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

August 30, 2023

OFFICE OF
AIR AND RADIATION

Mr. Kim Do
Director of FP&A
White Energy, Inc.
2595 Dallas Parkway
Suite 310
Frisco, Texas 75034

Dear Mr. Do:

You submitted an *Efficient Producer* petition to the Agency on behalf of White Energy, Inc. (White Energy) to approve a pathway for the generation of renewable fuel (D-code 6) Renewable Identification Numbers (RINs) under the renewable fuel standard (RFS) program for the production of non-grandfathered ethanol. The ethanol is produced through a dry mill process at your production facility located in Hereford, Texas using corn starch as feedstock (the "White Energy Hereford Corn Process"). White Energy also uses grain sorghum as a feedstock to produce ethanol; however, this petition only requests a new fuel pathway for the generation of D-code 6 RINs for non-grandfathered ethanol produced using corn starch as feedstock.

Through the petition process described under 40 CFR 80.1416, White Energy submitted data to the U.S. Environmental Protection Agency to perform a lifecycle greenhouse gas (GHG) emissions analysis of the fuel produced through the White Energy Hereford Corn Process. 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 more efficient fuel production process.

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

Based on our assessment, the non-grandfathered corn starch ethanol produced through the White Energy Hereford Corn Process qualifies under the Clean Air Act (CAA) for renewable fuel (D-code 6) RINs, assuming 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 the White Energy Hereford facility, and to the process, materials used, fuel produced, and process energy sources as outlined and described in the petition request submitted by White Energy.

The OTAQ Reg: Fuels Programs Registration and OTAQ EMTS: OTAQ EMTS Application will be modified to allow White Energy to register and generate RINs for the production of non-grandfathered ethanol from corn starch feedstock using a production process of "White Energy Hereford Corn Process."

Sincerely,

SARAH DUNHAM

Digitally signed by SARAH DUNHAM
Date: 2023.09.05 14:33:53 -04'00'

Sarah Dunham, Director
Office of Transportation and Air Quality

Enclosure

White Energy, Inc. Fuel Pathway Determination under the RFS Program
Office of Transportation and Air Quality

Summary: White Energy, Inc. (White Energy) submitted an *Efficient Producer* petition (the "White Energy petition"), dated June 23, 2023 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 ethanol produced through a dry mill process[1] at their production facility located in Hereford, Texas using corn starch as feedstock (the "White Energy Hereford Corn Process"). White Energy also uses grain sorghum as a feedstock to produce ethanol; however, this document only addresses White Energy's request for EPA to approve a new fuel pathway for their generation of D-code 6 RINs for non-grandfathered ethanol produced using corn starch as feedstock.

Although White Energy intends to document on an ongoing basis that the non-grandfathered corn ethanol it produces at its Hereford, Texas facility through the White Energy Hereford Corn Process meets the appropriate greenhouse gas (GHG) emissions reduction requirements, EPA has performed a threshold lifecycle GHG emissions analysis based on the information in the White Energy petition to determine if it appears that corn 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 corn ethanol. Based on the data provided in the White Energy petition, our analysis found that non-grandfathered corn ethanol produced through the White Energy Hereford Corn Process may be able to qualify as renewable fuel if White Energy 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 ethanol produced through the White Energy Hereford Corn Process if the fuel satisfies the corresponding GHG reduction requirements. The EPA is specifying the condition that to generate renewable fuel (D-code 6) RINs for non-grandfathered corn ethanol produced through the White Energy Hereford Corn Process, White Energy must demonstrate that all corn starch ethanol (including both grandfathered and non-grandfathered corn ethanol) produced during an averaging period (defined as the prior 365 days or the number of days since EPA activated the D-code 6 pathway associated with the White Energy Hereford Corn Process, whichever is less)[3] meets the 20% GHG reduction requirement. To make these demonstrations, White Energy must

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

keep records on the feedstocks used and the lifecycle GHG emissions associated with all the ethanol (including both corn and grain sorghum ethanol) produced by White Energy Hereford, 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 White Energy.
- *Section II. Available Information*: This section contains background information on White Energy and describes the information that White 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 non-grandfathered corn ethanol produced through the White Energy Hereford Corn 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 ethanol produced through the White Energy Hereford Corn 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 ethanol produced through the White Energy Hereford Corn Process.
- *Section V. Public Participation*: This section describes our administrative process to consider the White Energy 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 White Energy petition, including the D-code White Energy may use in generating RINs for non-grandfathered corn ethanol produced through the White Energy Hereford Corn Process.

