluate the lifecycle GHG emissions of the existing corn starch ethanol pathways noted above was used to analyze the pathway described in the LSCP petition. The preamble to the March 2010 RFS rule describes the modeling approach used to estimate lifecycle GHG emissions from corn starch ethanol. 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 corn starch analysis to reflect the process described in the LSCP petition, the only change required was replacing the production process data with the LSCP Marcus

[8] Although this determination only approves the generation of renewable fuel RINs for non-grandfathered volumes of corn starch ethanol produced through the LSCP Corn Process, because LSCP Marcus may also co-produce ethanol from corn kernel fiber, EPA's prior analysis of corn kernel fiber for the July 2014 Pathways II rule is relevant for EPA's evaluation. For the July 2014 Pathways II rule we found that using corn kernel fiber to produce ethanol does not have significant indirect GHG emissions impacts that are in addition to the impacts associated with making corn starch ethanol from the same corn kernels (79 FR 42147).

Process data, and the use of a conservative methodology to account for the possible co-production of cellulosic ethanol from corn kernel fiber. This resulted in the following changes to the modeling (described in more detail in the following sections):

- Gallons of corn starch ethanol per bushel of corn feedstock was modified to reflect the LSCP Marcus process yield; and
- Amount of energy used by the fuel production process was changed to reflect data provided in the LSCP Marcus energy balance.

This was a straightforward analysis based on existing modeling done for the March 2010 RFS rule and substituting the LSCP Marcus process data, which only altered the amounts of certain inputs and outputs of the fuel production process, taking into account the possible co-production of cellulosic ethanol.

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 lifecycle greenhouse gas emissions of the renewable fuel, as compared to the lifecycle greenhouse gas emissions of the gasoline or diesel fuel that it replaces. 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 fuel's 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 for the pathway described in the LSCP petition is consistent with the CAA's applicable requirements, including the definition of lifecycle

GHG emissions and threshold evaluation requirements. It was based on information provided in the petition, including mass and energy balance data for the pathways associated with the LSCP Marcus Process.

The lifecycle GHG emissions of fuel produced using the pathway associated with the LSCP Marcus Process were determined as follows:

Feedstock production and transport (upstream emissions) – In the pathway evaluated in this determination document, LSCP uses corn starch as feedstock for the production of ethanol. As previously noted, corn starch is a feedstock already listed in Table 1 to 40 CFR 80.1426 of the RFS regulations. Since corn starch has already been evaluated by EPA, no new feedstock production modeling was required. LSCP has certified through its petition that it uses a dry mill production process that is consistent with the definition of "dry mill process" specified in section I.C. of this decision document. Therefore, the LSCP Marcus Process is the same type of dry mill process as that modeled for the March 2010 RFS rule, and the existing agricultural sector modeling analyses for corn as feedstock remains valid for use in estimating the lifecycle impact of renewable fuel produced using the LSCP Marcus Process.

The Forest and Agricultural Sector Optimization Model (FASOM) and Food and Agricultural Policy Research Institute (FAPRI) models were used to analyze the GHG impacts of the feedstock production portion of the ethanol lifecycle. The same FASOM and FAPRI results representing the emissions from an increase in corn production that were generated as part of the March 2010 RFS rule analysis of the corn ethanol pathways were used in our analysis of the corn ethanol production process described in the LSCP petition.

In the corn ethanol analysis for the March 2010 RFS rule, we projected approximately 960 million bushels of corn (assuming 56 pounds per bushel at 15.5 percent moisture) used to produce 2.6 billion additional gallons of ethanol compared to a baseline scenario (based on a yield of 2.71 gallons per bushel), and we calculated GHG emissions from feedstock production for that amount of corn. The FASOM and FAPRI agricultural sector GHG results were divided by the total energy value of fuel produced to get emissions per mmBtu of ethanol.[9] For the modeled scenario we estimated lifecycle GHG emissions of 9.73 $kgCO_2e$ per bushel of corn used to make ethanol. This includes the upstream emissions associated with producing the corn feedstock and transporting it to the ethanol production facility, and also includes significant direct and indirect emissions (such as emissions from land use change). Therefore, to estimate the lifecycle GHG emissions from the corn feedstock used to make corn starch ethanol in the LSCP Marcus Process, the bushels of corn used as feedstock provided in the LSCP petition were multiplied by the emissions factor of 9.73 $kgCO_2e$ per bushel. In the same manner

[9] For the purposes of this determination document, Btus are expressed on a lower heating value (LHV) basis, gallons of ethanol are expressed on an undenatured (neat) basis, and bushels of corn are expressed in terms of 15.5% moisture content unless otherwise specified.

as described in section IV.D. of this document, these emissions were then normalized by the mmBtu of corn starch ethanol produced from the same amount of bushels of corn.