I. Required Information and Criteria for Petition Requests

A. Background and Purpose of Petition Process

As a result of changes to the RFS program in Clean Air Act section 211(o), as amended by the Energy Independence and Security Act of 2007 (EISA), EPA adopted new regulations, published at 40 CFR Part 80 Subpart M. The RFS regulations specify the types of renewable fuels eligible to

participate in the RFS program and the procedures by which renewable fuel producers and importers may generate RINs for the qualifying renewable fuels they produce through approved fuel pathways.[4]

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

> *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 are exempt from the 20% GHG emissions reduction requirement of the Act may generate RINs with a D-code of 6 pursuant to 40 CFR 80.1426(f)(6) for a specified baseline volume of fuel ("grandfathered fuel"[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 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.

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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 months hiatus in construction and the facility is fired with natural gas, biomass, or any combination thereof.

Corn and sorghum ethanol producers who seek a new pathway approval on terms substantially 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 therefore may 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.

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, the regulatory requirements for information on the production process and co-products can be satisfied by submission of the following certifications (with

[6] The prioritization criteria are explained on EPA's website: http://www2.epa.gov/renewable-fuel-standard-program/renewable-fuel-petition-review-process#step3

appropriate facility-specific adjustments reflecting feedstocks and energy sources used by the facility and/or to be used in the proposed pathway to be evaluated):

- Certification by the petitioner that the production process for the requested pathway is an ethanol production process where corn and/or grain sorghum 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, only grain sorghum or only corn starch and grain sorghum as feedstocks to produce ethanol.
- 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

White Energy submitted an *Efficient Producer* petition, requesting approval for their generation of RINs for non-grandfathered ethanol produced by a dry mill process from corn starch feedstock at their Hereford, Texas facility. A petition is required because the pathway associated with the White Energy Hereford Corn 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 White Energy Hereford Corn Process does not

match any of the pathways in Table 1 to 40 CFR 80.1426 because it dries more than 50% of the DGS it markets annually and does not use any 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 White Energy, Inc.

White Energy 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 ethanol produced through the White Energy Hereford Corn Process to satisfy the 20% lifecycle GHG reduction requirement applicable to non-grandfathered renewable fuel if all conditions in this document are satisfied. White Energy included information on their process yield (bushels of corn starch feedstock per gallons of fuel) and the energy used. In addition, White Energy 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.

White Energy also certified that the only feedstocks used to produce ethanol at the White Energy Hereford facility are corn starch and grain sorghum.

C. Information Available Through Existing Modeling

For the pathway addressed in their petition, White Energy would use a feedstock (corn starch) that has already been analyzed as part of the March 2010 RFS rule, as noted in Table 1. White Energy also uses grain sorghum feedstock to produce ethanol, a fuel pathway that EPA previously evaluated in the final rule published on December 17, 2012 (77 FR 74592) ("the December 2012 grain sorghum rule").[7] As a result, no new feedstock modeling was required to evaluate the White Energy petition, as modeling for corn starch was already done as part of the March 2010 RFS rule, and modeling for grain sorghum was done for the December 2012 grain sorghum 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.

The same analytical approach that was used to evaluate the lifecycle GHG emissions of the existing corn ethanol pathways noted above was used to analyze the pathway described in the White Energy petition. The preamble to the March 2010 RFS rule describes the modeling approach used to estimate lifecycle GHG emissions from corn 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 White Energy petition, the only change required was replacing the production process data with the White Energy Hereford Corn Process data. This resulted in the following changes to the modeling (described in more detail in the following sections):

- Amount of corn used in the fuel production process was modified to reflect the White Energy Hereford process yield in terms of bushels of feedstock input per gallons of ethanol produced; and
- Amount of energy used by the fuel production process was changed to reflect data provided in the White Energy Hereford energy balance.

This was a straightforward analysis based on existing modeling done for the March 2010 RFS rule and substituting the White Energy Hereford process data, which only altered the amounts of certain inputs and outputs of the fuel production process.

[7] Although the White Energy Hereford Corn Process analyzed in this petition response uses only corn as a feedstock, because White Energy Hereford also uses grain sorghum EPA's prior modeling of grain sorghum is relevant to determine the lifecycle GHG emissions associated with the corn ethanol produced by White Energy Hereford.