LSCP also intends to co-produce ethanol from corn kernel fiber at their LSCP Marcus facility. The corn kernel fiber is associated with the same corn kernels as are used by the facility to produce corn starch ethanol. EPA's analysis in this determination considers the yield of corn starch ethanol per bushel of corn, determined by subtracting the volume of ethanol produced from corn kernel fiber from the total volume of ethanol produced at the LSCP Marcus facility. We then divided the volume of corn starch ethanol produced by the bushels of corn feedstock used to calculate the yield of corn starch ethanol per standard bushel of corn. Corn kernel fiber qualifies as crop residue as defined at 40 CFR 80.1401,[10] and we attributed all upstream lifecycle GHG emissions associated with growing the corn, used for all purposes at the LSCP Marcus facility, to the corn starch ethanol that is produced.

Fuel production (process emissions) – The fuel production method involved in the pathway evaluated in this document is a dry mill process. However, the process used by LSCP Marcus is more efficient in terms of energy use than the average dry mill ethanol production technologies analyzed for the March 2010 RFS rule.

To analyze the GHG impacts of the fuel production process used by LSCP Marcus, EPA utilized the same approach that was used to determine the impacts of processes in the corn starch ethanol pathways analyzed in the March 2010 RFS rule with modifications explained below to account for the possible additional production of corn kernel fiber ethanol through a separate pathway, and taking into account differences in the types and amounts of process energy used by LSCP Marcus.

LSCP submitted average annual mass and energy balance data for operations at LSCP Marcus, including all of the energy used for feedstock, fuel, and co-product operations. This includes the energy used to produce all of the ethanol, (regardless of feedstock or regulatory characterization as cellulosic, conventional, grandfathered, non-grandfathered, or fuel for which no RINs are generated) produced by LSCP Marcus.

To evaluate the fuel production GHG emissions per gallon of corn starch ethanol produced through the LSCP Marcus Process, EPA attributed all of the energy used for feedstock, fuel, and co-product operations and associated GHG emissions to the volume of corn starch ethanol produced.[11] This is a conservative approach for evaluating the GHG emissions associated with corn starch ethanol

[10] See the July 2014 Pathways II rule for more information about EPA's determination that corn kernel fiber qualifies as a crop residue.

[11] For further details on how this calculation was performed see the equation to calculate GHGPc in section IV of this document.

produced by LSCP Marcus, because it allocates all of the energy used to process corn kernel fiber ethanol to the corn starch ethanol.[12]

The lifecycle GHG emissions factors used for process energy were the same emissions factors used in the modeling for the March 2010 RFS rule:

- Natural gas = $6.86*10^{-5}$ $kgCO_2e$/Btu
- Coal = $1.12*10^{-4}$ $kgCO_2e$/Btu
- Biogas CH_4 = $3.64*10^{-7}$ $kgCO_2e$/Btu
- U.S. average grid electricity = 0.750 $kgCO_2e$/kWh
- Crop residue biomass used onsite for process energy upstream emissions = $5.40*10^{-3}$ kgCO2e per dry pound (based on the corn stover lifecycle analysis for the March 2010 RFS rule)

Fuel distribution and use (downstream emissions) – The fuel type, ethanol, and hence the fuel distribution and use for ethanol, was already considered as part of the March 2010 RFS rule. Therefore, we applied the existing fuel distribution and use lifecycle GHG impacts for corn starch ethanol to our analysis of the LSCP petition. The emissions factor for ethanol distribution and use, otherwise known as downstream emissions, is 2.1 $kgCO_2e$ per mmBtu of ethanol.

Lifecycle GHG emissions – The lifecycle GHG emissions associated with LSCP Marcus's corn starch ethanol, using the conservative assumptions described above, were then compared to the baseline lifecycle GHG emissions, using the same value for baseline gasoline as in the March 2010 RFS rule analysis. Based on the data submitted by LSCP, our analysis indicates that ethanol produced using the LSCP Marcus Process would result in at least a 20 percent GHG emissions reduction compared to the baseline lifecycle GHG emissions.

Table 2 below breaks down by stage the lifecycle GHG emissions for corn starch ethanol produced using the LSCP Marcus Process, compared to such emissions for a corn starch ethanol pathway analyzed as part of the March 2010 RFS rule that does not use any of the advanced technologies specified in the RFS regulations and dries all of its co-product DGS, and the 2005 gasoline baseline. This table demonstrates the contribution of each stage in the fuel pathway and its relative significance in terms of GHG emissions.

In the table, upstream emissions include the lifecycle GHG emissions associated with producing and transporting all of the corn feedstock used at the LSCP Marcus facility. Process

[12] 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 RFS renewable fuel qualification that is sought by a petitioner when "conservative" assumptions are used, then a more precise quantification of the matter is not required for purposes of a pathway approval.

emissions include all of the lifecycle GHG emissions associated with producing all forms of ethanol. Downstream emissions include the lifecycle GHG emissions associated with distributing and using the finished corn starch ethanol. Table 2 provides EPA's mean estimate of GHG emissions for each of these stages of the lifecycle.

Table 2: Lifecycle GHG Emissions for Corn Starch Ethanol Produced through the LSCP Marcus Process (kgCO2e/mmBtu)[13]

	Corn Starch Ethanol, Natural Gas Fired Dry Mill, 100% Dry DGS, No Advanced Technologies	Corn Starch Ethanol Produced Through the LSCP Marcus Process	Baseline Lifecycle GHG Emissions for Gasoline
Upstream Emissions	47.6	44.7	*
Process Emissions	32.4	25.1	19.2
Downstream Emissions	2.1	2.1	79.0
Total Lifecycle Emissions	81.7	71.9	98.2
Percent Reduction	16.8%	26.8%	--

* Emissions included in Process Emissions stage.

B. Application of the Criteria for Petition Approval

Based on the information provided in the LSCP petition, and the requirements specified in section IV limiting RIN generation for non-grandfathered corn starch ethanol to such ethanol for which ongoing monitoring and assessment allow documentation of compliance with appropriate lifecycle greenhouse gas reduction requirements, EPA is approving this petition. Specifically, we have determined that ethanol produced pursuant to the LSCP Marcus Process using corn starch feedstock satisfies the minimum 20% greenhouse gas reduction threshold required in the CAA for non-grandfathered renewable fuel if the ethanol is produced in accordance with the fuel yield and energy use information specified in the LSCP petition. As detailed in section IV, EPA is specifying certain conditions that must be satisfied for corn starch ethanol produced through the approved pathway to be eligible for RIN generation. Where all the conditions are satisfied, EPA is authorizing the generation of renewable fuel (D-code 6) RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process, provided that the fuel meets the other criteria for renewable fuel specified in the CAA and EPA implementing regulations, and provided LSCP submits the necessary registration documentation as described in section IV of this document.

[13] Net emissions may not be the sum of the rows due to rounding.

IV. Conditions and Associated Regulatory Provisions

The authority for LSCP to generate RINs for non-grandfathered corn starch ethanol produced pursuant to the LSCP Marcus Process is expressly conditioned on LSCP satisfying all of the following conditions as detailed in this section, in addition to other applicable requirements for renewable fuel producers set forth in the RFS regulations. These conditions 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, EPA may revoke this pathway approval if it determines that LSCP has failed to comply with any of the conditions specified herein.[14]

The pathway for corn starch ethanol approved in this document is in addition to the existing pathways for corn starch ethanol listed in rows A, B, C, and D of Table 1 to 40 CFR 80.1426. This document does not impact the ability of LSCP to generate RINs for volumes of fuel pursuant to 40 CFR 80.1426(f)(6) or the approved pathways in Table 1 to 40 CFR 80.1426. For example, this approval does not impact the ability of LSCP to generate RINs for cellulosic ethanol produced from corn kernel fiber pursuant to pathway K in Table 1 to 40 CFR 80.1426.

This section details the registration, compliance monitoring, lifecycle GHG computation, recordkeeping, reporting, attest engagement and other requirements that apply to the non-grandfathered corn starch ethanol pathway associated with the LSCP Marcus Process and it is organized as follows:

- *Sub-section A*: definitions
- *Sub-section B*: registration requirements
- *Sub-section C*: compliance monitoring
- *Sub-section D*: lifecycle GHG conditions and associated computational requirements
- *Sub-section E*: recordkeeping requirements
- *Sub-section F*: reporting requirements
- *Sub-section G*: additional requirements

As described in the following sections, one condition for LSCP to generate RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process is documentation by LSCP that RINs are only generated if, on average, all corn starch ethanol (including both grandfathered and non-grandfathered volumes, and volumes for which RINs are not generated) produced during the specified averaging period (typically 365 days) satisfies the 20% lifecycle GHG reduction requirement. The 365-day rolling average is calculated based on the daily data monitored and collected by LSCP and the formulas specified in section IV.D.

[14] As with all pathway determinations, this approval does not convey any property rights of any sort, or any exclusive privilege.