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 fuel 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 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 White Energy 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 White Energy Hereford Corn Process.

The lifecycle GHG emissions of fuel produced using the pathway associated with the White Energy Hereford Corn Process were determined as follows:

Feedstock production and transport (upstream emissions) – White Energy uses only corn starch and grain sorghum as feedstocks for the production of ethanol, but corn starch is used exclusively in the White Energy Hereford Corn Process. 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 for EPA to evaluate the White Energy Hereford Corn Process. White Energy 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 White Energy Hereford Corn

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 White Energy Hereford Corn 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 White Energy 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.[8] 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 ethanol in the White Energy Hereford Corn Process, the bushels of corn used as feedstock provided in the White Energy petition were multiplied by the emissions factor of 9.73 $kgCO_2e$ per bushel. In the same manner as described in section IV.D. of this document, these emissions were then normalized by the mmBtu of ethanol produced from the same amount of bushels of corn.

White Energy also uses grain sorghum as a feedstock to produce ethanol at their White Energy Hereford facility. Because White Energy Plainview co-processes corn starch and grain sorghum, EPA's analysis in this determination considers the amount of grain sorghum used by White Energy Hereford and the total amount of all ethanol produced at the facility in order to establish the yield of ethanol per bushel of corn starch feedstock used in the process. Specifically, EPA used a mass-based allocation approach over all ethanol gallons to determine the yield of ethanol per standard bushel of corn. For example, if three hundred bushels of corn and one hundred bushels of grain sorghum (assuming standard 56 pounds per bushel) were used to produce 1,000 gallons of ethanol, EPA would consider three quarters of the ethanol (750 gallons) to be derived from corn feedstock and the other quarter (250 gallons) to be derived from grain sorghum feedstock, and EPA's analysis would consider

[8] 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.

the corn ethanol yield to be 2.5 gallons per bushel of corn.[9] This approach is valid because per EPA's analysis for the March 2010 RFS rule and the December 2012 grain sorghum rule, the average ethanol yield for corn starch and grain sorghum is the same at 2.71 gallons per standard bushel, at 56 pounds per bushel.

Fuel production (process emissions) – The fuel production method used by White Energy Hereford involves the production of ethanol from corn starch and grain sorghum in a dry mill process. However, the process described in the White Energy petition 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 corn ethanol production process used by White Energy Hereford, EPA utilized the same approach that was used to determine the impacts of processes in the corn ethanol pathways analyzed in the March 2010 RFS rule, taking into account differences in the types and amounts of process energy used. To account for the fact that White Energy Hereford sometimes co-processes corn and grain sorghum, our analysis of the White Energy petition incorporates aspects of the ethanol production modeling conducted for the December 2012 grain sorghum rule.

White Energy submitted average annual mass and energy balance data for operations at White Energy Hereford, including all of the process energy used from the point of delivery of the feedstock 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 fuel production facility. This includes the energy used to produce all of the ethanol (regardless of feedstock origin or regulatory characterization as grandfathered, non-grandfathered, or fuel for which no RINs are generated) produced by White Energy Hereford.

To evaluate the fuel production GHG emissions (i.e., the emissions associated with White Energy Hereford's use of grid electricity and process heat fuels) per gallon of corn ethanol produced through the White Energy Hereford Corn Process, EPA first determined the amount of electrical and thermal energy used to produce corn ethanol relative to grain sorghum ethanol. For the December 2012 grain sorghum rule, EPA found, based on process modeling developed by USDA, that on average a sorghum ethanol plant uses 96.3% of the thermal process energy of a corn ethanol plant (3.7% less), and 99.3% of the electrical energy (0.7% less). This is the best information available to EPA on the relative energy requirements for corn and sorghum ethanol processing, and it provides a conservative estimate of the GHG emissions associated with producing corn ethanol. Therefore, we applied these efficiency adjustment factors to the data provided in the White Energy petition to determine how much of the electrical and thermal energy to allocate to the corn ethanol and grain sorghum ethanol produced by White Energy Hereford. Specifically, the total amount of thermal and electrical energy used for

[9] The numbers provided in this example are for illustrative purposes only.

ethanol feedstock, fuel, and co-product operations at White Energy Hereford was multiplied by the corresponding average GHG emissions factor for each type of energy (see below). Then, the amount of energy used for corn ethanol was assigned based on the relative amounts of corn and grain sorghum feedstock used, and adjustments were made so that each gallon of grain sorghum ethanol produced used 3.7% less thermal energy and 0.7% less electrical energy than each gallon of corn ethanol.[10]