A. Definitions

For the purposes of this petition approval, the following terms are defined as follows:

a. *365-day rolling average lifecycle GHG emissions* means the average lifecycle GHG emissions for the corn starch ethanol produced by LSCP Marcus during the averaging time period, calculated as specified in section IV.D. based on the daily data collected and recorded by LSCP through continuous monitoring.[15]

b. *Averaging time period* means the 365 calendar days prior to the day that LSCP wishes to generate RINs for fuel produced through the LSCP Marcus Process.[16] To clarify, LSCP may not generate RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process on the same day that such ethanol is produced.

c. *Continuous monitoring* means the collection and use of measurement data and other information to record the data inputs required to calculate the 365-day rolling average lifecycle GHG emissions, in accordance with the compliance monitoring plan described in section IV.C or, for data collected during the 365 days prior to the effective date of this approval, with the compliance monitoring plan submitted in accordance with the November 26, 2014 pathway approval for LSCP Marcus.

d. *Energy used for feedstock, fuel and co-product operations* means energy used in all buildings or other areas that are used in any part for the storage and/or processing of feedstock, the production and/or storage of fuel intermediates, the production and/or storage of finished fuel or co-products, the on-site production of electricity (whether used onsite or exported), and the handling of feedstocks, fuel, co-products and wastes. It includes any energy used offsite for these purposes, including for example energy used offsite to dry the co-product distiller's grains produced by LSCP Marcus before it is sold to the ultimate consumer. It includes all of the energy uses described above regardless of whether they are related to corn starch or corn kernel fiber processing.

e. *Period of missing data* includes each day for which LSCP does not have valid data collected through continuous monitoring for any of the daily data inputs required to calculate the 365-day rolling average lifecycle GHG emissions, as specified section IV.D.

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[15] The EPA has provided spreadsheets on its website to help ethanol producers understand the correct calculation of 365-day rolling average lifecycle GHG emissions.

[16] This expedited *Efficient Producer* petition process is intended for facilities that consistently use efficient production methods (i.e., who meet the applicable lifecycle GHG reduction thresholds) throughout the year. Parties who only use efficient methods during part of the year, and wish approval for such partial-year production, may submit a standard petition.

B. Registration

Since LSCP is already registered to produce non-grandfathered corn starch ethanol pursuant to the pathway approved on November 26, 2014, and that approval is very similar to this one, a new registration application will not be required. Rather, in order to generate RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process when the facility also generates cellulosic biofuel RINs for corn kernel fiber ethanol during the averaging time period, LSCP first needs to submit and have EPA accept a registration update for the pathway that includes the LSCP Marcus Process. LSCP shall submit the registration update as an addendum to their independent third-party engineering review on file with EPA, meaning the registration update must be reviewed and accepted by the independent third-party engineer. LSCP shall notify EPA when they have submitted the registration update by submitting a message through the Program Support and Registration Contact Form (the "contact form").[17] LSCP shall submit the contact form with "Part 80 Registration" as the subject, "LSCP Marcus" as the organization, "Registration update for the LSCP Marcus Process" included in the summary of comments, and the comments section shall reference this determination document with its signature date. The modified pathway approved by this determination document will go into effect on the day that EPA sends an email to LSCP saying that the registration update for the LSCP Marcus Process has been accepted, and at that time this determination document will supersede the November 2014 determination. The registration update shall contain the following:

a. A Compliance Monitoring Plan (CMP) including technical specifications detailing how LSCP will accurately and reliably measure and record all of the daily data required in section IV.D. and calculate and record the 365-day rolling average lifecycle GHG emissions. The CMP shall state that the daily volumes of corn kernel fiber ethanol produced shall be measured and recorded in accordance with the methods and techniques specified in LSCP's registration application activated by and on file with EPA for the crop residue (i.e., corn kernel fiber) ethanol pathway in row K of Table 1 to 40 CFR 80.1426, and these daily volumes shall be used to determine the value of V_{CFS} used in the formulas specified in section IV.D below. The CMP shall also state whether there have been any changes at the LSCP Marcus facility that affect the process flow diagram, or any other part of the registration application, activated by and on file with EPA prior to the date of this determination, for the pathway that includes the LSCP Marcus Process.

b. If there have been any changes at the LSCP Marcus facility that affect the process flow diagram on file with EPA as part of the activated registration for the pathway that includes the LSCP Marcus Process, the registration update shall also contain a process flow diagram showing all of the following:

[17] The form is available through EPA's website here: https://www.epa.gov/fuels-registration-reporting-and-compliance-help/forms/fuels-program-helpdesk#contactform

1. The supply and continuous monitoring of all energy used for feedstock, fuel and co-product operations.

2. The continuous monitoring of bushels of corn used in fuel production processes for all of the ethanol produced by LSCP Marcus, including non-grandfathered ethanol for which RINs are generated, ethanol for which RINs are not generated and ethanol that is exempt from the 20% GHG reduction requirement per 40 CFR 80.1403.