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 = $5.40*10^{-3}$ $kgCO_2e$ 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 ethanol to our analysis of the White Energy 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 White Energy Hereford's fuel 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 White Energy, our analysis indicates that corn ethanol produced using the White Energy Hereford Corn 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 ethanol produced using the White Energy Hereford Corn Process, compared to such emissions for a corn 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 GHG emissions associated with producing the corn feedstock and transporting it to the fuel production facility. Process emissions include the GHG

[10] For details on how this calculation was performed see the equation to calculate GHG_{Pc} in section IV of this document.

emissions associated with the corn ethanol production process. Downstream emissions include the GHG emissions associated with distributing and using the finished fuel. 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 Ethanol Produced through the White Energy Hereford Corn Process (kgCO2e/mmBtu)[11]

	Corn Ethanol, Natural Gas Fired Dry Mill, 100% Dry DGS, No Advanced Technologies	Corn Ethanol Produced Through the White Energy Hereford Corn Process	Baseline Lifecycle GHG Emissions for Gasoline
Upstream Emissions	47.6	45.4	*
Process Emissions	32.4	19.7	19.2
Downstream Emissions	2.1	2.1	79.0
Lifecycle Emissions	81.7	67.1	98.2
Percent Reduction	16.8%	31.6%	--

* Emissions included in Process Emissions stage.

B. Application of the Criteria for Petition Approval

Based on the information provided in the White Energy petition, and the requirements specified in section IV limiting RIN generation for non-grandfathered corn ethanol to fuel for which ongoing monitoring and assessment allow documentation of compliance with appropriate lifecycle greenhouse gas reduction requirements, EPA is approving this petition request. Specifically, we have determined that ethanol produced pursuant to the White Energy Hereford Corn 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 White Energy petition. As detailed in section IV, EPA is specifying certain conditions that must be satisfied for 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 ethanol produced through the White Energy Hereford Corn Process from corn starch, provided that the fuel meets the other criteria for renewable fuel specified in the CAA and EPA implementing regulations.

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

IV. Conditions and Associated Regulatory Provisions

The authority for White Energy to generate RINs for non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn Process is expressly conditioned on White Energy satisfying all of the following conditions as detailed in this section, in addition to other applicable requirements for renewable fuel and renewable fuel producers set forth in the RFS regulations. The conditions in this section 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 White Energy has failed to comply with any of the conditions specified herein.[12]

The pathway for corn ethanol approved in this document is in addition to the existing pathways for corn ethanol listed in rows A, B, C and D of Table 1 to 40 CFR 80.1426. White Energy may also generate RINs under 40 CFR 80.1426(f)(6) for fuel that qualifies for the "grandfathering" exemption under 40 CFR 80.1403. This document does not impact the ability of White Energy 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.

This section details the registration, compliance monitoring, lifecycle GHG computation, recordkeeping, reporting, attest engagement and other requirements that apply to the non-grandfathered corn ethanol pathway associated with the White Energy Hereford Corn 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 White Energy to generate RINs for non-grandfathered ethanol produced through the White Energy Hereford Corn Process during a specified averaging period (typically 365 days) is documentation by White Energy that RINs are only generated if, on average, all ethanol produced during the specified averaging period satisfies the 20% lifecycle GHG reduction requirement. The 365-day (or shorter in certain circumstances) rolling average is calculated based on the daily data monitored and collected by White Energy and the formula specified in section IV.D.

[12] 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 ethanol produced by White Energy during the averaging time period, calculated as specified in section IV.D. based on the daily data collected and recorded by White Energy through continuous monitoring.[13]

b. *Averaging time period* means the 365 calendar days prior to the day that White Energy wishes to generate RINs for fuel produced during the averaging period through the White Energy Hereford Corn Process, or the number of days prior to the day that White Energy wishes to generate RINs since EPA activated the pathway,[14] whichever is less.[15] To clarify, White Energy may not generate RINs for non-grandfathered ethanol produced through the White Energy Hereford Corn 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.

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 (both corn and sorghum), the production and/or storage of fuel intermediates, the production and/or storage of finished fuel or co-products, 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 distillers grains produced by White Energy Hereford before it is sold to the ultimate consumer.

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

[14] A fuel pathway is activated under the RFS program when EPA accepts the registration application for the pathway, allowing it to be used in EMTS for RIN generation. When EPA accepts a registration application, an email is automatically sent from otaqfuels@epa.gov to the responsible corporate officer (RCO) of the company that submitted the registration application. The subject line of such an email includes the name of the company and the company request (CR) number corresponding with the registration application submission, and the body of the email says the company request "has been activated."

[15] 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.

e. *Period of missing data* includes each day for which White Energy 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.

B. Registration

White Energy Hereford must comply with all registration provisions in 40 CFR Part 80, Subpart M that apply to renewable fuel producers to register for the production of non-grandfathered corn ethanol through the White Energy Hereford Corn Process. The description of the White Energy Hereford production process that is required for registration pursuant to 40 CFR 80.1450(b)(1)(ii) shall contain the following:[16]

a. A Compliance Monitoring Plan including technical specifications detailing how White Energy 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.

b. A process flow diagram showing all of the following:

    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 and grain sorghum used in fuel production processes for all of the ethanol produced by White Energy Hereford, 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[17] for all of the ethanol produced by White Energy Hereford, 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.

[16] All of the registration materials required by 80.1450(b)(1), including those specifically described in this document, must be reviewed and verified pursuant to the independent third party engineering review required in 80.1450(b)(2).
[17] Temperature readings must take place at the same time the volume is measured.

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 White Energy Hereford Corn 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 shall 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 White Energy Hereford Corn Process."

d. If White Energy wishes to exclude any amount of energy used at White Energy Hereford 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.

    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.[18]

e. If White Energy wishes to take credit for exported electricity in calculating GHG_{Pc} pursuant to section IV.D, White Energy 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.

f. If White Energy intends to process corn starch and grain sorghum feedstocks simultaneously, White Energy must specify in their accepted registration materials the values they will use for the converted fraction (CF) and energy content (E) parameters in the formula to calculate feedstock energy (FE) at 40 CFR 80.1426(f)(3)(vi), and must explain the technical basis for those values.

[18] There are only two valid reasons for excluding any amount of energy used by White Energy Hereford 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.

C. Compliance Monitoring

White Energy must implement the Compliance Monitoring Plan, and must use data obtained and recorded in accordance with this plan to calculate the 365-day rolling average lifecycle GHG emissions.

D. Corn Ethanol Lifecycle GHG Emissions

White Energy may not generate RINs for non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn 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 White Energy for a minimum of five years from the date of RIN generation that it has satisfied all of the following requirements:

a. All of the ethanol produced at White Energy Hereford was produced by a dry mill process using only corn starch, grain sorghum or a combination of corn starch and grain sorghum as feedstocks during the averaging time period.

b. The 365-day rolling average lifecycle GHG emissions are calculated using the following formula, and do not exceed 78.56 kgCO2e/mmBtu of corn ethanol:[19]

$$LC_{GHGc} = GHG_{Uc} + GHG_{Pc} + GHG_{D}$$

Where:

LC_{GHGc} = Lifecycle GHG emissions, in $kgCO_2e$/mmBtu, of the volume of all corn ethanol produced at the facility during the averaging time period.

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

GHG_{Pc} = Process GHG emissions, in $kgCO_2e$/mmBtu, related to the processes used for conversion of corn into ethanol during the averaging period, including 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 ethanol produced during the averaging period, calculated per section IV.D.e.

[19] 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.

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

$$GHG_{U_C} = \frac{9.73 * B_C}{\left(V_S * 0.076 * \left[\frac{B_C}{B_C + B_{GS}}\right]\right)}$$

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 White Energy Hereford 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 White Energy Hereford as feedstock to produce ethanol during the averaging time period based on measurements recorded by White Energy Hereford.

m_c = Average moisture content of corn, in mass percent, for the corn delivered to White Energy Hereford for use as feedstock to produce ethanol during the averaging time period. The moisture content tests performed by White Energy shall sample corn that, based on good engineering judgment, is representative of each delivery of corn feedstock to White Energy Hereford. White Energy shall test the moisture content of the corn delivered in each and every truck load, train load, or other delivery of corn to White Energy Hereford, and for any given delivery must measure the corn moisture content no less frequently than once for every 10,000 bushels. For moisture content, White Energy 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 White Energy in their Compliance Monitoring Plan accepted by EPA. White Energy 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 White Energy Hereford during the averaging time period.