3. The continuous monitoring of volume and temperature[18] for all of the ethanol produced by LSCP Marcus, including non-grandfathered ethanol for which RINs are generated, ethanol for which RINs are not generated and ethanol for which RINs are generated that is exempt from the 20% GHG reduction requirement per 40 CFR 80.1403.

4. Information for each of the continuous monitoring systems (e.g., scales, fuel flow meters and electricity meters) shown in the process flow diagram including the name of the manufacturer, the manufacture date and all relevant serial numbers.

c. A certification signed by a Responsible Corporate Officer containing the following statement: "I hereby certify that: (1) I have reviewed and understand the process flow diagram submitted with this application for registration as required pursuant to section IV.B.b of the petition approval document for the pathway associated with the LSCP Marcus Process; (2) To the best of my knowledge the process flow diagram is accurate and complete; (3) All monitoring devices specified in the process flow diagram will be calibrated and maintained according to the manufacturer specifications or more frequently (if the manufacturer does not provide calibration or maintenance records then the company must meet standards for similar monitoring devices); and (4) All of the monitoring devices included in the process flow diagram monitor all of the information specified in sections IV.B.b.1, 2 and 3 of the petition approval document for the pathway associated with the LSCP Marcus Process."

d. If LSCP wishes to exclude any amount of energy used at the LSCP Marcus facility when calculating the 365-day rolling average lifecycle GHG emissions, the description of the facility's production process must include all of the following:

    1. An explanation of why such energy should not be included.

[18] Temperature readings must take place at the same time the volume is measured.

2. A plan showing how the energy that will not be included in the calculation of the 365-day rolling average lifecycle GHG emissions will be kept completely segregated, separately metered and recorded.[19]

e. If LSCP wishes to take credit for exported electricity in calculating GHG_P pursuant to section IV.D, LSCP must include a certification signed by a Responsible Corporate Officer stating that any exported electricity would be the result of combined heat and power technology as defined in the RFS regulations at 40 CFR 80.1401.

C. Compliance Monitoring

LSCP must implement the CMP, and must use data obtained and recorded in accordance with this plan to calculate the 365-day rolling average lifecycle GHG emissions.

D. Corn Starch Ethanol Lifecycle GHG Emissions

LSCP may not generate RINs for non-grandfathered corn starch ethanol produced pursuant to the LSCP Marcus Process unless it can demonstrate through records produced in accordance with 40 CFR 80.1454(b)(3) that are available as of the date of RIN generation and maintained by LSCP for a minimum of five years from the date of RIN generation that all of the ethanol produced during the averaging period at the LSCP Marcus facility (including non-grandfathered volume, grandfathered volume, ethanol for which RINs are generated, and ethanol for which RINs are not generated) meets all of the following requirements:

a. The ethanol was produced using only corn starch, corn kernel fiber, or other minor components of corn kernels as feedstock(s)

b. The 365-day rolling average lifecycle GHG emissions are calculated using the following formula, and do not exceed 78.56 kgCO2e/mmBtu:[20]

$$LC_{GHGc} = GHG_{Uc} + GHG_P + GHG_D$$

Where:

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[19] There are only two valid reasons for excluding any amount of energy used by LSCP Marcus when calculating the 365-day rolling average lifecycle GHG emissions. The first is that the energy is used in a stand-alone and separately-metered building that is used solely for administrative purposes. The second is that the energy is used in a stand-alone and separately-metered tower grain dryer to dry the corn kernel feedstock prior to grinding. The lifecycle GHG emissions from energy used at such a tower grain dryer may be excluded because they have been taken into account as part of the feedstock production stage of the EPA's lifecycle assessment of corn starch ethanol as modeled for the March 2010 RFS rule.

[20] The statutory petroleum gasoline baseline estimated for the March 2010 RFS final rule was 98.2 $kgCO_2e$/mmBtu. Fuel meeting the twenty percent lifecycle GHG reduction threshold produces 78.56 $kgCO_2e$/mmBtu or less.

LC_{GHGc} = Lifecycle GHG emissions, in $kgCO_2e$/mmBtu, that are attributed to the volume of all corn starch ethanol produced at the facility during the averaging time period, including the GHG emissions associated with producing all ethanol (including both corn starch and corn kernel fiber ethanol, and including non-grandfathered volume, grandfathered volume, ethanol for which RINs are generated, and ethanol for which RINs are not generated).