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

B_{GS} = Bushels of grain sorghum used by White Energy Hereford as feedstock to produce ethanol during the averaging time period in terms of a standard bushel at 13% moisture.[20]

For the purposes of this paragraph, B_{GS}, shall be calculated according to the following formula:

$$B_{GS} = B_{GS_m} * \left(\frac{1 - m_{gs}}{1 - 0.13}\right)$$

B_{GSm} = Bushels of grain sorghum used by White Energy Hereford as feedstock to produce ethanol during the averaging time period based on measurements recorded by White Energy Hereford.

m_{gs} = Average moisture content of grain sorghum, in mass percent, for the grain sorghum delivered to White Energy Hereford for use as feedstock to produce ethanol during the averaging time period. The moisture content tests performed by White Energy shall sample grain sorghum that, based on good engineering judgment, is representative of each delivery of grain sorghum feedstock to White Energy Hereford. White Energy shall test the moisture content of the grain sorghum delivered in each and every truck load, train load, or other delivery of grain sorghum to White Energy Hereford, and for any given delivery must measure the grain sorghum moisture content no less frequently than once for every 10,000 bushels. For moisture content, White Energy 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 White Energy in their Compliance Monitoring Plan accepted by EPA. White Energy shall calculate the average moisture content as a weighted average, by summing the products of the mass and corresponding moisture content of each grain sorghum delivery, and then dividing by the total mass of grain sorghum feedstock delivered to White Energy Hereford during the averaging time period.

0.13 = Moisture content of a standard bushel of grain sorghum at 56 pounds per bushel.

V_S = Standardized volume of all ethanol produced at the White Energy Hereford facility during the averaging time period (including both corn starch and grain sorghum ethanol), 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:

[20] As explained in section III, EPA's analysis in this determination considers the amount of grain sorghum used by White Energy Hereford in order to establish the yield of ethanol per bushel of corn feedstock used in the process.

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

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

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_{Pc} is calculated according to the following formula:

$$GHG_{P_C} = \frac{\frac{GHG_{THERM}}{(0.963 * R_{GS}) + R_C} + \frac{GHG_{ELEC}}{(0.993 * R_{GS}) + R_C}}{V_S * 0.076}$$

Where:

GHG_{THERM} = The greenhouse gas emissions, in $kgCO_2e$, associated with thermal energy used for feedstock, fuel and co-product operations, as measured by White Energy by continuous monitoring, and calculated according to the following formula:

$$GHG_{THERM} = \sum_{p=1}^{3} \left(PE_p * LHV_{PE,p} * EF_{PE,p}\right) + BIO * EF_{bio}$$

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_1 = Standard cubic feet (scf) of natural gas used in feedstock, fuel and co-product operations, as measured by White Energy by continuous monitoring.

PE_2 = Standard cubic feet (scf) of biogas CH_4 from landfills, waste treatment plants and/or waste digesters used as energy used for feedstock, fuel and co-product operations, as measured by White Energy by continuous monitoring.[21]

PE_3 = Tons of coal, used as energy used for feedstock, fuel and co-product operations, as measured by White Energy by continuous monitoring.

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

$LHV_{PE,1}$ = 983 Btu per scf of natural gas.

$LHV_{PE,2}$ = 983 Btu per scf of biogas CH_4.

$LHV_{PE,3}$ = 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:

$EF_{PE,1} = 6.86 * 10^{-5}$ $kgCO_2e$ per Btu of natural gas.

$EF_{PE,2} = 3.64 * 10^{-7}$ $kgCO_2e$ per Btu of biogas CH_4.

$EF_{PE,3} = 1.12 * 10^{-4}$ $kgCO_2e$ per Btu of coal.

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

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

0.963 = Adjustment factor for grain sorghum processing using 3.7% less thermal energy than corn ethanol processing.

0.993 = Adjustment factor for grain sorghum processing using 0.7% less electrical energy than corn ethanol processing.

$R_{GS} = \left(\frac{B_{GS}}{B_C+B_{GS}}\right)$ which is the ratio of grain sorghum feedstock used, on a mass basis.

$R_C = \left(\frac{B_C}{B_C+B_{GS}}\right)$ which is the ratio of corn feedstock used, on a mass basis.