GHG_{Uc} = Upstream GHG emissions, in $kgCO_2e$/mmBtu, related to the production and transport of the volume of corn feedstock used to produce all ethanol at the facility during the averaging time period, calculated per section IV.D.c.

GHG_P = Process GHG emissions, in $kgCO_2e$/mmBtu, related to energy used for feedstock, fuel and co-product operations; calculated per section IV.D.d.

GHG_D = Downstream GHG emissions, in $kgCO_2e$/mmBtu, related to the distribution and use of all corn starch ethanol produced during the averaging period, calculated per section IV.D.e.

c. For the purposes of the formula in section IV.D.b, GHG_{Uc} is calculated according to the following formula:

$$GHG_{Uc} = (9.73 * B_C) / (V_{CSS} * 0.076)$$

Where:

9.73 = Upstream emissions factor for corn, in $kgCO_2e$ per bushel, based on the lifecycle GHG modeling done by EPA for the March 2010 RFS rule.

B_C = Bushels of corn used by LSCP Marcus as feedstock to produce ethanol during the averaging time period in terms of a standard bushel at 15.5% moisture.

For the purposes of this paragraph, B_C, shall be calculated according to the following formula:

$$B_C = B_{C_m} * \left(\frac{1 - m_c}{1 - 0.155}\right)$$

B_{Cm} = Bushels of corn used by LSCP Marcus as feedstock to produce ethanol during the averaging time period based on measurements recorded by LSCP Marcus.

m_c = Average moisture content of corn, in mass percent, for the corn delivered to LSCP Marcus for use as feedstock to produce ethanol during the averaging time period. The moisture content tests performed by LSCP shall sample corn that, based on good engineering judgment, is representative of each delivery of corn feedstock to LSCP Marcus. LSCP shall test the moisture content of the corn delivered in each and every truck load, train load, or other delivery of corn to LSCP Marcus, and for any given

delivery must measure the corn moisture content no less frequently than once for every 10,000 bushels. For moisture content, LSCP shall use a DICKEY-john GAC 2500UGMA or Perten AM 5200-A moisture meter, as certified by the National Type Evaluation Program, and follow the device's operating instructions, or use alternative test methods as specified by LSCP in their CMP described in section IV.B of this document. LSCP shall calculate the average moisture content as a weighted average, by summing the products of the mass and corresponding moisture content of each corn delivery, and then dividing by the total mass of corn feedstock delivered to LSCP Marcus during the averaging time period.

0.155 = Moisture content of a standard bushel of corn at 56 pounds per bushel.

$V_{CSS} = V_S - V_{CFS}$, the standardized volume of corn starch ethanol produced at the LSCP Marcus facility during the averaging time period, in gallons of undenatured ethanol.

V_S = Standardized volume of all ethanol produced at the LSCP Marcus facility during the averaging time period, in gallons of undenatured ethanol. In determining the standardized volume, the actual volumes of ethanol shall be adjusted to a standard temperature of 60 degrees Fahrenheit using the following formula:

$$V_S = V_A * \left(1 - \left(0.00114 * \left(\left[\{T + 459.67\} * \frac{5}{9}\right] - \left[\{60 + 459.67\} * \frac{5}{9}\right]\right)\right)\right)$$

Where:

V_A = Actual volume of undenatured ethanol, in gallons.

T = Actual temperature of ethanol, in degrees Fahrenheit, measured at the same time that V_A is measured.

0.00114 = Coefficient to standardize volumes of undenatured ethanol.

60 = Standard temperature, in degrees Fahrenheit, for volumes of ethanol.

459.67 and 5/9 = Conversion factors for Fahrenheit to Kelvin

V_{CFS} = Standardized volume of ethanol produce from corn kernel fiber at the LSCP Marcus facility during the averaging time period, in gallons of undenatured ethanol, determined in accordance with the methods and techniques specified in LSCP's activated registration on file with EPA for the crop residue (i.e., corn kernel fiber) ethanol pathway in row K of Table 1 to 40 CFR 80.1426.

0.076 = Energy content of ethanol, in mmBtu/gallon (lower heating value).

d. For the purposes of the formula in section IV.D.b, GHG_P is calculated according to the following formula:

$$GHG_P = \frac{\sum_{p=1}^{3}(PE_p * LHV_{PE,p} * EF_{PE,p}) + BIO * EF_{bio} + ELEC * EF_{elec}}{V_{CSS} * 0.076}$$

Where:

p = Type of fuel used.

PE_p = A measure of the amount of fuel p used as energy used for feedstock, fuel and co-product operations, as follows:

PE_{p1} = Standard cubic feet (scf) of natural gas used in feedstock, fuel and co-product operations, as measured by LSCP by continuous monitoring.

PE_{p2} = scf of biogas CH_4 from landfills, wastewater treatment plants and/or waste digesters used as energy used for feedstock, fuel and co-product operations, as measured by LSCP by continuous monitoring.[21]

PE_{p3} = Tons of coal, used as energy used for feedstock, fuel and co-product operations, as measured by LSCP by continuous monitoring.

BIO = Dry pounds (0% moisture) of biomass used as energy used for feedstock, fuel and co-product operations, as measured by LSCP by continuous monitoring.

ELEC = kWh of Grid electricity used as energy used for feedstock, fuel and co-product operations, as measured by LSCP by continuous monitoring.

$LHV_{PE,p}$ = Lower Heating Value factor for fuel type p, as follows:

$LHV_{PE,p1}$ = 983 Btu per scf of natural gas.

$LHV_{PE,p2}$ = 983 Btu per scf of biogas CH_4.

$LHV_{PE,p3}$ = 19,546,300 Btu per ton of coal.

$EF_{PE,p}$ = Lifecycle GHG emissions factor for fuel type p, (based on lower heating value) as follows:

$EF_{PE,p1}$ = $6.86 * 10^{-5}$ $kgCO_2e$ per Btu of natural gas.

[21] This shall only represent the methane in the biogas used. If the amount of methane present in the biogas is not metered directly, LSCP shall determine the amount of methane present in the biogas used by LSCP Marcus, using the monitoring protocols and test procedures specified in the Compliance Monitoring Plan submitted by LSCP as part of their registration materials for the LSCP Marcus Process.

$EF_{PE,p2}$ = 3.64 * 10^{-7} $kgCO_2e$ per Btu of biogas CH_4.

$EF_{PE,p3}$ = 1.12 * 10^{-4} $kgCO_2e$ per Btu of coal.

EF_{bio} = 5.40*10^{-3} $kgCO_2e$ per dry lbs of crop residue biomass.

EF_{elec} = 0.750 $kgCO_2e$ per kWh of grid electricity, based on the United States grid average.

e. For the purposes of the formula in section IV.D.b, GHG_D is calculated to be 2.1 kgCO2e per mmBtu of corn starch ethanol.

f. For the purposes of section IV.D., for all corn starch ethanol produced by LSCP during a day where LSCP has missing data on any of the factors described in this section, LSCP shall assess such fuel as having lifecycle GHG emissions of 98.2 kgCO2e per mmBtu,[22] and use this value in their calculation of the 365-day rolling average lifecycle GHG emissions.

E. Recordkeeping

In addition to the specific recordkeeping requirements stated at 40 CFR 80.1454(b)(3)(i)-(xii), the following records related to the generation and assignment of RINs must be produced and maintained pursuant to 40 CFR 80.1454(b)(3) when LSCP generates RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process.

a. Records documenting the data required to calculate lifecycle GHG emissions per the requirements specified in section IV.D., and which are collected in accordance with the CMP described in section IV.B of this document. This includes comprehensive and reliable information with respect to the amount of feedstock and energy used and the amount of fuel produced, such as meter readings and energy bills that span the entire averaging time period for each instance that RINs are generated for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process.

b. Records presenting accurate calculations verifying compliance with the applicable lifecycle GHG reduction threshold on a 365-day rolling average basis in accordance with section IV.D. that are prepared on each day that RINs are generated for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process. The information must include identifiable unique references to all documents and metering data used in the calculations.[23]

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[22] The value of 98.2 kgCO2e/mmBtu was selected because it is the value for baseline lifecycle GHG emissions from gasoline, as evaluated by EPA for the March 2010 RFS rule. We recognize this is a conservative approach for substituting missing data, and we believe a conservative approach is necessary to eliminate any incentive for parties to fail to collect and document accurate data.

[23] The EPA has provided spreadsheets on its website to help ethanol producers understand the correct calculation of 365-day rolling average lifecycle GHG emissions. These spreadsheets can also be used for recordkeeping.

F. Reporting

As part of the quarterly RIN generation reports required under 40 CFR 80.1451(b), LSCP shall follow all of the instructions in the RFS Efficient Producer Data Form (RFS2500) (EPA Form 5900-374) to submit the required information that was prepared during the relevant quarter.[24]

G. Additional Conditions

The authority for LSCP to generate RINs for non-grandfathered corn starch ethanol produced pursuant to the LSCP Marcus Process is expressly conditioned on LSCP satisfying all of the following additional conditions:

a. For any biogas energy used for feedstock, fuel and co-product operations, LSCP must satisfy the requirements specified at 40 CFR 80.1426(f)(12) of the RFS regulations.

b. All of the biomass used onsite as process energy used for feedstock, fuel and co-product operations must be one or any combination of the types of biomass that is a crop residue, as defined at 40 CFR 80.1401 in the RFS regulations.[25]

LSCP may not generate RINs for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process if LSCP fails to comply with any of the conditions in this section IV. However, this does not prevent LSCP from generating RINs for fuel produced pursuant to any of the pathways specified in Table 1 to 40 CFR 80.1426, or pursuant to 40 CFR 80.1426(f)(6), to the extent that LSCP is authorized to do so under applicable regulations.