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

GHG_{ELEC} = The greenhouse gas emissions, in kgCO_2e, associated with electricity used for feedstock, fuel and co-product operations, as measured by White Energy by continuous monitoring, and calculated according to the following formula:

$$GHG_{ELEC} = ELEC * EF_{elec}$$

Where:

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

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 ethanol.

f. For the purposes of section IV.D., for all corn ethanol produced by White Energy during a day where White Energy has missing data on any of the factors described in this section, White Energy shall assess the corn ethanol produced on all such days 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 White Energy generates RINs for non-grandfathered corn ethanol produced through the White Energy Hereford Corn 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 compliance monitoring plan described in section IV.B.a. 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 ethanol produced through the White Energy Hereford Corn Process.

[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.

b. Records presenting accurate calculations verifying compliance with the requirement specified in section IV.D., above, that the 365-day rolling average lifecycle GHG emissions do not exceed 78.56 kgCO2e/mmBtu of corn ethanol as calculated in accordance with section IV.D.b, and that are prepared on each day that RINs are generated for non-grandfathered corn ethanol produced through the White Energy Hereford Corn Process. The information must include identifiable unique references to all documents and metering data used in the calculations.[23]

F. Reporting

As part of the quarterly RIN generation reports required under 40 CFR 80.1451(b), White Energy 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] White Energy shall submit reports in accordance with the RFS Efficient Producer Data Form for each and every quarter that it has an activated pathway for ethanol produced through the White Energy Hereford Process.

G. Additional Conditions

The authority for White Energy to generate RINs for non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn Process is expressly conditioned on White Energy satisfying all of the following additional conditions:

a. For any biogas energy used for feedstock, fuel and co-product operations, White Energy must satisfy the requirements specified at 40 CFR 80.1426(f)(12)(i) and/or (ii), as applicable, 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]

White Energy may not generate RINs for non-grandfathered corn ethanol produced through the White Energy Hereford Corn Process if White Energy fails to comply with any of the conditions in this section IV. However, this does not prevent White Energy 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 White Energy is authorized to do so under applicable regulations.

[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 to help with recordkeeping.
[24] Since the information prepared pursuant to section IV.E. must be included in the White Energy 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 residue.

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

Per the existing RFS regulations, if White Energy Hereford generates D-Code 6 RINs for ethanol made from corn starch feedstock and also generates advanced biofuel (D-Code 5) RINs for grain sorghum ethanol, the appropriate subparagraphs of 40 CFR 80.1426(f)(3) shall be used to allocate RINs.

EPA may modify the conditions specified above, as it deems necessary and appropriate to ensure that non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn 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 for non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn Process, 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 rule, we took public comment on our lifecycle assessment of the corn ethanol pathways listed in Table 1 to 40 CFR 80.1426, including all models used and all modeling inputs and evaluative approaches. In the March 2010 RFS rule, 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

[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. Since White Energy will be required to start tracking energy use once this pathway is activated in EMTS, they will have a more robust set of data that contributes to their 365-day rolling average, compared to having just one data point on the first day of approval. In addition, this condition will help to reduce the Agency's administrative burden related to enforcement and compliance. If White Energy 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 calendar year. However, for the reasons described above, we have decided not to grant additional petitions allowing such an approach.

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 White Energy, we have relied on the corn 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 White Energy Hereford. 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 White Energy petition also relied on certain aspects of the modeling and analysis completed for the December 2012 grain sorghum rule, which sought and addressed public comments through a rulemaking 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 December 2012 grain sorghum 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 December 2012 grain sorghum rules.

VI. Conclusion

This document specifies conditions designed to ensure that D-code 6 RINs are generated for non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn 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 White Energy Hereford facility and to the process, materials used, fuel and co-products produced, and process energy sources as outlined and described in the White Energy petition. Although White Energy Hereford also uses grain sorghum as a feedstock to produce ethanol, this document only addresses White Energy's request for EPA to approve a new fuel pathway for their generation of D-code 6 RINs for non-grandfathered ethanol produced from corn starch feedstock. This approval is effective as of signature date. However, RINs may only be generated for non-grandfathered corn ethanol produced pursuant to the White Energy Hereford Corn Process that is produced after the date of activation of White Energy's registration for this pathway.

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application (OTAQ Reg and EMTS) will be modified to allow White Energy to register to generate RINs for the production of non-grandfathered ethanol from corn starch feedstock using a production process of

"White Energy Hereford Corn Process." This document has no impact on the ability of White Energy to use the OTAQ Reg and EMTS 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.