If LSCP chooses to generate RINs for grandfathered fuel pursuant to 40 CFR 80.1426(f)(6), and also generate RINs for non-grandfathered corn starch ethanol produced pursuant to the LSCP Marcus Process during any given calendar year, LSCP may only generate RINs for non-grandfathered corn starch ethanol after it generates RINs for all of its grandfathered baseline volume. In other words, LSCP must first generate RINs for its entire grandfathered volume before generating RINs under the pathway approved in this document.[26]

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[24] Since the information prepared pursuant to section IV.E. must be included in the LSCP quarterly RIN generation reports to EPA, it follows that this information is subject to attest engagement requirements pursuant to 80.1464(b).

[25] See the July 2014 RFS rule (79 FR 42128) for more details on what EPA considers to be crop residue.

[26] There are several reasons for the inclusion of this condition. There are data reliability benefits associated with requiring the generation of grandfathered RINs first. For example, this condition will help to reduce the Agency's administrative burden related to enforcement and compliance. If LSCP were able to switch back and forth between generating grandfathered and non-grandfathered RINs, auditing their records would require EPA to do a more complex review of historical data. Furthermore, alternating between the grandfathered and non-grandfathered RIN generation creates more opportunities for errors in the calculations required to meet the GHG emission reduction threshold, and also provides more opportunities for errors when generating RINs in EMTS. EPA has approved pathway petitions in the past with conditions allowing parties to switch back and forth between the production of grandfathered and non-grandfathered volume during a

EPA may modify the conditions specified above, as it deems necessary and appropriate to ensure that non-grandfathered corn starch ethanol produced pursuant to the LSCP Marcus Process achieves the required lifecycle GHG reductions, including to make the conditions align with any future changes to the RFS regulations. If EPA makes any changes to the conditions noted in this document 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.

V. Public Participation

As part of the March 2010 RFS rulemaking process, we took public comment on our lifecycle assessment of the corn starch ethanol pathways listed in Table 1 to 40 CFR 80.1426, including all models used and all modeling inputs and evaluative approaches. In the context of that rulemaking 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 notice and public comment if we can do so as a reasonably straightforward extension of prior analyses, whereas notice and public comment would be conducted to respond to petitions requiring significant new analysis and/or modeling. *See* 75 FR 14797 (March 26, 2010).

In responding to the petition submitted by LSCP, we have relied on the corn starch ethanol modeling that we conducted for the March 2010 RFS rule, and have simply adjusted the analysis to account for the specific production process used by LSCP Marcus. We relied 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. Our analysis of the LSCP petition also relied on certain aspects of the modeling and analysis completed for the July 2014 Pathways II rulemaking, which included a public comment process. Thus, the fundamental analyses relied on for this decision have already been made available for public comment as part of the March 2010 RFS and July 2014 Pathways II rules. 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 and July 2014 Pathways II rules.

VI. Conclusion

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calendar year. However, for the reasons described above, we have decided not to grant additional petitions allowing such an approach.

This document specifies conditions designed to ensure that D-code 6 RINs are generated for non-grandfathered corn starch ethanol produced pursuant to the LSCP Marcus Process only if the ethanol satisfies the 20% lifecycle GHG reduction requirements specified in the CAA for renewable fuel. The fuel must also meet other applicable requirements specified in the CAA and EPA implementing regulations to qualify for RIN generation, including being produced from renewable biomass, and for use as transportation fuel, heating oil or jet fuel.

This approval applies specifically to the LSCP Marcus facility and to the process, materials used, fuel and co-products produced, and process energy sources as outlined and described in the LSCP petition. The pathway approved in this determination document, for non-grandfathered corn starch ethanol produced through the LSCP Marcus Process, will go into effect when EPA accepts a registration update as specified in section IV.B. of this document, and at that time this determination document will supersede the November 2014 determination.

This document has no impact on the ability of LSCP to register and generate RINs for the facility's baseline volume of grandfathered ethanol fuel or to register and generate RINs for ethanol produced using any of the pathways specified in Table 1 to 40 CFR 80.1426.